

# SAFETY DATA SHEET



SuperCos 1 Cosmid Vector Kit, Part Number 251301

## Section 1. Identification

### 1.1 Product identifier

**Product name** : SuperCos 1 Cosmid Vector Kit, Part Number 251301  
**Part No. (Chemical Kit)** : 251301  
**Part No.** : T3 RNA Polymerase 600110-51  
 T7 RNA Polymerase 600120-51  
 RNA Polymerase Dilution Buffer 600110-83  
 5X Transcription Buffer 600110-82  
 XL1-Blue MR E. coli Strain 200300-81  
 SuperCos 1 Cosmid 251301-51

**Validation date** : 3/23/2017

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

**Material uses** : Analytical reagent.  
 T3 RNA Polymerase 20 µl (1000 U 50 U/µl)  
 T7 RNA Polymerase 20 µl (1000 U 50 U/µl)  
 RNA Polymerase Dilution Buffer 1 ml  
 5X Transcription Buffer 1 ml  
 XL1-Blue MR E. coli Strain 500 µl  
 SuperCos 1 Cosmid 25 µl (25 µg 1 µg/µl)

### 1.3 Details of the supplier of the safety data sheet

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

### 1.4 Emergency telephone number

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

## Section 2. Hazards identification

### 2.1 Classification of the substance or mixture

**OSHA/HCS status** : T3 RNA Polymerase This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 T7 RNA Polymerase This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 RNA Polymerase Dilution Buffer This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 5X Transcription Buffer While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.  
 XL1-Blue MR E. coli Strain This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 SuperCos 1 Cosmid While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This

## Section 2. Hazards identification

SDS should be retained and available for employees and other users of this product.

### Classification of the substance or mixture

#### T3 RNA Polymerase

H320 EYE IRRITATION - Category 2B

#### T7 RNA Polymerase

H320 EYE IRRITATION - Category 2B

#### RNA Polymerase Dilution Buffer

H320 EYE IRRITATION - Category 2B

#### XL1-Blue MR E. coli Strain

H320 EYE IRRITATION - Category 2B

### 2.2 GHS label elements

#### Signal word

: T3 RNA Polymerase Warning  
 T7 RNA Polymerase Warning  
 RNA Polymerase Dilution Buffer Warning  
 5X Transcription Buffer No signal word.  
 XL1-Blue MR E. coli Strain Warning  
 SuperCos 1 Cosmid No signal word.

#### Hazard statements

: T3 RNA Polymerase H320 - Causes eye irritation.  
 T7 RNA Polymerase H320 - Causes eye irritation.  
 RNA Polymerase Dilution Buffer H320 - Causes eye irritation.  
 5X Transcription Buffer No known significant effects or critical hazards.  
 XL1-Blue MR E. coli Strain H320 - Causes eye irritation.  
 SuperCos 1 Cosmid No known significant effects or critical hazards.

### Precautionary statements

#### Prevention

: T3 RNA Polymerase P264 - Wash hands thoroughly after handling.  
 T7 RNA Polymerase P264 - Wash hands thoroughly after handling.  
 RNA Polymerase Dilution Buffer P264 - Wash hands thoroughly after handling.  
 5X Transcription Buffer Not applicable.  
 XL1-Blue MR E. coli Strain P264 - Wash hands thoroughly after handling.  
 SuperCos 1 Cosmid Not applicable.

#### Response

: T3 RNA Polymerase P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P337 + P313 - If eye irritation persists: Get medical attention.  
 T7 RNA Polymerase P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P337 + P313 - If eye irritation persists: Get medical attention.  
 RNA Polymerase Dilution Buffer P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P337 + P313 - If eye irritation persists: Get medical attention.  
 5X Transcription Buffer Not applicable.  
 XL1-Blue MR E. coli Strain P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove

## Section 2. Hazards identification

contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 - If eye irritation persists: Get medical attention.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

Not applicable.

