SuperHotTaq DNA Polymerase

Description: *SuperHotTaq* DNA Polymerase is the optimized mixture of *Taq* DNA polymerase and anti-*Taq* DNA polymerase monoclonal antibodies. Polymerase activity is blocked during set-up of the PCR reactions at ambient temperature (20 – 22 °C) by antibodies. The inhibition of *Taq* DNA polymerase is completely reversed when the temperature increased above 70 °C. The PCR products obtained with *SuperHotTaq* DNA Polymerase are free of unspecific products and primer-dimers.

Content

Ref No.	S119002	119002	119010	color
SuperHotTaq DNA Polymerase	**Sample size**	**200 units**	**1000 units**	**blue**
Incomplete NH_4 * Reaction Buffer (10x)	**1.8 mL**	**1.8 mL**	**2x 1.8 mL**	**red**
Complete NH_4 ** Reaction Buffer (10x)	**1.8 mL**	**1.8 mL**	**2x 1.8 mL**	**yellow**
Complete KCl * Reaction Buffer (10x)**	**1.8 mL**	**1.8 mL**	**2x 1.8 mL**	**black**
$MgCl_2$ 100 mM	**1 mL**	**1 mL**	**2x 1 mL**	**green**
Datasheet	**1**	**1**	**1**	**--**

* Incomplete NH_4 Reaction Buffer (10x): pH 8.8, 0.1% Tween 20, free of $MgCl_2$.

** Complete NH_4 Reaction Buffer (10x): pH 8.8, 0.1% Tween 20, 20 mM $MgCl_2$.

*** Complete KCl Reaction Buffer (10x): pH 8.8, 0.1% Tween 20, 15 mM $MgCl_2$.

Applications: *SuperHotTaq* DNA Polymerase is suitable for all regular applications but especially for PCR with complex genomic or cDNA templates, low copy number targets, large number of thermal cycles, Multiplex and Real Time PCR. *SuperHotTaq* Polymerase effectively directs PCR with templates up to 5 kb in length.

Concentration: 5 Units/µL

Sensitivity: detection of ≥ 6 DNA molecules

Unit definition: One unit of activity is defined as the amount of enzyme required to incorporate 10 nmoles of dNTP into acid-insoluble DNA fraction in 30 minutes at 72 °C.

Additionally provided: 1 tube $MgCl_2$ (100 mM)

Recommended $MgCl_2$ concentration: 1.5 mM – 6 mM

Quality Control

- 98% protein homogeneity in 10% SDS-PAGE
- No detectable exo-/endonuclease activities
- PCR amplification tests with different templates
- PCR amplification tests without templates as Negative Control
- Hotstart efficiency test showing effective blockage by AntiTaq
- Exonuclease efficiency test showing efficient 5´ - 3´Exonuclease activity

Storage condition: -20 °C

Pipetting scheme and thermocycler protocol

Components	Volume / 50 µL Reaction	Final concentration
10 x PCR-Buffer	5 µL	1 x
dNTP-Mix (10 mM each)	1 µL	200 µM each
Upstream Primer	variable	0.1 - 0.5 µM
Downstream Primer	variable	0.1 - 0.5 µM
SHTaq DNA Polymerase	0.25 - 1.0 µL	1.25 - 5.0 units
Template DNA	variable	10 to 500 ng/reaction
Sterile dest. water	Adjust to 50 µL final volume	

Separate $MgCl_2$ solution can be used for optimization. If incomplete buffer is used **titrate $MgCl_2$** for optimal PCR results with following recommendation (see table):

Final $MgCl_2$ conc. [mM]	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Volume [µL] of 100 mM $MgCl_2$/ 50 µL	0.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3

Thermocycler protocol

step	time	temperature
initial denaturation	2 minutes	94 °C
30 cycles:		
denaturation	10 seconds	94 °C
annealing	20 seconds	55 - 68 °C *
extension	1 minute	72 °C

* Usually the optimal annealing temperature is 5 °C below the melting temperature of the primers.

Notes:
Program the cycler according to the manufacturer's instructions.
Each program should start with an initial denaturation step at 94 °C for 2 to max. 5 min.
Recommended elongation time: 1 min/ 1 kb of target.
For maximum yield and specificity, temperatures (annealing) and cycling times should be optimized for each new template target or primer pair.