Conforms to US OSHA Hazard Communication 29CFR1910.1200

SAFETY DATA SHEET

Agilent Technologies

Klenow Fill-In Kit, Part Number 200410

Section 1. Identification

1.1 Product identifier

Product name : Klenow Fill-In Kit, Part Number 200410

Part no. (chemical kit) : 200410

Part no. :

Klenow Polymerase	600071-51
10× Fill-in Buffer	200410-52
pUC19/BamHI-digested control DNA	200410-51
10 mM dATP	200410-53
10 mM dGTP	200410-55
10 mM dCTP	200410-54
10 mM dTTP	200410-56

Validation date : 5/24/2021

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

Material uses : Analytical reagent.

Klenow Polymerase	0.025 ml (125 U 5 U/µl)
10× Fill-in Buffer	1 ml
pUC19/BamHI-digested control DNA	0.02 ml (20 µg 1 µg/µl)
10 mM dATP	0.15 ml
10 mM dGTP	0.15 ml
10 mM dCTP	0.15 ml
10 mM dTTP	0.15 ml

1.3 Details of the supplier of the safety data sheet

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

1.4 Emergency telephone number

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

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status :

Klenow Polymerase	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
10× Fill-in Buffer	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
pUC19/BamHI-digested control DNA	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.
10 mM dATP	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.
10 mM dGTP	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information

Section 2. Hazards identification

	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.
10 mM dCTP	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.
10 mM dTTP	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture

Klenow Polymerase

H320 EYE IRRITATION - Category 2B

10× Fill-in Buffer

H412 AQUATIC HAZARD (LONG-TERM) - Category 3

2.2 GHS label elements

Signal word	: Klenow Polymerase	Warning
	10× Fill-in Buffer	No signal word.
	pUC19/BamHI-digested control DNA	No signal word.
	10 mM dATP	No signal word.
	10 mM dGTP	No signal word.
	10 mM dCTP	No signal word.
	10 mM dTTP	No signal word.
Hazard statements	: Klenow Polymerase	H320 - Causes eye irritation.
	10× Fill-in Buffer	H412 - Harmful to aquatic life with long lasting effects.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.

Precautionary statements

Prevention	: Klenow Polymerase	Not applicable.
	10× Fill-in Buffer	P273 - Avoid release to the environment.
	pUC19/BamHI-digested control DNA	Not applicable.
	10 mM dATP	Not applicable.
	10 mM dGTP	Not applicable.
	10 mM dCTP	Not applicable.
	10 mM dTTP	Not applicable.
Response	: Klenow 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 advice or attention.
	10× Fill-in Buffer	Not applicable.
	pUC19/BamHI-digested control DNA	Not applicable.
	10 mM dATP	Not applicable.

Section 2. Hazards identification

	10 mM dGTP	Not applicable.
	10 mM dCTP	Not applicable.
	10 mM dTTP	Not applicable.
Storage :	Klenow Polymerase	Not applicable.
	10× Fill-in Buffer	Not applicable.
	pUC19/BamHI-digested control DNA	Not applicable.
	10 mM dATP	Not applicable.
	10 mM dGTP	Not applicable.
	10 mM dCTP	Not applicable.
	10 mM dTTP	Not applicable.
Disposal :	Klenow Polymerase	Not applicable.
	10× Fill-in Buffer	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
	pUC19/BamHI-digested control DNA	Not applicable.
	10 mM dATP	Not applicable.
	10 mM dGTP	Not applicable.
	10 mM dCTP	Not applicable.
	10 mM dTTP	Not applicable.
Supplemental label elements :	Klenow Polymerase	None known.
	10× Fill-in Buffer	None known.
	pUC19/BamHI-digested control DNA	None known.
	10 mM dATP	None known.
	10 mM dGTP	None known.
	10 mM dCTP	None known.
	10 mM dTTP	None known.

2.3 Other hazards

Hazards not otherwise classified :	Klenow Polymerase	None known.
	10× Fill-in Buffer	None known.
	pUC19/BamHI-digested control DNA	None known.
	10 mM dATP	None known.
	10 mM dGTP	None known.
	10 mM dCTP	None known.
	10 mM dTTP	None known.

