

Ampliqon Taq DNA Polymerase Glycerol Free 50 U/μl

For lyophilization of PCR master mixes with high stability

Key features:

- Highly concentrated Taq DNA polymerase
- Glycerol free storage buffer – for lyophilization
- High stability
- Ideal for development of PCR kits and high throughput assays

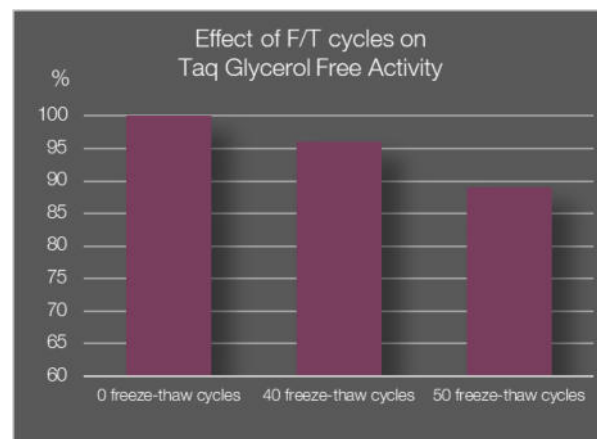
The highly concentrated Taq Glycerol Free 50 U/μl from Ampliqon is well suited for further manufacturing and lyophilization of PCR master mixes intended for example for diagnostic purposes. Taq Glycerol Free offers high performance and stability. Normally glycerol serves as a cryo-protectant within the storage buffer to protect the DNA polymerase during freezing conditions. Taq Glycerol Free was developed in order to be highly stable in a glycerol free storage buffer.

High stability of Taq DNA Polymerase Glycerol Free

To test the resistance of Ampliqon Taq DNA Polymerase Glycerol Free to freezing and thawing, a freeze-thaw test was performed applying 50 freeze-thaw cycles. Activity of Taq DNA Polymerase Glycerol Free after 40 and 50 freeze-thaw cycles, respectively, was measured using real-time PCR amplification and compared to a standard curve of Taq DNA polymerase activities. The standard curve was prepared by diluting the initial sample without freeze-thaw cycles.

All samples were diluted to a concentration, where the amount of Taq polymerase was limiting, thereby allowing to monitor changes in enzyme activity. Activity of DNA Polymerase is plotted against numbers of freeze-thaw cycles; 0, 40 and 50, respectively. The estimated activity after 40 freeze-

thaw cycles was slightly below 100 % activity, indicating a minor decrease in activity. After 50 freeze-thaw cycle, approximately 90 % of the full activity for Taq DNA polymerase was retained.



Applications:

- Lyophilization of PCR kits for diagnostic purposes
- HTP assays
- Automation
- DNA target detection
- Detection of pathogens
- Gene expression analysis

Product	Size*	Cat #
Taq DNA Polymerase Glycerol Free 50 U/μl	25 000 Units	A490010
	250 000 Units	A490012
	2 000 000 Units	A490044
Taq DNA Polymerase Glycerol Free 5 U/μl	500 Units	A100003
	1 000 Units	A100004
	5 000 Units	A100007

*1 unit / 50 μl reaction size

Taq DNA Polymerase, Glycerol free

Concentration: 5 unit/ μ l



A100003

Cat. No.: A100003

500 Units

-	Taq DNA Polymerase Glycerol free 5 U/ μ l
ID No.	5101500
Cap colour	Black
Content	100 μ l

MADE IN DENMARK

Key Features

Ampliqon Taq DNA Polymerase is a thermostable, recombinant DNA polymerase, which exhibits very high activity in primer extension and other molecular biology applications. The enzyme is isolated from *Thermus aquaticus* and has a molecular weight of approximately 94 kDa. Ampliqon Taq DNA Polymerase has a 5'→3' DNA polymerase and a 5'→3' exonuclease activity. The enzyme lacks a 3'→5' exonuclease activity (no proofreading ability). Taq DNA Polymerase leaves an A' overhang, which makes the enzyme ideal for TA cloning.

We recommend using the Ampliqon Taq DNA Polymerase with one of the Ampliqon Buffers.

Taq DNA Polymerase Glycerol free is ideal for freeze drying and automation.

Kit Components

Ampliqon Taq DNA Polymerase in Storage Buffer, Glycerol free
5 U/ μ l Taq, 20 mM Tris-HCl pH 8.3, 100 mM KCl, 0.1 mM EDTA, 1 mM DTT, 0.5% Tween® 20.

Recommended Storage and Stability

Long term storage at -20 °C. Product expiry at -20 °C is stated on the label.

Option: Store at +4 °C for up to 6 months.

Quality Control

Taq DNA Polymerase is tested for contaminating activities, with no traces of endonuclease activity, nicking activity or exonuclease activity.

Unit Definition

One unit is defined as the amount of polymerase that incorporates 10 nmol of dNTPs into acid-precipitable DNA in 30 minutes at 72 °C under standard assay conditions.

Protocol

This protocol serves as a guideline to ensure optimal PCR results when using Taq DNA Polymerase, Glycerol free. Optimal reaction conditions such as incubation times, temperatures and amount of template DNA may vary and must be determined individually.

1. Thaw Solutions. **It is important to thaw all solutions completely (some buffers need to reach room temperature) and mix thoroughly before use to avoid localized concentrations of salts.** Keep all components on ice.
2. Prepare a master mix according to Table 1. The master mix typically contains all the components needed for extension except the template DNA.

