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New England Biolabs
Product Specification

Product Name:	*Bst 2.0 WarmStart® DNA Polymerase (Glycerol-free)*
Catalog #:	*M0402L*
Concentration:	*120,000 units/ml*
Unit Definition:	*One unit is defined as the amount of enzyme that will incorporate 25 nmol of dNTP into acid insoluble material in 30 minutes at 65°C.*
Shelf Life:	*24 months*
Storage Temp:	*-80°C*
Storage Conditions:	*10 mM Tris-HCl, 50 mM KCl, 0.1 mM EDTA, 1 mM DTT, 0.1 % Triton® X-100, (pH 7.1 @ 25°C)*
Specification Version:	*PS-M0402L v1.0*
Effective Date:	*24 Jan 2024*

Assay Name/Specification (minimum release criteria)
Endonuclease Activity (Nicking) - A 50 µl reaction in ThermoPol® Reaction Buffer containing 1 µg of supercoiled PhiX174 DNA and a minimum of 500 units of *Bst* 2.0 DNA Polymerase (Glycerol Free) incubated for 4 hours at 65°C results in <10% conversion to the nicked form as determined by agarose gel electrophoresis.
Exonuclease Activity (Radioactivity Release) - A 50 µl reaction in ThermoPol® Reaction Buffer containing 1 µg of a mixture of single and double-stranded [^{3}H] *E. coli* DNA and a minimum of 500 units of *Bst* 2.0 DNA Polymerase (Glycerol Free) incubated for 4 hours at 65°C releases <0.1% of the total radioactivity.
Functional Testing (DNA-LAMP) - A 25 µl LAMP reaction with 8 units of *Bst* 2.0 WarmStart® DNA Polymerase (Glycerol-free), 10 ng of genomic DNA and 1X LAMP fluorescent dye results in a threshold time of ≤ 20 minutes as determined by fluorescent detection.
Functional Testing (RT-LAMP) - A 25 µl RT-LAMP reaction with 8 units of *Bst* 2.0 WarmStart® DNA Polymerase (Glycerol-free), 10 ng of genomic RNA and 1X LAMP fluorescent dye results in a threshold time of ≤ 20 minutes as determined by fluorescent detection.
Inhibition of Primer Extension (Hot Start) - A 50 µl reaction in Isothermal Amplification Buffer containing 6 mM $MgSO_4$ and 1.4 mM dNTPs in the presence of 1.6 µM of a fluorescent internally labeled oligonucleotide and a minimum of 16 units of *Bst* 2.0 WarmStart® DNA Polymerase (Glycerol Free) incubated for 2 hours at 25°C yields <5% extension as determined by capillary electrophoresis.
Non-Specific DNase Activity (16 Hour) - A 50 µl reaction in NEBuffer 2 containing 1 µg of T3 or T7 DNA in addition to a reaction containing Lambda-HindIII DNA and a minimum of 120 units of *Bst* 2.0 WarmStart® DNA Polymerase (Glycerol-free) incubated for 16 hours at 37°C results in a DNA pattern free of detectable nuclease degradation as determined by agarose gel electrophoresis.

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Assay Name/Specification (minimum release criteria)
Phosphatase Activity (pNPP) - A 200 µl reaction in 1M Diethanolamine, pH 9.8, 0.5 mM $MgCl_2$ containing 2.5 mM *p*-Nitrophenyl Phosphate (pNPP) and a minimum of 100 units of *Bst* 2.0 DNA Polymerase (Glycerol Free) incubated for 4 hours at 37°C yields <0.0001 unit of alkaline phosphatase activity as determined by spectrophotometric analysis.
Protein Purity Assay (SDS-PAGE) - *Bst* 2.0 DNA Polymerase (Glycerol Free) is ≥ 99% pure as determined by SDS-PAGE analysis using Coomassie Blue detection.
qPCR DNA Contamination (*E. coli* Genomic) - A minimum of 120 units of *Bst* 2.0 WarmStart® DNA Polymerase (Glycerol Free) is screened for the presence of *E. coli* genomic DNA using SYBR® Green qPCR with primers specific for the *E. coli* 16S rRNA locus. Results are quantified using a standard curve generated from purified *E. coli* genomic DNA. The measured level of *E. coli* genomic DNA contamination is ≤ 1 *E. coli* genome.
RNase Activity (Extended Digestion) - A 10 µl reaction in NEBuffer 4 containing 40 ng of a 300 base single-stranded RNA and a minimum of 120 units of *Bst* 2.0 WarmStart® DNA Polymerase (Glycerol Free) is incubated at 37°C. After incubation for 16 hours, >90% of the substrate RNA remains intact as determined by gel electrophoresis using fluorescent detection.

Lauren Brown

Date 24 Jan 2024

Lauren Brown
Quality Approver