

## New England Biolabs Certificate of Analysis

**Product Name:** Hot Start Taq DNA Polymerase  
**Catalog Number:** M0495L  
**Concentration:** 5,000 U/ml  
**Unit Definition:** One unit is defined as the amount of enzyme that will incorporate 15 nmol of dNTP into acid insoluble material in 30 minutes at 75°C.  
**Packaging Lot Number:** 10062497  
**Expiration Date:** 08/2021  
**Storage Temperature:** -20°C  
**Storage Conditions:** 10 mM Tris-HCl , 100 mM KCl , 1 mM DTT , 0.1 mM EDTA , 1X Stabilizers , 50 % Glycerol, (pH 7.4 @ 25°C)  
**Specification Version:** PS-M0495S/L v1.0

| Hot Start Taq DNA Polymerase Component List |                                   |            |                      |
|---|-----------------------------------|------------|----------------------|
| NEB Part Number                             | Component Description             | Lot Number | Individual QC Result |
| M0495LVIAL                                  | Hot Start Taq DNA Polymerase      | 10049431   | Pass                 |
| B9014SVIAL                                  | Standard Taq Reaction Buffer Pack | 10049383   | Pass                 |

| Assay Name/Specification  | Lot # 10062497 |
|---|----------------|
| <p><b>Protein Purity Assay (SDS-PAGE)</b><br/>           Taq DNA Polymerase is <math>\geq 99\%</math> pure as determined by SDS-PAGE analysis using Coomassie Blue detection.</p>   | Pass           |
| <p><b>qPCR DNA Contamination (E. coli Genomic)</b><br/>           A minimum of 5 units of Hot Start Taq DNA Polymerase 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 <math>\leq 1</math> E. coli genome.</p> | Pass           |
| <p><b>RNase Activity (Extended Digestion)</b><br/>           A 10 <math>\mu</math>l reaction in NEBuffer 4 containing 40 ng of a 300 base single-stranded RNA and a minimum of 1 <math>\mu</math>l of Hot Start Taq DNA Polymerase is incubated at 37°C. After incubation for 16 hours, &gt;90% of the substrate RNA remains intact as determined by gel electrophoresis using fluorescent detection.</p>   | Pass           |
| <p><b>Single Stranded DNase Activity ( Hot Start, FAM-Labeled Oligo)</b><br/>           A 50 <math>\mu</math>l reaction in ThermoPol® Reaction Buffer containing a 10 nM solution of a</p>  | Pass           |

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|--|----------------|
| <p>fluorescent internal labeled oligonucleotide and a minimum of 25 units of Taq DNA Polymerase incubated for 30 minutes at 37°C and 75°C yields &lt;10% degradation as determined by capillary electrophoresis.</p>   |                |
| <p><b>Non-Specific DNase Activity (16 Hour)</b><br/>A 50 µl reaction in NEBuffer 2 containing 1 µg of T3 DNA in addition to a reaction containing Lambda-HindIII DNA and a minimum of 5 units of Hot Start Taq DNA Polymerase incubated for 16 hours at 37°C results in a DNA pattern free of detectable nuclease degradation as determined by agarose gel electrophoresis.</p>  | <b>Pass</b>    |
| <p><b>Inhibition of Primer Extension (Hot Start, Radioactivity Incorporation)</b><br/>A 50 µl primer extension assay in ThermoPol® Reaction Buffer in the presence of 200 µM dNTPs including [<sup>3</sup>H]-dTTP, containing 15 nM primed single-stranded M13mp18 with 2.5 units of Hot Start Taq DNA Polymerase incubated for 16 hours at 25°C yields &gt;95% inhibition when compared to a non-hot start control reaction.</p>  | <b>Pass</b>    |
| <p><b>PCR Amplification (5.0 kb Lambda DNA)</b><br/>A 50 µl reaction in ThermoPol® Reaction Buffer in the presence of 200 µM dNTPs and 0.2 µM primers containing 5 ng Lambda DNA with 1.25 units of Hot Start Taq DNA Polymerase for 25 cycles of PCR amplification results in the expected 5.0 kb product.</p>  | <b>Pass</b>    |
| <p><b>Endonuclease Activity (Nicking, Hot Start)</b><br/>A 50 µl reaction in ThermoPol® Reaction Buffer containing 1 µg of supercoiled PhiX174 DNA and a minimum of 20 units of Taq DNA Polymerase incubated for 4 hours at 37°C and 75°C results in &lt;10% conversion to the nicked form as determined by agarose gel electrophoresis.</p>   | <b>Pass</b>    |
| <p><b>PCR Amplification (Hot Start 2 kb Lambda DNA)</b><br/>A 50 µl reaction in ThermoPol® Reaction Buffer in the presence of 200 µM dNTPs and 0.2 µM primers containing 20 pg Lambda DNA and 100 ng Human Genomic DNA with 1.25 units of Hot Start Taq DNA Polymerase for 30 cycles of PCR amplification results in an increase in yield of the 2 kb Lambda product and a decrease in non-specific genomic bands when compared to a non-hot start control reaction.</p> | <b>Pass</b>    |
| <p><b>Phosphatase Activity (pNPP)</b><br/>A 200 µl reaction in 1M Diethanolamine, pH 9.8, 0.5 mM MgCl<sub>2</sub> containing 2.5 mM p-Nitrophenyl Phosphate (pNPP) and a minimum of 100 units Taq DNA Polymerase incubated for 4 hours at 37°C yields &lt;0.0001 unit of alkaline phosphatase activity as determined by spectrophotometric analysis.</p>   | <b>Pass</b>    |

This product has been tested and shown to be in compliance with all specifications.

*Christie Vazquez*

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Christie Vazquez  
Production Scientist  
28 Aug 2019

*Michael Tonello*

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Michael Tonello  
Packaging Quality Control Inspector  
06 Jan 2020