

# Long and Accurate

## Long and Accurate PCR Selection Guide

Catalog Number	Product Description	Proofreading Enzyme with 3'→5'		Amplification Length <sup>b</sup>	Direct Load <sup>c</sup>	Page
		Exonuclease Activity	Fidelity <sup>a</sup>			
D8045	AccuTaq LA DNA Polymerase	✓	up to 6.5×	0.1 to >20 (40) kb		5
D4812	REDAccuTaq LA DNA Polymerase	✓	up to 6.5×	0.1 to >20 (40) kb	✓	5
D5062	KlenTaq LA DNA Polymerase	✓	up to 4×	0.1 to >5 (10) kb		6

a) Fidelity compared to Taq DNA Polymerase.

b) Two values are provided for the indicated amplification length. The range provided refers to the average length achieved from complex genomic targets, while the number in parentheses refers to lengths routinely achieved with less complicated targets such as plasmid or lambda phage DNA.

c) REDAccuTaq contains an inert red dye. The dye provides visual confirmation that the polymerase has been added to the reaction and mixing is complete. Aliquots from the PCR can be directly loaded onto the gel without adding loading buffers or tracking dyes. The dye has no effect on automated DNA sequencing, ligation, transformation or other downstream applications.

## AccuTaq™ LA DNA Polymerase

### Higher Fidelity for Specialized PCR Needs

AccuTaq LA DNA Polymerase is an optimized blend of Sigma's high quality Taq DNA Polymerase and a small amount of thermostable proofreading polymerase that exhibits 3'→5' exonuclease. By blending Taq with the right amount of this proofreading enzyme misincorporation errors are corrected, producing PCR amplicons that are longer and more accurate. This mix allows generation of amplicons from 0.25-40 kb.

### Features and Benefits

- Increased fidelity, up to 6.5× that of Taq DNA Polymerase
- Efficiently and accurately produce amplicons up to 22 kb on genomic templates and up to 40 kb on less complex templates such as lambda or bacterial genomic DNA

### Available in direct load

REDAccuTaq LA DNA Polymerase allows for quick recognition in high throughput applications as well as direct loading of amplification products onto agarose gels for electrophoresis. The inert red dye has no effect on automated sequencing, restriction enzyme digestion, ligation or other downstream manipulations. However, the PCR product is easily separated from the dye by standard purification methods.

### Components:

AccuTaq LA DNA Polymerase

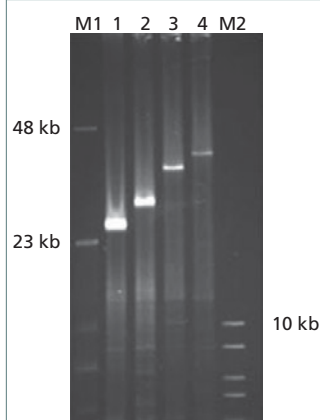
AccuTaq LA 10× Buffer

Vial of dimethyl sulfoxide (DMSO) optional

**Unit definition:** One unit incorporates 10 nmol of total dNTPs into acid-precipitable DNA in 30 min at 74 °C

**Storage:** -20 °C  
Shipped in wet ice

### Longer Products with Improved Fidelity



**Longer products with improved fidelity.** Amplification of 25-40 kb of lambda DNA template using AccuTaq LA DNA.

Lane 1: 25 kb

Lane 2: 31 kb

Lane 3: 36 kb

Lane 4: 40 kb

Lane M1: Lambda *Hind* III marker

Lane M2: PCR 100 bp ladder

### Ordering Information

Cat. No.	Product Description	Quantity
D8045	AccuTaq LA DNA Polymerase	125 units
	5 units per $\mu$ l	500 units
		1,500 units
D4812	REDAccuTaq LA DNA Polymerase	250 units
	1 unit per $\mu$ l	