Section 3. Composition/information on ingredients

Substance/mixture :	Klenow Polymerase	Mixture
	10× Fill-in Buffer	Mixture
	pUC19/BamHI-digested control DNA	Mixture
	10 mM dATP	Mixture
	10 mM dGTP	Mixture
	10 mM dCTP	Mixture
	10 mM dTTP	Mixture

Ingredient name	%	CAS number
Klenow Polymerase		
Glycerol	≥50 - ≤75	56-81-5
10× Fill-in Buffer		
Magnesium chloride	<2.5	7786-30-3

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

Section 3. Composition/information on ingredients

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

Eye contact :	Klenow 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.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	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.
	10 mM dATP	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.
	10 mM dGTP	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.
	10 mM dCTP	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.
	10 mM dTTP	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 :	Klenow 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.
	10× Fill-in 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

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		an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	pUC19/BamHI-digested control DNA	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10 mM dATP	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10 mM dGTP	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10 mM dCTP	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10 mM dTTP	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact :	Klenow 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.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10 mM dATP	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10 mM dGTP	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10 mM dCTP	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10 mM dTTP	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Ingestion :	Klenow 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.
	10× Fill-in 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

Section 4. First aid measures

	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.
pUC19/BamHI-digested control DNA	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.
10 mM dATP	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.
10 mM dGTP	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.
10 mM dCTP	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.
10 mM dTTP	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

Eye contact :	Klenow Polymerase	Causes eye irritation.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.

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Inhalation :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.
Skin contact :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.
Ingestion :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact :	Klenow Polymerase	Adverse symptoms may include the following: irritation watering redness
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.
Inhalation :	Klenow Polymerase	No specific data.
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.
Skin contact :	Klenow Polymerase	No specific data.
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.

Section 4. First aid measures

Ingestion :	Klenow Polymerase	No specific data.
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.

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

Notes to physician :	Klenow Polymerase	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10× Fill-in Buffer	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	pUC19/BamHI-digested control DNA	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10 mM dATP	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10 mM dGTP	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10 mM dCTP	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	10 mM dTTP	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments :	Klenow Polymerase	No specific treatment.
	10× Fill-in Buffer	No specific treatment.
	pUC19/BamHI-digested control DNA	No specific treatment.
	10 mM dATP	No specific treatment.
	10 mM dGTP	No specific treatment.
	10 mM dCTP	No specific treatment.
	10 mM dTTP	No specific treatment.
Protection of first-aiders :	Klenow Polymerase	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	No action shall be taken involving any personal risk or without suitable training.
	10 mM dATP	No action shall be taken involving any personal risk or without suitable training.
	10 mM dGTP	No action shall be taken involving any personal risk or without suitable training.
	10 mM dCTP	No action shall be taken involving any personal risk or without suitable training.
	10 mM dTTP	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media :	Klenow Polymerase	Use an extinguishing agent suitable for the surrounding fire.
	10× Fill-in Buffer	Use an extinguishing agent suitable for the surrounding fire.
	pUC19/BamHI-digested control DNA	Use an extinguishing agent suitable for the surrounding fire.
	10 mM dATP	Use an extinguishing agent suitable for the surrounding fire.
	10 mM dGTP	Use an extinguishing agent suitable for the surrounding fire.
	10 mM dCTP	Use an extinguishing agent suitable for the surrounding fire.
	10 mM dTTP	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media :	Klenow Polymerase	None known.
	10× Fill-in Buffer	None known.
	pUC19/BamHI-digested control DNA	None known.
	10 mM dATP	None known.
	10 mM dGTP	None known.
	10 mM dCTP	None known.
	10 mM dTTP	None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical :	Klenow Polymerase	In a fire or if heated, a pressure increase will occur and the container may burst.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	In a fire or if heated, a pressure increase will occur and the container may burst.
	10 mM dATP	In a fire or if heated, a pressure increase will occur and the container may burst.
	10 mM dGTP	In a fire or if heated, a pressure increase will occur and the container may burst.
	10 mM dCTP	In a fire or if heated, a pressure increase will occur and the container may burst.
	10 mM dTTP	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products :	Klenow Polymerase	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	10× Fill-in Buffer	Decomposition products may include the following materials: halogenated compounds metal oxide/oxides
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.