**Storage** : SuperCos 1 Cosmid  
 T3 RNA Polymerase  
 T7 RNA Polymerase  
 RNA Polymerase Dilution Buffer  
 5X Transcription Buffer  
 XL1-Blue MR E. coli Strain  
 SuperCos 1 Cosmid

**Disposal** : T3 RNA Polymerase  
 T7 RNA Polymerase  
 RNA Polymerase Dilution Buffer  
 5X Transcription Buffer  
 XL1-Blue MR E. coli Strain  
 SuperCos 1 Cosmid

**Supplemental label elements** : T3 RNA Polymerase  
 T7 RNA Polymerase  
 RNA Polymerase Dilution Buffer  
 5X Transcription Buffer  
 XL1-Blue MR E. coli Strain  
 SuperCos 1 Cosmid

### 2.3 Other hazards

**Hazards not otherwise classified** : T3 RNA Polymerase  
 T7 RNA Polymerase  
 RNA Polymerase Dilution Buffer  
 5X Transcription Buffer  
 XL1-Blue MR E. coli Strain  
 SuperCos 1 Cosmid

## Section 3. Composition/information on ingredients

**Substance/mixture** : T3 RNA Polymerase Mixture  
 T7 RNA Polymerase Mixture  
 RNA Polymerase Dilution Buffer Mixture  
 5X Transcription Buffer Mixture  
 XL1-Blue MR E. coli Strain Mixture  
 SuperCos 1 Cosmid Mixture

Ingredient name	%	CAS number
<b>T3 RNA Polymerase</b> Glycerol	≥50 - ≤75	56-81-5
<b>T7 RNA Polymerase</b> Glycerol	≥50 - ≤75	56-81-5
<b>RNA Polymerase Dilution Buffer</b> Glycerol	≥50 - ≤75	56-81-5
<b>5X Transcription Buffer</b> Trometamol Sodium chloride	≤3 ≤3	77-86-1 7647-14-5
<b>XL1-Blue MR E. coli Strain</b> Glycerol	≥10 - ≤25	56-81-5

## Section 3. Composition/information on ingredients

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

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

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

## Section 4. First aid measures

### 4.1 Description of necessary first aid measures

<b>Eye contact</b>	: T3 RNA Polymerase	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	T7 RNA Polymerase	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	RNA Polymerase Dilution Buffer	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	5X Transcription Buffer	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	XL1-Blue MR E. coli Strain	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
	SuperCos 1 Cosmid	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.
<b>Inhalation</b>	: T3 RNA Polymerase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	T7 RNA Polymerase	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position

## Section 4. First aid measures

and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

RNA Polymerase Dilution Buffer

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

5X Transcription Buffer

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

XL1-Blue MR E. coli Strain

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

SuperCos 1 Cosmid

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

### Skin contact

:  RNA Polymerase

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

T7 RNA Polymerase

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

RNA Polymerase Dilution Buffer

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

5X Transcription Buffer


Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

XL1-Blue MR E. coli Strain

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

## Section 4. First aid measures

### Ingestion

SuperCos 1 Cosmid	before reuse. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
:  RNA Polymerase	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
T7 RNA Polymerase	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
RNA Polymerase Dilution Buffer	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
5X Transcription Buffer	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.



## Section 4. First aid measures

XL1-Blue MR E. coli Strain

Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.

SuperCos 1 Cosmid

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.





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

#### Potential acute health effects


<b>Eye contact</b>	: T3 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	Causes eye irritation. Causes eye irritation. Causes eye irritation. No known significant effects or critical hazards. Causes eye irritation. No known significant effects or critical hazards.
<b>Inhalation</b>	: T3 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Skin contact</b>	: T3 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Ingestion</b>	: T3 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.

