RADIANT
MOLECULAR TOOLS

Radiant™ Taq DNA Polymerase

Catalog No.	Pack Size and Concentration	Components (Volume)		
C101	500 Reactions	Taq Polymerase - 1 x .01mL	10X Buffer – 1 x 2mL	50mM $MgCl_2$– 1 x 2mL
C105	2,500 Reactions	Taq Polymerase - 5 x .01mL	10X Buffer – 5 x 2mL	50mM $MgCl_2$– 5 x 2mL
C109	10,000 Reactions	Taq Polymerase - 20 x .01mL	10X Buffer – 20 x 2mL	50mM $MgCl_2$– 20 x 2mL

Description

Radiant™ Taq DNA Polymerase is a highly purified, high performance DNA Polymerase optimized for the sensitive DNA amplification of a wide range of DNA templates including complex mammalian genomic DNA. Radiant™ Taq DNA Polymerase exhibits 5´-3´ DNA polymerase activity with an error-rate of wild-type *Taq* (2.0 x 10^{-5}). The polymerase is ideal for screening, colony PCR, high-throughput PCR and genotyping of problematic GC-rich and AT-rich sequences. Radiant™ Taq DNA Polymerase is engineered for robust, superior PCR and is supplied with a highly optimized, new-generation buffer system which provides exceptional sensitivity.

- High-yields with amplicons up to 5 Kb with standard or fast cycling.
- New-generation PCR buffer formulation including enhancers for maximum PCR efficiency and reaction speed.
- Robust PCR performance across a wide range of DNA templates including genomic DNA and GC-rich and AT-rich sequences.
- Supplied with 10X Reaction Buffer and separate $MgCl_2$ for flexibility and optimization.

Storage

Radiant™ Taq DNA Polymerase is shipped on blue or dry ice and should be stored at –20°C upon receipt. Excessive freeze/thawing should be avoided. When stored as specified, Radiant™ Taq DNA Polymerase is stable for 12 months from date of receipt. The Kit may also be stored at 4°C for 1 month.

Important Considerations

Radiant™ 10x Taq Reaction Buffer: The 10x Taq reaction buffer contains proprietary PCR enhancers and has been optimized for maximum efficiency, sensitivity and success with difficult amplicons. We do not suggest the use of additional PCR enhancers.

Template: For complex genomic DNA, we suggest the use of 5ng - 500ng per reaction; For cDNA or plasmid DNA, please use < 100ng per reaction.

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

Annealing: We recommend performing a temperature gradient to determine the optimal annealing temperature. Alternatively, we suggest a 55°C annealing temperature. 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. 15 seconds per kilobase(Kb) is recommended for amplification from eukaryotic genomic DNA or cDNA. For shorter amplicons, a 1 second extension is sufficient.

Reaction setup

1. Prepare a PCR master mix based on following table:

Component	50µl Reaction	Final Concentration/Notes
Radiant™ 10x Taq Reaction Buffer	5 µl	1X
100mM dNTPs (25mM ea)	0.5 µl	1mM
50mM $MgCl_2$	3 µl	3mM
Forward Primer (10µM)	2.0 µl	400 nM
Reverse Primer (10µM)	2.0 µl	400 nM
Template DNA	<100ng cDNA, <500ng genomic	variable
Radiant™ Taq DNA Polymerase (5u/µl)	0.25 µl - 1 µl	variable
PCR-grade water	Up to 50 µl final volume	

* For alternative total reaction volumes (eg. 25 µl), scale all components proportionally and maintain final concentrations.

2. PCR cycling:

Cycles	Temperature & Time		Notes
1	95°C	1 minute	Initial Denaturation
40	95°C 55°C to 65°C 72°C	15 seconds 15 seconds 15 seconds per Kb	Denaturation Annealing Extension

Quality Control

Radiant™ Taq DNA Polymerase is tested extensively for robust activity, processivity, efficiency, heat activation, sensitivity, absence of nuclease contamination and absence of nucleic acid contamination. Radiant™ Taq DNA Polymerase is manufactured under a comprehensive quality management system, following ISO 9001:2008 standards.

Limitations of Use

This product is intended for research purposes only and is not intended for any animal or human therapeutic use.

Technical Support

For Trouble-shooting and Technical Guidance, please contact us at tech@alkalisci.com and provide PCR reaction conditions, cycling parameters, amplicon size, and screen grabs (gel images) if possible.