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PCRBIO VeriFi Polymerase

Product description:

PCRBIO VeriFi Polymerase is a versatile and robust high fidelity enzyme engineered for PCR applications where greater sequence accuracy is required, together with improved PCR success rates of long and challenging templates.

PCRBIO VeriFi Polymerase is derived from Pfu DNA polymerase for its 3'-5' exonuclease (proofreading) activity. The enzyme is engineered with proprietary mutations that significantly increase processivity, resulting in shorter extension times (10-30 s/kb), higher yields and the ability to amplify longer and more difficult targets, including eukaryotic genomic templates in excess of 17.5kb.

The high accuracy and enhanced 3'-5' exonuclease activity of PCRBIO VeriFi Polymerase result in fidelity that is approximately 100 times higher than Taq DNA polymerase. The enzyme is ideally suited to applications where greater accuracy is required, such as cloning, site-directed mutagenesis and sequencing. PCR products generated with this range of products are blunt ended.

PCRBIO VeriFi Polymerase is provided with an advanced buffer system including dNTPs, Mg and enhancers, enabling high fidelity PCR of a wide range of targets and fragment sizes with minimal or no optimisation required.

Component	100 units	500 units
PCRBIO VeriFi Polymerase (2u/µl)	1 x 50µL	1 x 250µL
5x PCRBIO VeriFi Buffer	1 x 1.7mL	3 x 1.7mL

Shipping and storage

On arrival the kit should be stored between -30˚C and -15˚C. Avoid prolonged exposure to light. If stored correctly the kit will retain full activity for 12 months. The kit can be stored at 4˚C for 1 month. The kit can go through 30 freeze/thaw cycles with no loss of activity.

Limitations of product use

The product may be used only for in vitro research purposes.

Technical support

For technical support and troubleshooting please email technical@pcrbio.com with the following information:

Amplicon size
Reaction setup
Cycling conditions
Screen grabs of gel images

Important considerations

5x PCRBIO VeriFi Buffer: The 5x buffer contains 15mM $MgCl_2$, 5mM dNTPs, enhancers and stabilizers. It is not recommended to add further PCR enhancers or $MgCl_2$to the reaction. The buffer composition has been optimised to maximise PCR success rates.

Primers: Primers should have a predicted melting temperature of around 60˚C, using default Primer 3 settings (http://bioinfo.ut.ee/primer3/). The final primer concentration in the reaction should be between 0.2µM and 0.6µM.

Denaturation: Denaturation should be performed at 95˚C. However, if the presence of high GC regions results in low yields, increasing the melting temperature to 98-100˚C can improve the amount of product.

Annealing: We recommend performing a temperature gradient to experimentally determine the optimal annealing temperature. Alternatively, we recommend a 62˚C annealing temperature then increase in 2˚C increments if non-specific products are present.

Extension: Optimal extension is achieved at 72˚C. The optimal extension time is dependent on amplicon length and complexity of template. 30 seconds per kilobase (kb) is recommended for most applications however shorter extension times of between 10 and 30 seconds per kb are possible. Two-step cycling protocols may also be used with combined annealing and extension at 68-75˚C.

Fast cycling: If using faster extension times, care must be taken to prevent loading too much template DNA. If non-specific bands are visible after amplification, the amount of template DNA should be decreased.

Reaction setup

1. Allow 5x PCRBIO VeriFi Buffer to reach room temperature, briefly vortex.

2. Prepare a master mix on ice based on the following table:

Reagent	25µL reaction	50µL reaction	Final concentration	Notes
5x PCRBIO VeriFi Buffer	5.0µL	10.0µL	1x	
Forward primer (10µM)	1.0µL	2.0µL	400nM	See above for optimal primer design
Reverse primer (10µM)	1.0µL	2.0µL	400nM	
Template DNA	<100ng genomic DNA <5ng less complex DNA	<200ng genomic DNA <10ng less complex DNA	variable	
PCRBIO VeriFi Polymerase (2u/µL)	0.25µL	0.5µL		
PCR grade dH_2O	Up to 25µL final volume	Up to 50µL final volume		

3. Cycle using conditions based on the following table

Cycles	Temperature	Time	Notes
1	95˚C	1min	Initial denaturation
25-35	95˚C	15 seconds	Denaturation (see above for high GC templates)
	60˚C to 75˚C	15 seconds	Anneal
	72˚C	10-30 seconds / kb	Extension (see above for optimal extension time and fast cycling considerations)