#### Over-exposure signs/symptoms

## Section 4. First aid measures



<b>Eye contact</b>	:  RNA Polymerase	Adverse symptoms may include the following: irritation watering redness
	T7 RNA Polymerase	Adverse symptoms may include the following: irritation watering redness
	RNA Polymerase Dilution Buffer	Adverse symptoms may include the following: irritation watering redness
	5X Transcription Buffer	No specific data.
	XL1-Blue MR E. coli Strain	Adverse symptoms may include the following: irritation watering redness
<b>Inhalation</b>	: SuperCos 1 Cosmid	No specific data.
	:  RNA Polymerase	No specific data.
	T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
	XL1-Blue MR E. coli Strain	No specific data.
<b>Skin contact</b>	: SuperCos 1 Cosmid	No specific data.
	:  RNA Polymerase	No specific data.
	T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
	XL1-Blue MR E. coli Strain	No specific data.
<b>Ingestion</b>	: SuperCos 1 Cosmid	No specific data.
	:  RNA Polymerase	No specific data.
	T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
	XL1-Blue MR E. coli Strain	No specific data.

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

<b>Notes to physician</b>	:  RNA Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	T7 RNA Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	RNA Polymerase Dilution Buffer	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	5X Transcription Buffer	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	XL1-Blue MR E. coli Strain	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	SuperCos 1 Cosmid	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.





## Section 4. First aid measures

<b>Specific treatments</b>	:  RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment. No specific treatment.
<b>Protection of first-aiders</b>	:  RNA Polymerase  T7 RNA Polymerase  RNA Polymerase Dilution Buffer  5X Transcription Buffer  XL1-Blue MR E. coli Strain  SuperCos 1 Cosmid	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. 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. 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. No action shall be taken involving any personal risk or without suitable training. 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. No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	:  RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. 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.
<b>Unsuitable extinguishing media</b>	:  RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	None known. None known. None known. None known. None known. None known.

### 5.2 Special hazards arising from the substance or mixture

## Section 5. Fire-fighting measures

### Specific hazards arising from the chemical

: ☒ RNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
T7 RNA Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
RNA Polymerase Dilution Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
5X Transcription Buffer	In a fire or if heated, a pressure increase will occur and the container may burst.
XL1-Blue MR E. coli Strain	In a fire or if heated, a pressure increase will occur and the container may burst.
SuperCos 1 Cosmid	In a fire or if heated, a pressure increase will occur and the container may burst.

### Hazardous thermal decomposition products

: ☒ RNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
T7 RNA Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
RNA Polymerase Dilution Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide
5X Transcription Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds metal oxide/oxides
XL1-Blue MR E. coli Strain	Decomposition products may include the following materials: carbon dioxide carbon monoxide
SuperCos 1 Cosmid	No specific data.

### 5.3 Advice for firefighters

#### Special protective actions for fire-fighters

: ☒ 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.
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.
XL1-Blue MR E. coli Strain	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.

## Section 5. Fire-fighting measures

SuperCos 1 Cosmid		Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
<b>Special protective equipment for fire-fighters</b>	: T7 RNA Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	T7 RNA Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	RNA Polymerase Dilution Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	5X Transcription Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	XL1-Blue MR E. coli Strain	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	SuperCos 1 Cosmid	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

<b>For non-emergency personnel</b>	: T7 RNA Polymerase	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	T7 RNA Polymerase	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	RNA Polymerase Dilution Buffer	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

## Section 6. Accidental release measures

5X Transcription Buffer	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
XL1-Blue MR E. coli Strain	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
SuperCos 1 Cosmid	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
<b>For emergency responders :</b> T3 RNA Polymerase	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
T7 RNA Polymerase	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
RNA Polymerase Dilution Buffer	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
5X Transcription Buffer	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
XL1-Blue MR E. coli Strain	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
SuperCos 1 Cosmid	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
<b>6.2 Environmental precautions :</b> 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).
T7 RNA Polymerase	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
RNA Polymerase Dilution Buffer	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 6. Accidental release measures

5X Transcription Buffer	Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). 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).
XL1-Blue MR E. coli Strain	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).
SuperCos 1 Cosmid	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### 6.3 Methods and materials for containment and cleaning up

**Methods for cleaning up** :  RNA Polymerase

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.
XL1-Blue MR E. coli Strain	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.
SuperCos 1 Cosmid	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

**Protective measures** :  RNA Polymerase

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

T7 RNA Polymerase

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

RNA Polymerase Dilution Buffer

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

5X Transcription Buffer

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

XL1-Blue MR E. coli Strain

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

SuperCos 1 Cosmid

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

**Advice on general occupational hygiene**

:  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.

