Check the product label for actual catalog number, lot and expiry date.

Lyo-Ready Hot Start Taq Polymerase, 250 u/µl

CAT.#	SIZE	COMPONENTS	COMPONENT COMPOSITION
HSE010LR-5KU	5000 u	20 µl – Lyo-Ready Taq Polymerase, 250 u/µl ~66 µl - Lyo-Ready Hot Start Protein Blend, 10 mg/ml	Highly-concentrated Taq DNA Polymerase in a storage buffer with 50% glycerol and 1% non-ionic detergents. A concentrated Hot-Start Protein Blend in a stabilized buffer solution.
Storage	*In the dark at -20°C. The set is confirmed to retain same properties for at least 10 freezing thawing cycles.* *Aliquot the components to avoid freezing thawing.*		

APPLICATIONS

- Lyophilization-ready PCR/qPCR kit development
- Sensitive hot-start PCR up to 6 kb
- Low copy target detection
- Amplification of complex (GC/AT rich) templates
- Fast PCR
- Multiplex hot-start PCR

BENEFITS

- Concentrated Taq optimized for lyophilization ensuring minimal glycerol and detergent concentration in lyophilization mixtures
- Special Protein Blend enables the hot start function of Taq for low copy number target detection and no background
- High yields under standard and fast cycling conditions
- Robust amplification of GC rich templates

PRODUCT DETAILS

highQu ALLin™ Hot Start Taq Polymerase is the superior sensitivity hot-start DNA polymerase with numerous references. The same best properties of the enzyme are retained in a lyophilization-ready high concentration product format. For a successful lyophilization, the concentration of glycerol and detergents shall be minimized. This is ensured by supplying high concentration components; a separate tube of a highly concentrated Taq Polymerase and a separate tube of a concentrated hot-start Protein Blend. Mixed together and added into the final PCR mix prior lyophilization those high-concentration components minimize the amount of such substances as glycerol or detergents that may interfere with lyophilization. As a result, after the lyophilization of PCR mixes with added primers and all relevant buffer components such valued properties as a superior sensitivity and robust performance are maintained for successful PCR detection workflows. The enzyme provides higher success rates in demanding PCR applications such as amplification of complex or longer templates, and is suitable for a fast cycling.

TECHNICAL DATA

Lyo-Ready Hot Start Taq Polymerase has the same PCR accuracy like a native Taq DNA Polymerase, and produces A-tailed PCR products suitable for ligating into TA cloning vectors.
The hot-start function of this format of the high-concentrated Taq Polymerase enzyme is achieved by mixing it with a supplied Hot Start Protein Blend in a ratio 1:3 up to 1:3,3.
The enzyme-HS protein mixture shall be prepared in the final 1X PCR reaction buffer to be used for lyophilization. The mixture shall be mixed well and incubated for at least 30 minutes at 37°C. Under these conditions Taq polymerase will be fully blocked to ensure the enzyme will not be active at low temperatures until the reactivation step.
We highly recommend preparing the enzyme-protein mixture right before the use. The supplied package is optimized to be mixed together by using all 20 µl of the enzyme and all supplied 66 µl of the proteins. Alternatively, one can prepare 4 smaller aliquots of each; 5 µl enzyme and 16,5 µl protein aliquots and freeze them to have 4 portions.

PROTOCOL RECOMMENDATIONS

- All protocols shall be optimized individually, the reaction and cycling conditions may vary depending on the concentration of salts and all other components present in chosen lyophilization/PCR buffers.
- Take typical measures to prevent PCR cross over contamination, keep your bench clean, wear gloves, use sterile tubes and filter pipet tips.
- Thaw and keep reagents on ice. Mix well before use.
- Run an annealing temperature gradient from 55°C to 65°C to choose the best conditions. If using combined annealing-extension step, do not use temperature below 60°C, create primers with high annealing temperature.

✓ **How to mix Taq with Hot Start Protein Blend**

- Add 3 to 3,3 µl of Hot Start Protein Blend to each 1 µl of Taq Polymerase in your chosen final 1X PCR reaction buffer.
- Best is to mix the whole 20 µl Taq with supplied 66 µl of Protein Blend in your final 1X PCR reaction buffer right before the lyophilization.
- Mix well by pipetting up and down, incubate for 30 min at 37°C.
- Alternatively, prepare small aliquots of each component to be frozen until used for mixing; 4 x 5 µl enzyme aliquots and 4 x 16,5 µl protein blend aliquots and freeze them.

✓ **How to choose the lyophilization buffer**

- The enzyme shall theoretically work well in all common classical PCR buffers that include all necessary components such as magnesium, monovalent ions, dNTPs and non-ionic detergents at classically recommended concentrations.
- Ensure the pH is optimal for performance of Taq DNA Polymerases.
- Perform optimization steps with each new PCR buffer.

✓ **Cycling recommendations**

Initial denaturation/ Taq activation	1 cycle: 95°C – 2 min
Denaturation	40 cycles: 95°C – 5 sec
Annealing	40 cycles: 55-65°C – 10-15 sec
Extension	40 cycles: 72°C –10-15 sec
Alternatively, the Annealing/Extension steps can be combined into one	*40 cycles: 60-65°C – 20-30 sec*

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