5.3 Advice for firefighters

Section 5. Fire-fighting measures

Special protective actions for fire-fighters :	Klenow 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.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	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.
	10 mM dATP	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.
	10 mM dGTP	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.
	10 mM dCTP	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.
	10 mM dTTP	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 :	Klenow Polymerase	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10× Fill-in Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	pUC19/BamHI-digested control DNA	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10 mM dATP	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10 mM dGTP	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10 mM dCTP	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10 mM dTTP	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel :	Klenow 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.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	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.
	10 mM dATP	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.
	10 mM dGTP	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.
	10 mM dCTP	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.
	10 mM dTTP	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
For emergency responders :	Klenow 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".
	10× Fill-in 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".
	pUC19/BamHI-digested control DNA	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

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		the information in "For non-emergency personnel".
	10 mM dATP	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".
	10 mM dGTP	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".
	10 mM dCTP	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".
	10 mM dTTP	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
6.2 Environmental precautions :	Klenow 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).
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	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).
	10 mM dATP	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).
	10 mM dGTP	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).
	10 mM dCTP	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).
	10 mM dTTP	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

Section 6. Accidental release measures

Methods for cleaning up :	Klenow 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.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	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.
	10 mM dATP	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.
	10 mM dGTP	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.
	10 mM dCTP	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.
	10 mM dTTP	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 :	Klenow 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.
	10× Fill-in 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. 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

Section 7. Handling and storage

		product residue and can be hazardous. Do not reuse container.
	pUC19/BamHI-digested control DNA	Put on appropriate personal protective equipment (see Section 8).
	10 mM dATP	Put on appropriate personal protective equipment (see Section 8).
	10 mM dGTP	Put on appropriate personal protective equipment (see Section 8).
	10 mM dCTP	Put on appropriate personal protective equipment (see Section 8).
	10 mM dTTP	Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene :	Klenow 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.
	10× Fill-in 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.
	pUC19/BamHI-digested control DNA	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.
	10 mM dATP	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.
	10 mM dGTP	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.
	10 mM dCTP	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.
	10 mM dTTP	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

7.2 Conditions for safe storage, including any incompatibilities	: Klenow Polymerase	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	10× Fill-in 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. See Section 10 for incompatible materials before handling or use.
	pUC19/BamHI-digested control DNA	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	10 mM dATP	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	10 mM dGTP	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
	10 mM dCTP	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

Section 7. Handling and storage

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

7.3 Specific end use(s)

Recommendations	: Klenow Polymerase	Industrial applications, Professional applications.
	10× Fill-in Buffer	Industrial applications, Professional applications.
	pUC19/BamHI-digested control DNA	Industrial applications, Professional applications.
	10 mM dATP	Industrial applications, Professional applications.
	10 mM dGTP	Industrial applications, Professional applications.
	10 mM dCTP	Industrial applications, Professional applications.
	10 mM dTTP	Industrial applications, Professional applications.
Industrial sector specific solutions	: Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Klenow Polymerase Glycerol	**OSHA PEL 1989 (United States, 3/1989).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust **OSHA PEL (United States, 5/2018).** TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust
10× Fill-in Buffer Magnesium chloride	None.

8.2 Exposure controls

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

Section 8. Exposure controls/personal protection

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

Individual protection measures

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

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

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state :

Klenow Polymerase	Liquid.
10× Fill-in Buffer	Liquid.
pUC19/BamHI-digested control DNA	Liquid.
10 mM dATP	Liquid.
10 mM dGTP	Liquid.
10 mM dCTP	Liquid.
10 mM dTTP	Liquid.

Color :

Klenow Polymerase	Not available.
10× Fill-in Buffer	Not available.
pUC19/BamHI-digested control DNA	Not available.
10 mM dATP	Not available.
10 mM dGTP	Not available.
10 mM dCTP	Not available.
10 mM dTTP	Not available.