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.



## Section 7. Handling and storage

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.

XL1-Blue MR E. coli Strain

Potentially biohazardous material. 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.

SuperCos 1 Cosmid

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

### 7.2 Conditions for safe storage, including any incompatibilities

:  T7 RNA Polymerase

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

T7 RNA Polymerase

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

RNA Polymerase Dilution Buffer

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

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

## Section 7. Handling and storage

XL1-Blue MR E. coli Strain

opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

SuperCos 1 Cosmid

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

### 7.3 Specific end use(s)

#### Recommendations

<ul style="list-style-type: none"> <li>▶ T3 RNA Polymerase</li> <li>T7 RNA Polymerase</li> <li>RNA Polymerase Dilution Buffer</li> <li>5X Transcription Buffer</li> <li>XL1-Blue MR E. coli Strain</li> <li>SuperCos 1 Cosmid</li> </ul>	<ul style="list-style-type: none"> <li>Industrial applications, Professional applications.</li> <li>Industrial applications, Professional applications.</li> <li>Industrial applications, Professional applications.</li> <li>Industrial applications, Professional applications.</li> <li>Industrial applications, Professional applications.</li> <li>Industrial applications, Professional applications.</li> </ul>
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#### Industrial sector specific solutions

<ul style="list-style-type: none"> <li>▶ T3 RNA Polymerase</li> <li>T7 RNA Polymerase</li> <li>RNA Polymerase Dilution Buffer</li> <li>5X Transcription Buffer</li> <li>XL1-Blue MR E. coli Strain</li> <li>SuperCos 1 Cosmid</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> <li>Not applicable.</li> <li>Not applicable.</li> <li>Not applicable.</li> <li>Not applicable.</li> <li>Not applicable.</li> </ul>
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## Section 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
▶ T3 RNA Polymerase Glycerol	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust
T7 RNA Polymerase Glycerol	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable

## Section 8. Exposure controls/personal protection

	fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust
<b>RNA Polymerase Dilution Buffer</b> Glycerol	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust
<b>5X Transcription Buffer</b> Trometamol Sodium chloride	None. None.
<b>XL1-Blue MR E. coli Strain</b> Glycerol	<b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m <sup>3</sup> 8 hours. Form: Total dust <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m <sup>3</sup> 8 hours. Form: Total dust

