**Bst 2.0 WarmStart™ DNA Polymerase**

1,600 units 8,000 U/ml Lot: 0021306
RECOMBINANT Store at –20°C Exp: 6/15

**Description:** Bst 2.0 WarmStart DNA Polymerase is an in silico designed homologue of *Bacillus stearothermophilus* DNA Polymerase I, Large Fragment (Bst DNA Polymerase, Large Fragment) with a reversibly-bound aptamer, which inhibits polymerase activity at temperatures below 45°C. The aptamer rapidly releases the Bst 2.0 WarmStart DNA Polymerase above 45°C and therefore no special activation step is needed to activate the polymerase. Bst 2.0 WarmStart DNA Polymerase contains 5’→3’ DNA polymerase activity and strong strand-displacement activity but lacks 5’→3’ exonuclease activity. Bst 2.0 WarmStart DNA Polymerase displays improved amplification speed, yield, salt tolerance, and thermostability compared to wild-type Bst DNA polymerase, Large Fragment.

**Source:** Bst 2.0 WarmStart DNA Polymerase is prepared from an *E. coli* strain that expresses the Bst 2.0 DNA Polymerase protein from an inducible promoter.

**Applications:**
- Isothermal DNA amplification
- Applications requiring strand-displacement DNA synthesis
- DNA sequencing through high GC regions
- Rapid sequencing from nanogram amounts of DNA template

**Reagents Supplied with Enzyme:**
- Isothermal Amplification Buffer (10X)

**Reaction Conditions:**
Specific reaction conditions will vary for different isothermal amplification applications. For best results, use 1X Isothermal Amplification Buffer.

**Heat Inactivation:** 80°C for 20 minutes.

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**Quality Control Assays**

**Exonuclease Assay:** Incubation of a 50 µl reaction in 1X ThermoPol™ Reaction Buffer containing a minimum of 500 units of Bst 2.0 DNA Polymerase with 1 µg of a mixture of single and double-stranded [3H] *E. coli* DNA (10⁶ cpm/µg) for 4 hours at 65°C results in < 10% conversion to the nicked form as determined by agarose gel electrophoresis.

**Endonuclease Assay:** Incubation of a 50 µl reaction in 1X ThermoPol™ Reaction Buffer containing a minimum of 500 units of Bst 2.0 DNA Polymerase with 1 µg of supercoiled φX174 DNA for 4 hours at 65°C results in < 10% conversion to the nicked form as determined by agarose gel electrophoresis.

**Physical Purity:** Purified to > 99% homogeneity as determined by SDS-PAGE analysis using Coomassie Blue detection.
Phosphatase Assay: Incubation of a 200 µl reaction in 1 M Diethanolamine (pH 9.8) and 0.5 mM MgCl₂ containing 2.5 mM p-Nitrophenol Phosphate and a minimum of 100 units of Bst 2.0 DNA Polymerase incubated for 4 hours at 37°C yields no detectable phosphatase activity as determined by spectrophotometric analysis of released p-nitrophenylene anion at 405 nm.

RNase Activity: Incubation of a 10 µl reaction in 1X NEBuffer 4 containing a minimum of 1 µl of Bst 2.0 WarmStart DNA Polymerase and 40 ng of F-300 RNA transcript incubated for 16 hours at 37°C results in < 10% substrate degradation as determined by gel electrophoresis using fluorescent detection.

Enzyme Properties
Activity in NEBuffers
ThermoPol Buffer 125%
Unit Assay Conditions 100%
NEBuffer 1 25%
NEBuffer 2 100%
NEBuffer 3 100%
NEBuffer 4 100%
NEBuffer EcoRI 100%

Notes on Use: Bst 2.0 WarmStart DNA Polymerase does not exhibit 3’→ 5’ exonuclease activity.

Reaction temperatures above 70°C are not recommended.

Bst 2.0 WarmStart DNA Polymerase cannot be used for thermal cycle sequencing or PCR.

Companion Products Sold Separately:
Bst 2.0 DNA Polymerase
#M0537S 1,600 units
#M0537L 8,000 units
#M0537M 8,000 units
Bst DNA Polymerase, Large Fragment
#M0275S 1,600 units
#M0275L 8,000 units
#M0275M 8,000 units
Magnesium Sulfate (MgSO₄) Solution
#B1003S 6.0 ml
Isothermal Amplification Buffer Pack
#B0537S 6.0 ml
Deoxynucleotide Solution Set
#N0446S 25 µmol each
Deoxynucleotide Solution Mix
#N0447S 8 µmol each
#N0447L 40 µmol each

Notes on Use: Bst 2.0 WarmStart DNA Polymerase requires a license from New England Biolabs, Inc. Please contact busdev@neb.com for more information.

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