DATA SHEET

Jena Bioscience

Taq Polymerase

Thermostable DNA Polymerase without buffer
Thermus aquaticus, recombinant, *E. coli*

Cat. No.	Amount
PCR-420-1KU	1 kilo unit
PCR-420-10KU	10 kilo units
PCR-420-100KU	100 kilo units
PCR-420-1MU	1 mio units

Unit Definition: One unit is defined as the amount of the enzyme required to catalyze the incorporation of 10 nmoles of dNTP's into an acid-insoluble form in 30 minutes at 70 °C using hering sperm DNA as substrate.

For general laboratory use.

Shipping: shipped on gel packs

Storage Conditions: store at -20 °C

Additional Storage Conditions: avoid freeze/thaw cycles

Shelf Life: 12 months

Form: liquid

Concentration: 5 units/µl

Description:
The polymerase is recommended for routine PCR applications (up to 4 kb fragment length) or high throughput PCR.
The enzyme replicates DNA at 72 °C. It catalyzes the polymerization of nucleotides into duplex DNA in 5'→3' direction in the presence of magnesium. It also possesses a 5'→3' polymerization-dependent exonuclease replacement activity but lacks a 3'→5' exonuclease (proof-reading) activity.

Content:
Reaction Buffer and Nucleotides are not included. Please refer to our sections Buffers & Components and Nucleotides.

Taq Polymerase
5 units/µl Taq DNA Polymerase in 20 mM Tris-HCl, 100 mM KCl, 0.1 mM EDTA, 1 mM DTT, stabilizers, 50 % (v/v) Glycerol, pH 8.0 (25°C)

Assay Set-Up:
Before starting, thaw up all components and vortex thoroughly to ensure homogeneity.

component	final assay conc.
PCR-grade Water	fill up to final amount
Reaction Buffer	1 x
dNTP Mix	200 µM
Taq Polymerase	0.025-0.05 units/µl
primer mix or each primer	200-400 nM each primer
template/sample DNA	< 10 ng DNA/assay

Cycling Conditions:
Spin down the tubes/plate briefly to remove bubbles and place them into the cycler.

initial denaturation	95 °C	2 min	1 x
denaturation annealing [1] elongation [2]	95 °C 50-68 °C 72 °C	10-20 sec 10-20 sec 20 sec - 4 min	25-30 x

[1] The annealing temperature depends on the melting temperature of the primers used.
[2] The elongation time depends on the length of the fragments to be amplified. A time of 1 min/kb is recommended.

Recommended Buffer Systems:
Ruby Buffer (#PCR-272) includes a density reagent + tracking dye and allows the direct loading of the PCR products into an electrophoresis gel. For DNA detection / fluorescent DNA staining, we recommend to use new generations dyes (e.g. SYBR DNA Stain, #PCR-273) instead of the classical but highly mutagenic ethidium bromide.,

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Crystal Buffer (#PCR-271) is recommended for down-stream applications such as DNA sequencing, ligation, restriction digestion or where an analysis of the PCR product by absorbance or fluorescence excitation is required. For gel electrophoresis add gel loading buffer and fluorescent DNA stain (e.g. Gel Loading Buffer with DNA Stain, #PCR-274 - #PCR-276) before loading the PCR into the gel. Using pre-stained gels or post-run staining protocols is also possible.,

KCl Buffer (#PCR-262) is recommended for use in routine PCR reactions. The buffer is optimized for highest specificity but may require additional fine-tuning of assay parameters like $MgCl_2$ concentration and annealing temperature.,

Labeling Buffer (#PCR-263) is recommended for DNA labeling or mutagenesis applications. The buffer is specially optimized for incorporation of labeled or modified nucleotides into DNA. It gives superior results in a broad range of reaction conditions with most primer-template pairs but amplification may also tend to an increased inaccuracy.

Optimization of $MgCl_2$ concentration:
$MgCl_2$ Solution - 25 mM (#PCR-266) is recommended for optimization of the final Mg^{2+} concentration. A concentration of 1.5-2.0 mM is required for optimal functionality. Lower concentrations give higher specificity, whereas higher concentrations give higher yield.

Related Products:
dNTP Mix - 10 mM, #NU-1023
Ruby Buffer, #PCR-272
Crystal Buffer, #PCR-271
KCl Buffer, #PCR-262
$MgCl_2$ Solution - 25 mM, #PCR-266”