### 8.2 Exposure controls

#### Appropriate engineering controls

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

#### Environmental exposure controls

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

### Individual protection measures

#### Hygiene measures

: Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### Eye/face protection

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

#### Skin protection

## Section 8. Exposure controls/personal protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties






#### Appearance

<b>Physical state</b>	:	<ul style="list-style-type: none"> <li>☑ RNA Polymerase</li> <li>T7 RNA Polymerase</li> <li>RNA Polymerase Dilution Buffer</li> <li>5X Transcription Buffer</li> <li>XL1-Blue MR E. coli Strain</li> <li>SuperCos 1 Cosmid</li> </ul>	<ul style="list-style-type: none"> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> <li>Liquid.</li> </ul>
<b>Color</b>	:	<ul style="list-style-type: none"> <li>☑ RNA Polymerase</li> <li>T7 RNA Polymerase</li> <li>RNA Polymerase Dilution Buffer</li> <li>5X Transcription Buffer</li> <li>XL1-Blue MR E. coli Strain</li> <li>SuperCos 1 Cosmid</li> </ul>	<ul style="list-style-type: none"> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> </ul>
<b>Odor</b>	:	<ul style="list-style-type: none"> <li>☑ RNA Polymerase</li> <li>T7 RNA Polymerase</li> <li>RNA Polymerase Dilution Buffer</li> <li>5X Transcription Buffer</li> <li>XL1-Blue MR E. coli Strain</li> <li>SuperCos 1 Cosmid</li> </ul>	<ul style="list-style-type: none"> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> </ul>
<b>Odor threshold</b>	:	<ul style="list-style-type: none"> <li>☑ RNA Polymerase</li> <li>T7 RNA Polymerase</li> <li>RNA Polymerase Dilution Buffer</li> <li>5X Transcription Buffer</li> <li>XL1-Blue MR E. coli Strain</li> <li>SuperCos 1 Cosmid</li> </ul>	<ul style="list-style-type: none"> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> <li>Not available.</li> </ul>
<b>pH</b>	:	<ul style="list-style-type: none"> <li>☑ RNA Polymerase</li> <li>T7 RNA Polymerase</li> <li>RNA Polymerase Dilution Buffer</li> <li>5X Transcription Buffer</li> <li>XL1-Blue MR E. coli Strain</li> <li>SuperCos 1 Cosmid</li> </ul>	<ul style="list-style-type: none"> <li>7.7</li> <li>7.7</li> <li>7.7</li> <li>8</li> <li>7</li> <li>7.5</li> </ul>



## Section 9. Physical and chemical properties

<b>Melting point</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	0°C (32°F)
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	0°C (32°F)
<b>Boiling point</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	100°C (212°F)
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	100°C (212°F)
<b>Flash point</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Evaporation rate</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Flammability (solid, gas)</b>	:  RNA Polymerase	Not applicable.
	T7 RNA Polymerase	Not applicable.
	RNA Polymerase Dilution Buffer	Not applicable.
	5X Transcription Buffer	Not applicable.
	XL1-Blue MR E. coli Strain	Not applicable.
	SuperCos 1 Cosmid	Not applicable.
<b>Lower and upper explosive (flammable) limits</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Vapor pressure</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Vapor density</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Relative density</b>	:  RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.

## Section 9. Physical and chemical properties





<b>Solubility</b>	:  T7 RNA Polymerase	Soluble in the following materials: cold water and hot water.
	T7 RNA Polymerase	Soluble in the following materials: cold water and hot water.
	RNA Polymerase Dilution Buffer	Soluble in the following materials: cold water and hot water.
	5X Transcription Buffer	Easily soluble in the following materials: cold water and hot water.
	XL1-Blue MR E. coli Strain	Soluble in the following materials: cold water and hot water.
	SuperCos 1 Cosmid	Easily soluble in the following materials: cold water and hot water.
<b>Partition coefficient: n-octanol/water</b>	:  T7 RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Auto-ignition temperature</b>	:  T7 RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Decomposition temperature</b>	:  T7 RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.
<b>Viscosity</b>	:  T7 RNA Polymerase	Not available.
	T7 RNA Polymerase	Not available.
	RNA Polymerase Dilution Buffer	Not available.
	5X Transcription Buffer	Not available.
	XL1-Blue MR E. coli Strain	Not available.
	SuperCos 1 Cosmid	Not available.

## Section 10. Stability and reactivity

<b>10.1 Reactivity</b>	:  T7 RNA Polymerase	No specific test data related to reactivity available for this product or its ingredients.
	T7 RNA Polymerase	No specific test data related to reactivity available for this product or its ingredients.
	RNA Polymerase Dilution Buffer	No specific test data related to reactivity available for this product or its ingredients.
	5X Transcription Buffer	No specific test data related to reactivity available for this product or its ingredients.
	XL1-Blue MR E. coli Strain	No specific test data related to reactivity available for this product or its ingredients.
	SuperCos 1 Cosmid	No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	:  T7 RNA Polymerase	The product is stable.
	T7 RNA Polymerase	The product is stable.
	RNA Polymerase Dilution Buffer	The product is stable.
	5X Transcription Buffer	The product is stable.
	XL1-Blue MR E. coli Strain	The product is stable.
	SuperCos 1 Cosmid	The product is stable.



