August 2023

Quick-Start Protocol

TaqNova HS DNA Polymerase

TaqNova HS DNA Polymerase (cat. nos. RP905A, RP902A, and RP925A) is a mixture of thermostable Taq DNA polymerase isolated from *Thermus aquaticus* and a highly specific monoclonal antibody, which acts as an inhibitor of the polymerization activity. TaqNova HS DNA Polymerase enables setup of a hot-start PCR reaction at room temperature. The antibody binds reversibly to the enzyme, inhibiting polymerase activity at ambient temperatures, which prevents extension of non-specifically annealed primers and primer–dimers formed at low temperatures during PCR setup. The antibody is released from the polymerase during normal cycling conditions. The use of TaqNova HS DNA Polymerase does not require any additional incubation step to activate the enzyme. This product should be shipped on dry ice, and must be stored at –20°C.

Further information

- Safety Data Sheets: **www.qiagen.com/safety**
- Technical assistance: **support.qiagen.com**

Notes before starting

- One unit is defined as an amount of enzyme required to incorporate 10 nmol of dNTPs to an insoluble DNA fraction in 30 minutes at 72°C in a 50 µL reaction.
- The concentration of TaqNova HS DNA Polymerase is 5 U/µL.

Things to do before starting

1. Thaw the master mix solution and other reagents completely, mix thoroughly, and spin briefly.
2. Add the following reaction reagents to a sterile nuclease-free PCR tube:

Reagent	Suggested amount per reaction	Acceptable final concentrations in reaction mixture
10x TaqNova HS DNA Polymerase buffer	5 µL	1x
8 mM dNTPs Mix	5 µL	0.2–0.25 mM of each dNTP
$MgCl_2$ 50 mM	2 µL	2–5 mM
10 µM Forward primer	1 µL	0.1–1.0 µM
10 µM Reverse primer	1 µL	0.1–1.0 µM
DNA template	1 ng	10 pg to 0.5 µg
TaqNova HS DNA Polymerase	1.5 U	1–3 U
PCR-grade water	Fill up to 50 µL	Fill up to required volume

This composition is intended for use as a guide only; conditions may vary from reaction to reaction and may require optimization.

Procedure

1. Mix the prepared reaction mixture thoroughly by pipetting or vortexing, then spin briefly.
2. Place the prepared PCR mixture in a thermal cycler and start the PCR reaction. Table 1 shows a sample of PCR cycling conditions.

Table 1. PCR cycling conditions

Step	Temperature (°C)	Time	
Initial denaturation	95	2–5 min*	
Denaturation	95	30 s	
Annealing	45–65†	30 s	25–40 cycles§
Extension	72	15 s to 2 min‡	
Final extension	72	1–5 min	
Cooling	4	∞	

* The initial denaturation time depends on the GC content within the amplified region and the template DNA type. For non-complex templates such as plasmid DNA or cDNA, the initial denaturation step, carried out briefly (1–2 min), is recommended. For more complex templates such as eukaryotic genomic DNA, a longer initial denaturation step (3–5 min) is required.

† The annealing temperature depends on the primer sequences and their melting temperature (Tm). The optimal annealing temperature is usually 2–5°C below the Tm of primers.

‡ The elongation time depends on the length of an amplified DNA fragment. Setting 30 s per 1 kbp of the PCR product is recommended.

§ The number of cycles depends on the number of copies of the amplified gene fragment. Thirty cycles is sufficient for low complexity templates. In the case of high complexity templates or less concentrated DNA, the number of cycles should be increased to 40.

3. After the reaction is finished, apply the reaction mixtures directly onto a gel.

Document Revision History

Date	Changes
08/2023	Initial release

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual.