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BioMaster HS-Taq PCR-Color (2×)

Cat. number MHC010-200, MHC010-1020

Product description:

BioMaster HS-Taq PCR-Color (2×) kit contains 2× **BioMaster HS-Taq PCR-Color** reaction mix, 50 mM $MgCl_2$ and sterile water. **BioMaster HS-Taq PCR-Color (2×)** reaction mix is developed for PCR analysis of a large number of samples. **BioMaster HS-Taq PCR-Color (2×)** includes all of the components necessary for PCR performance (excluding Mg^{2+} ions, DNA template and primers):

- Highly processive recombinant HS-*Taq* DNA polymerase;
- Deoxynucleoside triphosphate mixture;
- 2× PCR buffer;
- Tracking dyes.

The mix is optimized for consistent and efficient hot start PCR. The master mix is supplemented with additives that increase half-life and processivity of HS-*Taq* DNA polymerase by enhancing its stability during PCR. ***BioMaster HS-Taq PCR-Color (2×)*** reaction mix is chemically stable, inert and does not interfere with optimal annealing temperature or the parameters of template melting.

The included DNA polymerase is inactive at room temperature and its activation requires preheating at 95 °C for 5 min. Additional solution of $MgCl_2$ enables easy optimization for each individual primer/template system.

Presented kit form saves time and minimizes contamination risk due to reduced number of pipetting steps. The presence of dyes and high density of the solution allow loading the reaction solution directly on gel for electrophoresis.

Product composition

Cat. #	BioMaster HS-Taq PCR-Color (2×)	50 mM $MgCl_2$	Water	Number of reactions (50 µl)
MHC010-200	4 × 1.25 ml	1 × 1 ml	4 × 1.25 ml	200
MHC010-1020	17 × 1.5 ml	1 × 1.8 ml	2 × 1.8 ml	1020

BioMaster HS-Taq PCR-Color (2×) contains:

100 mM Tris-HCl (pH 8.5 at 25 °C), 100 mM KCl, 0.4 mM of each deoxynucleoside triphosphate, 4 mM $MgCl_2$, 0.06 U/µL *Taq* DNA polymerase, 0.2% Tween 20, stabilizers of *HS-Taq* DNA polymerase, and tracking dyes.

Applications:

- Hot start PCR;
- High throughput PCR;

- Conventional PCR with high reproducibility;
- Synthesis of PCR products for TA cloning;
- RT-PCR.

Taq DNA Polymerase features

Recombinant *Taq* DNA polymerase possesses 5′→3′ DNA-dependent polymerase activity and 5′→3′ exonuclease activity of native *Taq* DNA Polymerase from *Thermus aquaticus*. The rate of DNA synthesis by *Taq* polymerase depends on the complexity of DNA template and is approximately 2 kbp/min. Recombinant *Taq* DNA Polymerase is ideal for conventional PCR of templates up to 5 kbp in length.

Reaction mix features

- Optimized for specific performance of HS-*Taq* DNA polymerase, long-term storage (storage at room temperature for 30 days does not affect the efficiency of PCR), multiple thawing-freezing cycles;
- Contains tracking dyes that do not interfere with the performance of polymerase and components increasing density of sample solution for easy gel loading.

Note: mobility of dyes in 0.5 – 1.5% agarose gel

xylene cyanol	bromphenol blue	Orange G	tartrazine
10000 – 4000 bp	500-400 bp	<100 bp	<20 bp

Benefits of use

- The enzyme with hot start capability increases specificity, sensitivity and reaction yield;
- HS-*Taq* DNA polymerase activation requires 5 min heating;
- Reduced preparation time;
- Low contamination risk during preparation of PCR samples;
- Standardized conditions of the same-type reactions (reduced pipetting error during mixing PCR components in a series of experiments);
- Easier gel loading. No need in loading buffer due to the high density of mixture;
- PCR products can be further subjected to TA cloning due to the presence of deoxyadenosine overhangs in amplified DNA.

Limits of use

- Not recommended to use for amplicons of > 5 kbp in length;
- Due to the high content of dye, **BioMaster HS-Taq PCR-Color (2×)** cannot be used for real-time PCR and other applications that require analysis of optical absorbance or fluorescence of a sample – **BioMaster qPCR (2×)** or **BioMaster qPCR SYBR Blue (2×)** should be used for such purposes.

Amplification protocol

1. Thaw the reaction mixture, mix carefully and thoroughly.
2. Add the following components into the thin-wall PCR tubes considering the final volume of a reaction mixture equal to 50 µl:

Component	Volume	Final concentration
BioMaster HS-Taq PCR-Color (2×)	25	1×
Forward primer	variable	0,1 – 600 nM
Reverse primer	variable	0,1 – 600 nM
DNA template	variable	1 pg – 1 µg
Sterile water	up to 50 µl	

3. Gently vortex and remove the droplets by centrifugation.

Note: in case if a thermal cycler is not equipped with a heated lid, add a droplet (25-35 µL) of mineral oil in each tube.
Note: Ready reaction solution should be quickly placed into the pre-warmed to 95 °C thermal cycler.

4. Conduct PCR using recommended temperature conditions:

Step	Temperature, °C	Incubation time	Number of cycles
Preliminary denaturation	95	5 min	1
Denaturation	95	5 – 15 sec	25-45
Annealing	50 – 68 (Tm-5)	5 - 20 sec	
Elongation	72	0,5-1 min/kbp.	
Final elongation	72	5 – 15 min	1

Tm – template/primer melting temperature, depends on the structure of primers. The following formula can be used for approximate estimation of Tm: Tm (°C) = 2 x (A+T) + 4 x (G+C).

5. After performing PCR, analyze amplification products by electrophoresis. Samples can be loaded on gel without additional loading buffer.

Note: 1xTAE buffer with ethidium bromide is recommended for visualizing PCR products by electrophoresis.

Storage conditions: in a place protected from light at +25 ° C - 7 days; at +4 ° C - 6 months; at -20 ° C - 12 months; not more than 50 thawing-freezing cycles.

Transportation: at 0 - +4 ° C, it is allowed to transport at room temperature up to 3 days.