Section 9. Physical and chemical properties

Odor :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Odor threshold :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
pH :	Klenow Polymerase	7
	10× Fill-in Buffer	7.5
	pUC19/BamHI-digested control DNA	7.5
	10 mM dATP	7.5
	10 mM dGTP	7.5
	10 mM dCTP	7.5
	10 mM dTTP	7.5
Melting point :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	0°C (32°F)
	pUC19/BamHI-digested control DNA	0°C (32°F)
	10 mM dATP	0°C (32°F)
	10 mM dGTP	0°C (32°F)
	10 mM dCTP	0°C (32°F)
	10 mM dTTP	0°C (32°F)
Boiling point :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	100°C (212°F)
	pUC19/BamHI-digested control DNA	100°C (212°F)
	10 mM dATP	100°C (212°F)
	10 mM dGTP	100°C (212°F)
	10 mM dCTP	100°C (212°F)
	10 mM dTTP	100°C (212°F)
Flash point :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Evaporation rate :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) :	Klenow Polymerase	Not applicable.
	10× Fill-in Buffer	Not applicable.
	pUC19/BamHI-digested control DNA	Not applicable.
	10 mM dATP	Not applicable.
	10 mM dGTP	Not applicable.
	10 mM dCTP	Not applicable.
	10 mM dTTP	Not applicable.
Lower and upper explosive (flammable) limits :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Vapor pressure :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Vapor density :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Relative density :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Solubility :	Klenow Polymerase	Soluble in the following materials: cold water and hot water.
	10× Fill-in Buffer	Easily soluble in the following materials: cold water and hot water.
	pUC19/BamHI-digested control DNA	Easily soluble in the following materials: cold water and hot water.
	10 mM dATP	Easily soluble in the following materials: cold water and hot water.
	10 mM dGTP	Easily soluble in the following materials: cold water and hot water.
	10 mM dCTP	Easily soluble in the following materials: cold water and hot water.
	10 mM dTTP	Easily soluble in the following materials: cold water and hot water.

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Auto-ignition temperature :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Decomposition temperature :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.
Viscosity :	Klenow Polymerase	Not available.
	10× Fill-in Buffer	Not available.
	pUC19/BamHI-digested control DNA	Not available.
	10 mM dATP	Not available.
	10 mM dGTP	Not available.
	10 mM dCTP	Not available.
	10 mM dTTP	Not available.

Section 10. Stability and reactivity

10.1 Reactivity :	Klenow Polymerase	No specific test data related to reactivity available for this product or its ingredients.
	10× Fill-in Buffer	No specific test data related to reactivity available for this product or its ingredients.
	pUC19/BamHI-digested control DNA	No specific test data related to reactivity available for this product or its ingredients.
	10 mM dATP	No specific test data related to reactivity available for this product or its ingredients.
	10 mM dGTP	No specific test data related to reactivity available for this product or its ingredients.
	10 mM dCTP	No specific test data related to reactivity available for this product or its ingredients.
	10 mM dTTP	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability :	Klenow Polymerase	The product is stable.
	10× Fill-in Buffer	The product is stable.
	pUC19/BamHI-digested control DNA	The product is stable.
	10 mM dATP	The product is stable.
	10 mM dGTP	The product is stable.
	10 mM dCTP	The product is stable.
	10 mM dTTP	The product is stable.

Section 10. Stability and reactivity

10.3 Possibility of hazardous reactions	: Klenow Polymerase	Under normal conditions of storage and use, hazardous reactions will not occur.
	10× Fill-in Buffer	Under normal conditions of storage and use, hazardous reactions will not occur.
	pUC19/BamHI-digested control DNA	Under normal conditions of storage and use, hazardous reactions will not occur.
	10 mM dATP	Under normal conditions of storage and use, hazardous reactions will not occur.
	10 mM dGTP	Under normal conditions of storage and use, hazardous reactions will not occur.
	10 mM dCTP	Under normal conditions of storage and use, hazardous reactions will not occur.
	10 mM dTTP	Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: Klenow Polymerase	No specific data.
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.
10.5 Incompatible materials	: Klenow Polymerase	May react or be incompatible with oxidizing materials.
	10× Fill-in Buffer	May react or be incompatible with oxidizing materials.
	pUC19/BamHI-digested control DNA	May react or be incompatible with oxidizing materials.
	10 mM dATP	May react or be incompatible with oxidizing materials.
	10 mM dGTP	May react or be incompatible with oxidizing materials.
	10 mM dCTP	May react or be incompatible with oxidizing materials.
	10 mM dTTP	May react or be incompatible with oxidizing materials.
10.6 Hazardous decomposition products	: Klenow Polymerase	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10× Fill-in Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	pUC19/BamHI-digested control DNA	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10 mM dATP	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10 mM dGTP	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10 mM dCTP	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10 mM dTTP	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
Klenow Polymerase				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
10× Fill-in Buffer				
Magnesium chloride	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
	LD50 Oral	Rat	2800 mg/kg	-

Irritation/Corrosion

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

Sensitization

Not available.