Table 1. Reaction components (master mix and template DNA)

Component	Vol./reaction*	Final concentration*
10x Buffer	5 μ l	1x
25 mM MgCl ₂	-	Optional
dNTP mix (12.5 mM each)	0.8 μ l	0.2 mM of each dNTP
Primer A (10 μ M)	1 μ l (0.5 – 5 μ l)	0.2 μ M (0.1 – 1.0 μ M)
Primer B (10 μ M)	1 μ l (0.5 – 5 μ l)	0.2 μ M (0.1 – 1.0 μ M)
Taq DNA Pol.	0.2 μ l (0.2 – 1 μ l)	1 unit (1 – 5 units)
PCR-grade H ₂ O	X μ l	-
Template DNA	X μ l	genomic DNA: 50 ng (10 – 500 ng) plasmid DNA: 0.5 ng (0.1 – 1 ng) bacterial DNA: 5 ng (1 – 10 ng)
TOTAL volume	50 μ l	-

* Suggested starting conditions; theoretically used conditions in brackets. The final volume can be reduced to 25 μ l by using half of the volumes suggested in Vol./reaction, eg. 0.1 μ l Taq instead of 0.2 μ l Taq.

3. Mix the master mix thoroughly and dispense appropriate volumes into reaction tubes. Mix gently, e.g. by pipetting the master mix up and down a few times.
4. Add template DNA to the individual tubes containing the master mix.
5. Program the thermal cycler according to the manufacturer's instructions.
For maximum yield and specificity, temperatures and cycling times should be optimized for each new template target or primer pair.
6. Place the tubes in the thermal cycler and start the reaction.

Three-step PCR program

Cycles	Duration of cycle	Temperature
1	2 – 5 minutes ^a	95 °C
25 – 35	20 – 30 seconds ^b 20 – 40 seconds ^c 30 seconds ^d	95 °C 50 – 65 °C 72 °C
1	5 minutes ^e	72 °C

^a. Initial denaturation step (optional).

^b. Denaturation step: This step is the first regular cycling event and consists of heating the reaction to 95 °C for 20 – 30 seconds. It causes melting of the DNA template by disrupting the hydrogen bonds between complementary bases, yielding single-stranded DNA molecules.

^c. Annealing step: The reaction temperature is lowered to 50 – 65 °C for 20 – 40 seconds allowing annealing of the primers to the single-stranded DNA template. Typically, the annealing temperature is about 3 – 5 °C below the T_m (melting temperature) of the primers used.

- d. Extension/elongation step: Taq polymerase has its optimum activity temperature at 72 °C. At this step the DNA polymerase synthesizes a new DNA strand complementary to the DNA template strand. The extension time depends on the length of the DNA fragment to be amplified. As a rule of thumb, at its optimum temperature the DNA polymerase will polymerize a thousand bases per minute.
- e. Final elongation: This single step is occasionally performed at a temperature of 72 °C for 5 minutes after the last PCR cycle to ensure that any remaining single-stranded DNA is fully extended.

Two-step PCR program

Fast 2-step PCR protocols are available using this link:
<https://ampliqon.com/en/pcr-technology/application-notes/>

Notes:

- For longer DNA targets more DNA polymerase could be added to the PCR master mix.

Related Products

Taq DNA Polymerase (500 units) *	Cat. No.
Taq DNA Polymerase 5 U/μl • with 10x Ammonium Buffer • 5x PCR Buffer RED	A110003 A111103 A111803
Taq DNA Polymerase 5 U/μl, RED • with 10x Ammonium Buffer	A200003 A201103
Taq DNA Polymerase 5 U/μl, glycerol free • with 10x Ammonium Buffer	A100003 A101103

Hot Start DNA Polymerase (500 units) *	Cat. No.
TEMPase Hot Start DNA Polymerase, 5 U/μl • with 10x Ammonium Buffer	A220003 A221103

*Available in kits including one or two buffers (Ammonium Buffer, Standard Buffer or Combination Buffer). All kits include extra 25 mM MgCl₂.

Buffers for DNA polymerases *	Cat. No.
10x Ammonium Buffer, 3 x 1.5 ml	A301103
10x Standard Buffer, 3 x 1.5 ml	A302103
10x Combination Buffer, 3 x 1.5 ml	A303103
5x PCR Buffer RED, 6 x 1,5 ml **	A301810

*Ammonium Buffer, Standard Buffer and Combination Buffer are also available as Mg²⁺ free buffers, detergent free buffers and Mg²⁺ and detergent free buffers.
 **For direct gel loading and visualisation.

Taq 2x Master Mixes (500 x 50 μl reactions) *	Cat. No.
Taq OptiMix Mix Clear 2x Master Mix	A370503
Taq DNA Polymerase 2x Master Mix	A140303
Taq DNA Polymerase 2x Master Mix RED	A180303

*Taq Master Mixes available also in 1.1x variants.

Ultrapure dNTPs*	Cat. No.
dNTP Mix 40 mM (2 x 500 μl): 10 mM each dA, dC, dG, dT	A502004
dNTP Set, 100 mM each: 250 μl of each dA, dC, dG and dT	A511104

*Other concentrations and Single dNTPs are available.

Loading Buffers and Ladders	Cat. No.
5x Loading Buffer Red *, 5 x 1 ml	A608104
Iqon PCR Ladder **, 100 – 3000 bp, 1 x 0.5 ml	A610341

* Also available with Blue, Orange or Cyan. ** Available in different size ranges.

For Research Use Only. Not for use in diagnostics procedures.

Other product sizes, combinations and customized solutions are available. Please look at www.ampliqon.com or ask for our complete product list for PCR Enzymes. For customized solutions please contact us.

Made in Denmark

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