Check the product label for actual catalog number, lot and expiry date.

Taq DNA Polymerase

CAT.#	SIZE	COMPONENTS	COMPONENT COMPOSITION
PCE0201	1500 u	1500 u - Taq DNA Polymerase, 5 u/µl 4 x 2 ml - 10X PCR Buffer 2 x 2 ml - 50 mM $MgCl_2$	Enzyme in storage buffer. 10X PCR Buffer contains enhancers and stabilizers, but no dNTPs and no Mg^{2+}.
PCE0202	3000 u	2 x 1500 u - Taq DNA Polymerase, 5 u/µl 8 x 2 ml - 10X PCR Buffer 4 x 2 ml - 50 mM $MgCl_2$	Enzyme in storage buffer. 10X PCR Buffer contains enhancers and stabilizers, but no dNTPs and no Mg^{2+}.
Storage	*In the dark at -20°C.*		

APPLICATIONS

- Routine PCR up to 5 kb
- RT-PCR
- Colony PCR
- TA cloning, library construction
- Genotyping, screening

BENEFITS

- High yields in routine PCR and under fast cycling conditions
- Guarantied successful DNA preparation for TA cloning
- Robust on complex templates

PRODUCT DETAILS

highQu Taq DNA Polymerase is the classical enzyme for routine PCR applications providing high amplification yields of 3-5 kb targets under various conditions.
Taq DNA Polymerase is purified from a recombinant *E. coli* strain carrying the *Taq* DNA polymerase gene.
Taq DNA polymerase is thermostable 5´ → 3´ DNA polymerase. It lacks 3´ → 5´ exonuclease (proofreading) activity and has low 5´ → 3´ exonuclease activity. Polymerase exhibits deoxynucleotidyl transferase activity resulting in A-overhang at the 3'-ends of PCR products and allowing for TA cloning.
The PCR accuracy of Taq DNA Polymerase is 4.5 x 10^4 (nucleotides incorporated before the error occurs) and it produces A-tailed products suitable for ligating into TA cloning vectors.

MAGNESIUM AND NUCLEOTIDE USE

The 50 mM $MgCl_2$ is provided in a separate tube what allows for magnesium optimization. The dNTPs in mixes or sets can be purchased separately.

- Typical concentration of each dNTP in the reaction is 0.2 – 0.25 mM. Higher concentration increase yields, however Mg^{2+}-ions bind to dNTPs, therefore, both components shall be present in coordinated concentrations. Too high dNTPs and magnesium concentrations reduce PCR fidelity.
- Mix well dNTP and magnesium solutions, to avoid concentration fluctuations. Use final 3 mM $MgCl_2$ and 0.25 mM each dNTP concentrations for routine PCR.

		50 µl rxn to achieve desired conc.

PROTOCOL

- Take typical measures to prevent PCR cross over contamination, keep your bench clean, wear gloves, use sterile tubes and filter pipet tips.
- Include a no-template control and positive control in parallel.
- Thaw and keep reagents on ice. Mix well before use.
- The longer the amplicon, the longer the extension time. Taq DNA Polymerase speed is ~ 2000 nucleotides/min, so 15-90 seconds of extension can be provided per cycle, depending on amplicon size.
- Start annealing with 55°C and perform gradient by increasing temperature in 2°C up to 65°C to choose the best. Calculate primer annealing temperature using software.

✓ Prepare a 50 µl reaction:	
. & For. Primers	-0.5 µM final (1-2 µl of 10 µM each)
or ng *or* gDNA Template	5-500 ng
(10 mM dNTP Mix NUM0201)	mix or 0.5 µl of 25 mM dNTP mix)
2	µl
(PCR Water WAT0110)	o 49 µl
	- 1 µl Polymerase, 5 u/µl
✓ Mix gently, avoid bubbles. Place into the instrument set:	
	5°C – 60 sec
	-40 cycles: 95°C - 15 sec
	-40 cycles: 55-65°C – 15 sec
	-40 cycles: 72°C – 15-90 sec
	72°C – 5 min (for TA cloning)
Store probes for short time on ice, for long at -20°C.	

IN VITRO RESEARCH USE ONLY

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