ZmTech® Hot Start Taq DNA Polymerase (Cat. T207023)

Component:

1. **10x PCR reaction buffer containing 15mM $MgCl_2$**
2. **ZmTech® Taq DNA Polymerase Supplied at 6.25 units/µl, 0.2ul/reaction (total 25ul).**

Storage Temperature: -20ºC

Reagents required but not provided: 10mM dNTP mix (dATP, dCTP, dGTP, TTP sodium salts), PCR grade water

Product Description:

- **Storage in 50% glycerol containing 40 mM Tris-HCl (pH 7.5), 100 mM NaCl, 0.1 mM EDTA, 1 mM DTT, 0.5mM AEBSF and 0.1% Triton X-100 (a nonionic detergent to increase enzyme stability during longer incubations).**
- **Source: An enzyme from an *E. coli* strain that carries the *Taq* DNA Polymerase gene, possesses a 5´→3´ polymerase activity and a double-strand specific 5´→3´ exonuclease activity, can be used to synthesize DNA that containing secondary structure or high GCs regions, but not for thermal cycle sequencing. The error rate less than 332 $x10^{-6}$ bases.**
- **Suggestions for use: The DNA polymerase is inactive at room temperature and a 5-minute hot start at 95ºC is essential to active the enzyme. Hot start procedure can significantly improve the results of DNA amplifications by reducing the generation of nonspecific amplification products and primer-dimer artifacts.**
- **Typical applications: complex genomic or cDNA templates (high GCs regions, high methylated regions or other multiple modification regions), very low-copy-number targets, multiple primer pairs in the same reaction tube.**
- **Specific features and benefits:**

Application:	Target template length	Fidelity	specificity	GC-rich	yield
Routine PCR	up to 2 kb	****	****	***	***
Hot-start PCR	up to 2 kb	****	****	***	****
Routine PCR	up to 5 kb	***	***	***	**
Hot-start PCR	up to 5 kb	***	****	***	***

Recommend reaction Conditions:

20 mM Tris-HCl, 10 mM $(NH_4)_2SO_4$, 10 mM KCl, 2 mM $MgSO_4$, 0.1 % Triton X-100, pH 8.8 @ 25°C

Unit definition:

One unit is defined as the amount of the enzyme able to catalyze the incorporation of 10 nmoles of dNTP into an acid-insoluble form in a 50ul reaction in 30 minutes at 65ºC.

Precautions and Disclaimer:

This product and procedure described are intended for R&D use only. Purchase of this product does not convey a license to perform any patented process.

Procedure:

1. **Preparation of PCR Master Mix**
   for a single reaction (total volume: 25uL) in a 0.2 or 0.5 mL microtube.

Component	Volume (µL)	Final Concentration
10x PCR Buffer	2.5	1x
10mM dNTP mix	0.5	200µM
$MgCl_2$	X	(1.5mM-7mM)
DNA Template	2	determined by user
Forward primer (5µM)	1	200nM
Reverse primer (5µM)	1	200nM
ZmTech Taq DNA Polymerase	0.2	0.05units/ µL
PCR grade water	up to 25 µL	

2. Setup typical thermal cycling parameters

Enzyme activation step:	**95°C**	**5 minutes**
25-40 cycles:		
Denaturation	**95°C**	**30 seconds**
Annealing	**X°C**	**30 sec dependent on Tm of primers**
Extension	**72°C**	**1 minute (1min per kb ampplicon)**
Hold 4°C		

Evaluation:

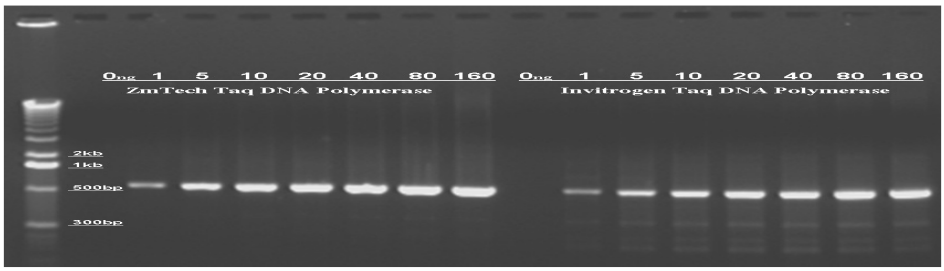

Figure:
Comparison of amplification of single-copy gene from human genomic DNA, using ZmTech Taq DNA Polymerase and competitor "I" Taq DNA Polymerase (Recombinant) and PCR reactions performed for 32 cycles, Showing high fidelity, specificity and yields of PCR product.