# Long and Accurate

## KlenTaq<sup>®</sup> LA DNA Polymerase Mix

### For Increased Yields and Fidelity

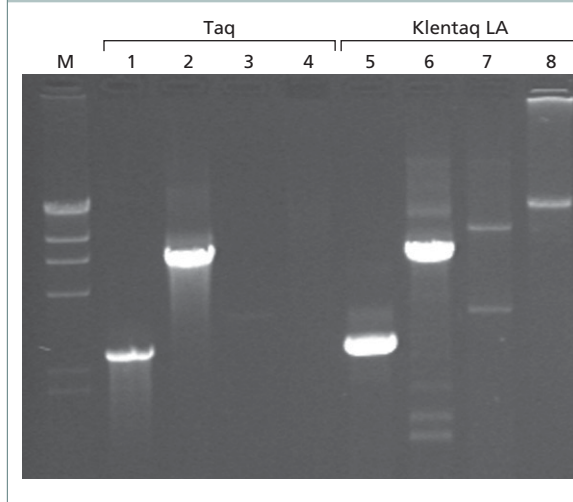
KlenTaq LA DNA Polymerase Mix is an optimized mixture combining KlenTaq-1 with a proofreading enzyme. KlenTaq-1 is a Klenow-fragment analog of Taq DNA Polymerase. It has no endonuclease or exonuclease activity, but is more thermostable than Taq or other terminal deletions of Taq. Since a wide range of magnesium concentration is tolerated by this enzyme, generally no magnesium optimization is needed. The proofreading polymerase provides the 3'→5' exonuclease activity that is necessary for longer and higher fidelity products.

KlenTaq LA DNA Polymerase provides an excellent alternative to Taq DNA Polymerase for intermediate length products. It allows higher yields and greater fidelity (up to 4× that of Taq). It can amplify genomic DNA up to 5 kb or up to 10 kb on less complex DNA targets such as bacterial, viral targets or cDNA. Its increased thermostability makes it the ideal choice for amplifying GC-rich regions or templates with difficult secondary structure.

### Features and Benefits

- KlenTaq LA DNA Polymerase has increased thermostability and processivity, resulting in increased yields
- Amplify difficult structure or GC-rich templates. The increased thermostability allows higher temperature conditions to disrupt difficult secondary structures
- Increased fidelity at up to 4× higher than that of Taq DNA Polymerase
- Tolerance to a broad range of magnesium concentrations eliminates the need to optimize MgCl<sub>2</sub>
- Amplify up to 5 kb genomic targets and up to 10 kb on less complex targets, such as lambda DNA

### Increase Length and Yield by Using KlenTaq LA DNA Polymerase



### Increase length and yield by using KlenTaq LA DNA Polymerase.

Lambda DNA was amplified using primer sets for 2.5 kb, 6 kb, 10 kb and 20 kb fragments. KlenTaq LA generates higher yields than Taq DNA Polymerase at 2.5 and 6 kb and is also able to amplify 10 and 20 kb fragments. Amount of lambda DNA template used for each PCR reaction: 1 ng for 2.5 kb, 2 ng for 6 kb, 2.5 ng for 10 kb, 50 ng for 20 kb.

Lane M: Marker  
Lanes 1, 5: 2.5 kb  
Lanes 2, 6: 6 kb  
Lanes 3, 7: 10 kb  
Lanes 4, 8: 20 kb

**Components:** KlenTaq LA DNA Polymerase  
KlenTaq LA 10× Buffer

**Unit definition:** One unit will incorporate 10 nmol of total dNTPs into acid-precipitable DNA in 30 min at 74 °C

**Concentration:** 5 units per µl

**Storage:** -20 °C  
Shipped in wet ice

### Reference

1. Barnes, W.M., PCR amplification of up to 35-kb DNA with high fidelity and high yield from bacteriophage templates. *Proc. Natl. Acad. Sci. USA* **91**, 2216-2220 (1994).

### Ordering Information

Cat. No.	Product Description	Quantity
<b>D5062</b>	KlenTaq LA DNA Polymerase Mix	125 units 500 units 1,500 units