## Section 10. Stability and reactivity

<b>10.3 Possibility of hazardous reactions</b>	:  3 RNA Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
	T7 RNA Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
	RNA Polymerase Dilution Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
	5X Transcription Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
	XL1-Blue MR E. coli Strain	Under normal conditions of storage and use, hazardous reactions will not occur.
	SuperCos 1 Cosmid	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	:  3 RNA Polymerase	No specific data.
	T7 RNA Polymerase	No specific data.
	RNA Polymerase Dilution Buffer	No specific data.
	5X Transcription Buffer	No specific data.
	XL1-Blue MR E. coli Strain	No specific data.
	SuperCos 1 Cosmid	No specific data.
<b>10.5 Incompatible materials</b>	:  3 RNA Polymerase	May react or be incompatible with oxidizing materials.
	T7 RNA Polymerase	May react or be incompatible with oxidizing materials.
	RNA Polymerase Dilution Buffer	May react or be incompatible with oxidizing materials.
	5X Transcription Buffer	May react or be incompatible with oxidizing materials.
	XL1-Blue MR E. coli Strain	May react or be incompatible with oxidizing materials.
	SuperCos 1 Cosmid	May react or be incompatible with oxidizing materials.
<b>10.6 Hazardous decomposition products</b>	:  3 RNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	T7 RNA Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	RNA Polymerase Dilution Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	5X Transcription Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	XL1-Blue MR E. coli Strain	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	SuperCos 1 Cosmid	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
<b>T3 RNA Polymerase</b> Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>T7 RNA Polymerase</b> Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>RNA Polymerase Dilution Buffer</b> Glycerol	LD50 Oral	Rat	12600 mg/kg	-
<b>5X Transcription Buffer</b> Trometamol	LD50 Dermal	Rat	>5000 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
<b>XL1-Blue MR E. coli Strain</b> Glycerol	LD50 Oral	Rat	12600 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>T3 RNA Polymerase</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-		24 hours 500 milligrams
<b>T7 RNA Polymerase</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-		24 hours 500 milligrams
<b>RNA Polymerase Dilution Buffer</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-		24 hours 500 milligrams
<b>5X Transcription Buffer</b> Trometamol	Skin - Moderate irritant	Rabbit	-	25 Percent 500 milligrams	-
	Skin - Severe irritant	Rabbit	-		24 hours 100 milligrams
Sodium chloride	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Eyes - Moderate irritant Skin - Mild irritant	Rabbit Rabbit	- -		24 hours 500 milligrams
<b>XL1-Blue MR E. coli Strain</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-		24 hours 500

## Section 11. Toxicological information

milligrams

### Sensitization

Not available.

### Mutagenicity

Not available.

### Carcinogenicity

Not available.

### Reproductive toxicity

Not available.

### Teratogenicity

Not available.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<b>5X Transcription Buffer</b> Trometamol	Category 3	Not applicable.	Respiratory tract irritation


### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard


Not available.

### Information on the likely routes of exposure


:  RNA Polymerase	Routes of entry anticipated: Oral, Dermal, Inhalation.
T7 RNA Polymerase	Routes of entry anticipated: Oral, Dermal, Inhalation.
RNA Polymerase Dilution Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
5X Transcription Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
XL1-Blue MR E. coli Strain	Routes of entry anticipated: Oral, Dermal, Inhalation.
SuperCos 1 Cosmid	Not available.

### Potential acute health effects

#### Eye contact

:  RNA Polymerase	Causes eye irritation.
T7 RNA Polymerase	Causes eye irritation.
RNA Polymerase Dilution Buffer	Causes eye irritation.
5X Transcription Buffer	No known significant effects or critical hazards.
XL1-Blue MR E. coli Strain	Causes eye irritation.
SuperCos 1 Cosmid	No known significant effects or critical hazards.

#### Inhalation

:  RNA Polymerase	No known significant effects or critical hazards.
T7 RNA Polymerase	No known significant effects or critical hazards.
RNA Polymerase Dilution Buffer	No known significant effects or critical hazards.
5X Transcription Buffer	No known significant effects or critical hazards.
XL1-Blue MR E. coli Strain	No known significant effects or critical hazards.
SuperCos 1 Cosmid	No known significant effects or critical hazards.

