SMOBIO
Small Bio, Smart Tool

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Product Information

Q-HiFi™ DNA Polymerase

TF2000	**100 units**	
	Q-HiFi™ DNA Polymerase	100 µl
	5X Q-HiFi™ Buffer	1200 µl
	dNTPs Mix (2 mM each)	600 µl

Storage

-20°C ≥ 24 months

Description

The Q-HiFi™ DNA Polymerase is a unique blended enzyme mix containing a high fidelity DNA polymerase and an elongation enhancer, thus being capable to perform quick and accurate PCR. The extension rate of Q-HiFi™ DNA Polymerase (7 sec/kb) is > 4-fold quicker than that of *pfu* DNA polymerase (30 sec/kb). The fidelity of Q-HiFi™ DNA Polymerase is 50 times higher than that of *Taq* DNA polymerase. The optimized 5X Q-HiFi™ Buffer includes special enhancers that contribute to suppress non-specific amplification as well as plateau effect produced by conventional PCR. Therefore, Q-HiFi™ DNA Polymerase exhibits great elongation capability (up to 40 kb from lambda DNA).

Applications

- Long range PCR amplification for next-generation DNA sequencing
- Generates blunt end amplicons for cloning with GetClone™ PCR cloning vector

Features

- 5’→3’ DNA polymerase activity
- 3’→5’ exonuclease (proofreading) activity
- High reaction rate: 7 seconds/kb
- High fidelity: 50 times higher than *Taq* polymerase
- Generates blunt end amplicons
- Vast elongation capability (up to 40 kb)
- Thermo-stable for more than 10 hrs at 95°C

Storage Buffer

50 mM Tris-HCl (pH 8.0), 50 mM KCl, 0.1 mM EDTA, 1 mM DTT, stabilizer, 50% (v/v) glycerol

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.

Recommended PCR Condition

Template	1 – 150 ng
Forward primer	0.1 – 0.5 µM*
Reverse primer	0.1 – 0.5 µM*
5X Q-HiFi™ Buffer	10 µl
dNTPs (2 mM each)	5 µl
Q-HiFi™ DNA Polymerase	1 µl (1 unit)
H_2O	to 50 µl
Total volume	50 µl

*When amplifying products ≧10 kb in length, use primers at a final concentration of 0.1 µM each.

Recommended Primer design

For ≦10 kb products:

For general amplification, select primers with a Tm value of ≧ 55°C. 20- to 25-mer primers are suitable, or greater than 25-mer in length may provide optimal results.

For >10 kb products:

Select primers with a Tm value of ≧ 65°C. 25- to 35-mer primers are suitable. Avoid high GC-content at the 3' end of each primer.

Recommended PCR Program

For ≦10 kb products:

98°C	2 min	
98°C	10 sec	25 ~ 40 cycles
50~68°C*	15 sec	
68°C	10-30 sec/kb	
68°C	1 min	

For ≧10 kb products

98°C	10 sec	25 ~ 40 cycles
68°C	10-30 sec/kb	

*Optimal PCR condition varies according to primers' thermodynamic properties.

Quality Control

Functional Testing

Q-HiFi™ DNA Polymerase is tested for performance in the polymerase chain reaction (PCR) using 1 unit of enzyme to amplify a 665 bp target from 10 pg of tested plasmid DNA. The resulting PCR product is visualized as a single band on an ethidium bromide-stained agarose gel.

Nuclease Assay

No contaminating endonuclease or exonuclease activity was detected using pUC19 incubated with Q-HiFi™ DNA Polymerase for 4 hours at 37°C.

Residual Nucleotides Assay

No contaminating residual nucleotides were detected from purified Q-HiFi™ DNA Polymerase by PCR assay.

Other Information

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Caution: Not intended for human or animal diagnostic or therapeutic uses.

Related Products

CV1000	GetClone PCR Cloning Vector, 20 RXN
CV1100	GetClone PCR Cloning Vector II, 20 RXN
DM2300	ExcelBand 100 bp+3K DNA Ladder, 500 µl
DM3100	ExcelBand 1 KB (0.25-10 kb) DNA Ladder, 500 µl
DM4100	ExcelBand XL 25 kb DNA Ladder, Broad Range (up to 25 kb), 500 µl
DL5000	FluoroDye DNA Fluorescent Loading Dye (Green, 6×), 1 ml
DS1000	FluoroStain DNA Fluorescent Staining Dye (Green, 10,000×), 500 µl
NS1000	FluoroVue Nucleic Acid Gel Stain (10,000X), 500 µl
TP1000	ExcelTaq DNA Polymerase, 5 U/ µl, 500 U × 1
TP1200	ExcelTaq 5× PCR Master Dye Mix, 200 RXN
TP1260	ExcelTaq 5× Fluorescent PCR Master Mix, 200 RXN
TP2000	ExcelTaq Blood Direct DNA Polymerase, 5 U/ µl, 500 U
TF1000	SMO-HiFi™ DNA Polymerase, 1U/ µl, 100 U
TF2100	2X Q-HiFi™ PCR Master Mix, 50 RXN
TF3000	G-HiFi™ DNA Polymerase, 1U/ µl, 100 U
VE0100	B-BOX™ Blue Light LED epi-illuminator, AC 100-240V, 50/60Hz