Conclusion/Summary

Skin : **10x Fill-in Buffer**: May cause skin sensitization.

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 the likely routes of exposure :

Klenow Polymerase	Routes of entry anticipated: Oral, Dermal, Inhalation.
10× Fill-in Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
pUC19/BamHI-digested control DNA	Not available.
10 mM dATP	Not available.
10 mM dGTP	Not available.
10 mM dCTP	Not available.
10 mM dTTP	Not available.

Potential acute health effects

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Eye contact :	Klenow Polymerase	Causes eye irritation.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.
Inhalation :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.
Skin contact :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.
Ingestion :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact :	Klenow Polymerase	Adverse symptoms may include the following: irritation watering redness
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.
Inhalation :	Klenow Polymerase	No specific data.
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.

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Skin contact :	Klenow Polymerase	No specific data.
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.
Ingestion :	Klenow Polymerase	No specific data.
	10× Fill-in Buffer	No specific data.
	pUC19/BamHI-digested control DNA	No specific data.
	10 mM dATP	No specific data.
	10 mM dGTP	No specific data.
	10 mM dCTP	No specific data.
	10 mM dTTP	No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.
Carcinogenicity :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.
Mutagenicity :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.

Section 11. Toxicological information

Reproductive toxicity :	Klenow Polymerase	No known significant effects or critical hazards.
	10× Fill-in Buffer	No known significant effects or critical hazards.
	pUC19/BamHI-digested control DNA	No known significant effects or critical hazards.
	10 mM dATP	No known significant effects or critical hazards.
	10 mM dGTP	No known significant effects or critical hazards.
	10 mM dCTP	No known significant effects or critical hazards.
	10 mM dTTP	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Klenow Polymerase					
Glycerol	12600	N/A	N/A	N/A	N/A
10× Fill-in Buffer					
10× Fill-in Buffer	229517.4	204926.2	N/A	N/A	N/A
Magnesium chloride	2800	2500	N/A	N/A	N/A

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Klenow Polymerase			
Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
10× Fill-in Buffer			
Magnesium chloride	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
Klenow Polymerase				
Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-

12.3 Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Klenow Polymerase Glycerol	-1.76	-	low

12.4 Mobility in soil

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

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

Section 13. Disposal considerations

13.1 Waste treatment methods

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

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

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

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

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

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Water Act (CWA) 311: Edetic acid

Section 15. Regulatory information

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

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification :

Klenow Polymerase	EYE IRRITATION - Category 2B
10× Fill-in Buffer	Not applicable.
pUC19/BamHI-digested control DNA	Not applicable.
10 mM dATP	Not applicable.
10 mM dGTP	Not applicable.
10 mM dCTP	Not applicable.
10 mM dTTP	Not applicable.

Composition/information on ingredients

Name	%	Classification
Klenow Polymerase Glycerol	≥50 - ≤75	EYE IRRITATION - Category 2B

State regulations

Massachusetts : The following components are listed: GLYCERINE MIST

New York : None of the components are listed.

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

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

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 15. Regulatory information

Inventory list

Australia	:	Not determined.
Canada	:	All components are listed or exempted.
China	:	All components are listed or exempted.
Europe	:	All components are listed or exempted.
Japan	:	**Japan inventory (ENCS)**: Not determined. **Japan inventory (ISHL)**: Not determined.
New Zealand	:	All components are listed or exempted.
Philippines	:	All components are listed or exempted.
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	:	Not determined.

Section 16. Other information

History

Date of issue	:	05/24/2021
Date of previous issue	:	02/14/2019
Version	:	5
Key to abbreviations	:	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available UN = United Nations

Procedure used to derive the classification

Classification	Justification
Klenow Polymerase EYE IRRITATION - Category 2B	Calculation method
10× Fill-in Buffer AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method

Indicates information that has changed from previously issued version.

Notice to reader

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