## Section 11. Toxicological information

<b>Skin contact</b>	:	☑ RNA Polymerase	No known significant effects or critical hazards.
		T7 RNA Polymerase	No known significant effects or critical hazards.
		RNA Polymerase Dilution Buffer	No known significant effects or critical hazards.
		5X Transcription Buffer	No known significant effects or critical hazards.
		XL1-Blue MR E. coli Strain	No known significant effects or critical hazards.
		SuperCos 1 Cosmid	No known significant effects or critical hazards.
<b>Ingestion</b>	:	☑ RNA Polymerase	No known significant effects or critical hazards.
		T7 RNA Polymerase	No known significant effects or critical hazards.
		RNA Polymerase Dilution Buffer	No known significant effects or critical hazards.
		5X Transcription Buffer	No known significant effects or critical hazards.
		XL1-Blue MR E. coli Strain	No known significant effects or critical hazards.
		SuperCos 1 Cosmid	No known significant effects or critical hazards.

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

<b>Eye contact</b>	:	☑ RNA Polymerase	Adverse symptoms may include the following: irritation watering redness
		T7 RNA Polymerase	Adverse symptoms may include the following: irritation watering redness
		RNA Polymerase Dilution Buffer	Adverse symptoms may include the following: irritation watering redness
		5X Transcription Buffer	No specific data.
		XL1-Blue MR E. coli Strain	Adverse symptoms may include the following: irritation watering redness
		SuperCos 1 Cosmid	No specific data.
<b>Inhalation</b>	:	☑ RNA Polymerase	No specific data.
		T7 RNA Polymerase	No specific data.
		RNA Polymerase Dilution Buffer	No specific data.
		5X Transcription Buffer	No specific data.
		XL1-Blue MR E. coli Strain	No specific data.
		SuperCos 1 Cosmid	No specific data.
<b>Skin contact</b>	:	☑ RNA Polymerase	No specific data.
		T7 RNA Polymerase	No specific data.
		RNA Polymerase Dilution Buffer	No specific data.
		5X Transcription Buffer	No specific data.
		XL1-Blue MR E. coli Strain	No specific data.
		SuperCos 1 Cosmid	No specific data.
<b>Ingestion</b>	:	☑ RNA Polymerase	No specific data.
		T7 RNA Polymerase	No specific data.
		RNA Polymerase Dilution Buffer	No specific data.
		5X Transcription Buffer	No specific data.
		XL1-Blue MR E. coli Strain	No specific data.
		SuperCos 1 Cosmid	No specific data.

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

#### Short term exposure

**Potential immediate effects** : Not available.

## Section 11. Toxicological information

**Potential delayed effects** : Not available.

### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Potential chronic health effects

<b>General</b>	: T7 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: T7 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Mutagenicity</b>	: T7 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Teratogenicity</b>	: T7 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Developmental effects</b>	: T7 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Fertility effects</b>	: T7 RNA Polymerase T7 RNA Polymerase RNA Polymerase Dilution Buffer 5X Transcription Buffer XL1-Blue MR E. coli Strain SuperCos 1 Cosmid	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. No known significant effects or critical hazards. No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Route	ATE value
5X Transcription Buffer Oral	102040.8 mg/kg

