DATA SHEET

cellco
Biotecnologia ao seu alcance

GoldTaq Pol Hot Start

Heat-activatable DNA polymerase for high specificity, chemically modified

Thermus aquaticus, recombinant, *E. coli*

Cat. Nº.	Amount
☐ POL-130XS	100 units
☐ POL-130S	250 units
☐ POL-130M	500 units
☐ POL-130L	1.000 units
■ POL-130XL	2 x 1.000 units
☐ POL-130XXL	5 x 1.000 units

Unit Definition:
One unit is defined as the amount of the enzyme required to catalyze the incorporation of 10 nmoles of dNTPs into an acid-insoluble form in 30 minutes at 70 °C.

Concentration:
5 units/µL

For *in vitro* use only!

Shipping:
Shipped on blue ice

Storage Conditions:
Store at -20 °C

Additional Storage Conditions:
Avoid freeze/thaw cycles

Shelf Life:
12 months

Kit contents:

GoldTaq Pol Hot Start (blue cap)
5 units/µl Taq DNA Polymerase in Tris-HCl pH 9.0 (25°C), KCl, EDTA, DTT, 50% (v/v) Glycerol and stabilizers.

GoldTaq Reaction Buffer complete (red cap) - 10x conc.
Tris-HCl pH 8.0 (25°C), KCl, 25 mM $MgCl_2$.

$MgCl_2$ Stock Solution (yellow cap)
25 mM $MgCl_2$.

Description:
GoldTaq Hot Start provides improved specificity and sensitivity when amplifying low-copy-number targets in complex backgrounds or when prolonged room-temperature set up is required. This ultra-pure enzyme, in addition to its hot-start capabilities, reduces false positives, amplifies a wide range of DNA sequence contexts. GoldTaq Pol is purified by an additional separation process to reduce contaminating bacterial DNA sequences from the enzyme preparation The polymerase activity is chemically blocked at ambient temperature and switched on automatically at the onset of the initial denaturation. The thermal activation prevents the extension of nonspecifically annealed primers and primer-dimer formation at low temperatures during PCR setup. The enzyme catalyzes the polymerization of nucleoside 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 activity.

Activation step:
GoldTaq Hot Start Pol requires a prolonged heating or denaturing step. The chemical modification of the polymerase is reversed by the increased temperature of the hot start cycle.

PCR Reaction Setup

The PCR procedure below shows appropriate volumes for a single 50-µL reaction. For multiple reactions, prepare a master mix of components common to all and then dispense appropriate volumes into each PCR reaction tube prior to adding template DNA and primers.

Thaw, mix, and briefly centrifuge each component before use.

Add the following components to a microcentrifuge tube:

1. Prepare PCR master mix
Note: Consider the volumes for all components listed next steps to determine the correct amount of water required to reach your final reaction volume.

Components	50 µL rxn	[final]
Water, grade PCR	To 50 µL	
10x Reaction Buffer	5 µL	1X
dNTP (Mix 10 mM)	1 µL	200 µM each
GoldTaq DNA Polymerase (5U/ µL)	0,5 µl	2,5 U/reaction

Mix and briefly centrifuge the components.

2. Add template DNA and primers

Components	50 µL rxn	[final]
Foward primer (10 µM)	0,5 - 2,5 µl	0,1 – 0,5 µM
Reverse primer (10 µM)	0,5 - 2,5 µl	0,1 – 0,5 µM
DNA template		10 pg – 1 µg**

**genomic DNA: 1 ng-1µg; plasmidial or viral DNA: 1 pg-1 ng

Cap each tube, mix, and briefly centrifuge the content.

DATA SHEET

cellco

GoldTaq Pol Hot Start

Heat-activatable DNA polymerase for high specificity, chemically modified

Thermus aquaticus, recombinant, *E. coli*

3. Optimization of $MgCl_2$ concentration:

The 10x reaction buffer contain 25 mM $MgCl_2$, a recommended concentration for most applications. For an individual optimization add $MgCl_2$ stock solution as shown in the table below.

$MgCl_2$ Final Concentration	3 mM	4 mM
$MgCl_2$ stock volume to 50 µl	1 µl	3 µl

4. Incubate reactions in a thermal cycler.

Recommended cycling conditions:

Step		Temp.	Time
Initial denaturation		95 °C	10 min
30 cycles	Denaturation	95 °C	15 - 30 sec
	Annealing [1]	45-68 °C	15 - 30 sec
	Elongation [2]	72 °C	1 min/kbp
Final extension (optional)		72 °C	1 - 2 min
Hold		4 - 8 °C	

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.

For optimal specificity and amplification an individual optimization of the recommended parameters may be necessary for each new template DNA and/or primer pair.

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.

For optimal specificity and amplification an individual optimization of the recommended parameters may be necessary for each new template DNA and/or primer pair.