Product Name: Q5® High-Fidelity DNA Polymerase
Catalog Number: M0491L
Concentration: 2,000 U/ml
Unit Definition: One unit is defined as the amount of enzyme that will incorporate 10 nmol of dNTP into acid insoluble material in 30 minutes at 74°C
Packaging Lot Number: 10070258
Expiration Date: 09/2021
Storage Temperature: -20°C
Storage Conditions: Proprietary
Specification Version: PS-M0491S/L v2.0

### Q5® High-Fidelity DNA Polymerase Component List

<table>
<thead>
<tr>
<th>NEB Part Number</th>
<th>Component Description</th>
<th>Lot Number</th>
<th>Individual QC Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>M0491L VIAL</td>
<td>Q5® High-Fidelity DNA Polymerase</td>
<td>10050012</td>
<td>Pass</td>
</tr>
<tr>
<td>B9028A VIAL</td>
<td>Q5® High GC Enhancer</td>
<td>10059594</td>
<td>Pass</td>
</tr>
<tr>
<td>B9027S VIAL</td>
<td>Q5® Reaction Buffer Pack</td>
<td>10064337</td>
<td>Pass</td>
</tr>
</tbody>
</table>

### Assay Name/Specification

<table>
<thead>
<tr>
<th>Assay Name/Specification</th>
<th>Lot # 10070258</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RNase Activity (Extended Digestion)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>A 10 µl reaction in NEBuffer 4 containing 40 ng of a 300 base single-stranded RNA and a minimum of 1 µl of Q5® High-Fidelity 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.</td>
<td></td>
</tr>
<tr>
<td><strong>qPCR DNA Contamination (E. coli Genomic)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>A minimum of 2 units of Q5® High-Fidelity 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 ≤ 1 E. coli genome.</td>
<td></td>
</tr>
<tr>
<td><strong>Protein Purity Assay (SDS-PAGE)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>Q5® High-Fidelity DNA Polymerase is ≥ 95% pure as determined by SDS-PAGE analysis using Coomassie Blue detection.</td>
<td></td>
</tr>
<tr>
<td><strong>Phosphatase Activity (pNPP)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>A 200 µl reaction in 1M Diethanolamine, pH 9.8, 0.5 mM MgCl2 containing 2.5 mM</td>
<td></td>
</tr>
<tr>
<td>Assay Name/Specification</td>
<td>Lot # 10070258</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>p-Nitrophenyl Phosphate (pNPP) and a minimum of 100 units Q5® High-Fidelity DNA Polymerase incubated for 4 hours at 37°C yields &lt;0.0001 unit of alkaline phosphatase activity as determined by spectrophotometric analysis.</td>
<td></td>
</tr>
<tr>
<td><strong>PCR Amplification (Enhancer Dependent, &gt;65% GC-rich)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>A 50 µl reaction in Q5® Reaction Buffer and Q5® High GC Enhancer in the presence of 200 µM dNTPs and 0.5 µM primers containing 20 ng Human Genomic DNA with 1 unit of Q5® High-Fidelity DNA Polymerase for 30 cycles of PCR amplification results in the enhancer-dependent production of the expected 452 bp product.</td>
<td></td>
</tr>
<tr>
<td><strong>Endonuclease Activity (Nicking, Polymerase)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>A 50 µl reaction in NEBuffer 2 in the presence of 400 µM dNTPs containing 1 µg of supercoiled pUC19 DNA and a minimum of 10 units of Q5® High-Fidelity DNA Polymerase incubated for 4 hours at 37°C results in &lt;10% conversion to the nicked form as determined by agarose gel electrophoresis.</td>
<td></td>
</tr>
<tr>
<td><strong>PCR Amplification (7 kb Human Genomic DNA)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>A 50 µl reaction in Q5® Reaction Buffer in the presence of 200 µM dNTPs and 0.5 µM primers containing 20 ng Human Genomic DNA with 1 unit of Q5® High-Fidelity DNA Polymerase for 30 cycles of PCR amplification results in the expected 7 kb product.</td>
<td></td>
</tr>
<tr>
<td><strong>PCR Amplification (20 kb Lambda DNA)</strong></td>
<td>Pass</td>
</tr>
<tr>
<td>A 50 µl reaction in Q5® Reaction Buffer in the presence of 200 µM dNTPs and 1.0 µM primers containing 10 ng Lambda DNA with 1 unit of Q5® High-Fidelity DNA Polymerase for 22 cycles of PCR amplification results in the expected 20 kb product.</td>
<td></td>
</tr>
</tbody>
</table>

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

Christie Vazquez
Production Scientist
14 Nov 2019

Michael Tonello
Packaging Quality Control Inspector
25 Mar 2020