## Section 12. Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>T3 RNA Polymerase</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>T7 RNA Polymerase</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>RNA Polymerase Dilution Buffer</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
<b>5X Transcription Buffer</b> Trometamol	Acute EC50 >980 mg/l Fresh water Acute NOEC 520 mg/l Fresh water	Daphnia Daphnia	48 hours 48 hours
Sodium chloride	Acute EC50 2430000 µg/l Fresh water Acute EC50 28.85 mg/dm <sup>3</sup> Fresh water	Algae - Navicula seminulum Algae - Pseudokirchneriella subcapitata	96 hours 72 hours
	Acute EC50 519.6 mg/l Fresh water Acute IC50 6.87 g/L Fresh water Acute LC50 1.56 g/L Fresh water Acute LC50 1000000 µg/l Fresh water Chronic LC10 781 mg/l Fresh water	Crustaceans - Cypris subglobosa Aquatic plants - Lemna minor Daphnia - Daphnia magna Fish - Morone saxatilis - Larvae Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	48 hours 96 hours 48 hours 96 hours 3 weeks
	Chronic NOEC 6 g/L Fresh water Chronic NOEC 0.314 g/L Fresh water Chronic NOEC 100 mg/l Fresh water	Aquatic plants - Lemna minor Daphnia - Daphnia pulex Fish - Gambusia holbrooki - Adult	96 hours 21 days 8 weeks
<b>XL1-Blue MR E. coli Strain</b> Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

### 12.2 Persistence and degradability

Not available.

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>T3 RNA Polymerase</b> Glycerol	-1.76	-	low
<b>T7 RNA Polymerase</b> Glycerol	-1.76	-	low
<b>RNA Polymerase Dilution Buffer</b> Glycerol	-1.76	-	low
<b>5X Transcription Buffer</b> Trometamol	-1.56	-	low
<b>XL1-Blue MR E. coli Strain</b> Glycerol	-1.76	-	low

### 12.4 Mobility in soil



## Section 12. Ecological information

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

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

## Section 13. Disposal considerations

### 13.1 Waste treatment methods

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

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

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

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

## Section 14. Transport information

### Regulatory information

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

## Section 15. Regulatory information

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

**U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.  
**Clean Water Act (CWA) 311**: Edetic acid; Disodium hydrogenorthophosphate

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

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**SARA 302/304**

## Section 15. Regulatory information

### Composition/information on ingredients

No products were found.

**SARA 304 RQ** : Not applicable.

### SARA 311/312

**Classification** : Immediate (acute) health hazard

### Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
<b>T3 RNA Polymerase</b> Glycerol	≥50 - ≤75	No.	No.	No.	Yes.	No.
<b>T7 RNA Polymerase</b> Glycerol	≥50 - ≤75	No.	No.	No.	Yes.	No.
<b>RNA Polymerase Dilution Buffer</b> Glycerol	≥50 - ≤75	No.	No.	No.	Yes.	No.
<b>5X Transcription Buffer</b> Trometamol	≤3	Yes.	No.	No.	Yes.	No.
Sodium chloride	≤3	No.	No.	No.	Yes.	No.
<b>XL1-Blue MR E. coli Strain</b> Glycerol	≥10 - ≤25	No.	No.	No.	Yes.	No.

### State regulations

**Massachusetts** : The following components are listed: GLYCERINE MIST

**New York** : None of the components are listed.

**New Jersey** : The following components are listed: GLYCERIN; 1,2,3-PROPANETRIOL

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

### California Prop. 65

No products were found.

### International regulations

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

Not listed.

#### Montreal Protocol (Annexes A, B, C, E)

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 inventory** : At least one component is not listed in DSL but all such components are listed in NDSL.

## Section 15. Regulatory information

<b>China</b>	: All components are listed or exempted.
<b>Europe</b>	: <input checked="" type="checkbox"/> Not determined.
<b>Japan</b>	: <input checked="" type="checkbox"/> <b>Japan inventory (ENCS)</b> : Not determined. <b>Japan inventory (ISHL)</b> : Not determined.
<b>Malaysia</b>	: Not determined.
<b>New Zealand</b>	: All components are listed or exempted.
<b>Philippines</b>	: Not determined.
<b>Republic of Korea</b>	: Not determined.
<b>Taiwan</b>	: All components are listed or exempted.
<b>Turkey</b>	: <input checked="" type="checkbox"/> Not determined.

## Section 16. Other information

### History

<b>Date of issue</b>	: 03/23/2017
<b>Date of previous issue</b>	: 07/20/2015.
<b>Version</b>	: 2

Indicates information that has changed from previously issued version.

### Notice to reader

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