

# Feature Guide for PCR Enzymes

Product Name	GeneAmp® Fast PCR Master Mix	AmpliTaq Gold® DNA Polymerase & AmpliTaq Gold® DNA Polymerase, LD	AmpliTaq® DNA Polymerase & AmpliTaq® DNA Polymerase, LD	AmpliTaq® DNA Polymerase, Stoffel Fragment	rTth DNA Polymerase	rTth DNA Polymerase, XL	GeneAmp® High Fidelity PCR System
PCR Performance Guarantee	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PCR Technical Support	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recombinant Enzyme	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Molecular Weight	N/A	94 kDa	94 kDa	61 kDa	94 kDa	N/A	94/92 kDa
Number of Amino Acids	N/A	832	832	544	834	N/A	832/770
Optimal Extension Temperature	64°C - 68°C	72°C - 80°C	72°C - 80°C	72°C - 80°C	72°C - 80°C	72°C - 80°C	72°C - 80°C
Extension Rate (72°C)	2 - 4 Kb/min	2 - 4 Kb/min	2 - 4 Kb/min	2 - 4 Kb/min	2 - 4 Kb/min	2 - 4 Kb/min	2 - 4 Kb/min
Hot Start	Automated, Immediate	Automated	Manual	Manual	Manual	Manual	Manual
Enzyme Activation	N/A	2 - 10 min at 95°C or ≤10 additional cycles	N/A	N/A	N/A	N/A	N/A
Reverse Transcriptase Activity	N/A	Minimal/Low	Minimal/Low	Minimal/Low	Yes, Mn <sup>++</sup> dependent	Yes, Mn <sup>++</sup> dependent	Minimal/Low
Half Life	97.5°C/10 min 95°C/40 min 92.5°C/>130 min	97.5°C/10 min 95°C/40 min 92.5°C/>130 min	97.5°C/10 min 95°C/40 min 92.5°C/>130 min	97.5°C/20 min 95°C/80 min	97.5°C/2 min 95°C/20 min	97.5°C/2 min 95°C/20 min	97.5°C/10 min 95°C/40 min
Cycling Half Life*	160 cycles	160 cycles	160 cycles	320 cycles	80 cycles	80 cycles	160 cycles
Magnesium Ion PCR Optimum	N/A	1.5 mM - 4 mM	1 mM - 4 mM	2 mM - 10 mM	1.5 mM - 2.5 mM	1.5 mM - 2.5 mM	1 mM - 5 mM
pH Optimum for PCR Amplification**	N/A	7.0 - 7.5	7.0 - 7.5	7.0 - 7.5	7.0 - 7.5	7.0 - 7.5	7.0 - 7.5
pH Optimum for Activation	N/A	8.05 at room temperature	N/A	N/A	N/A	N/A	N/A
dNTP PCR Optimum	N/A	40 µM - 200 µM	40 µM - 200 µM	40 µM - 200 µM	40 µM - 200 µM	40 µM - 200 µM	40 µM - 200 µM
KCl PCR Optimum	N/A	50 mM	50 mM	10 mM	75 mM - 100 mM	75 mM - 100 mM	N/A
Primer PCR Optimum	0.1 µM - 0.5 µM	0.1 µM - 1.0 µM	0.1 µM - 1.0 µM	0.1 µM - 1.0 µM	0.1 µM - 1.0 µM	0.4 µM	0.3 µM
Processivity	50 - 60 bases	50 - 60 bases	50 - 60 bases	5 - 10 bases	30 - 40 bases	30 - 40 bases	50 - 60 bases
Fidelity	+++	+++	+++	++	+++	++++	+++++
Longest PCR Product	~2 Kb	~5 Kb	~5 Kb	<2 Kb	~5 Kb	>40 Kb	~10 Kb
Extra A Addition	Yes	Yes	Yes	Yes (less)	Yes	Mixture	Mixture
5'- 3' Exonuclease Activity	Yes	Yes	Yes	No	Yes	Yes	Yes
3'- 5' Exonuclease Activity	No	No	No	No	No	Yes	Yes
Contaminating Nucleases	No	No	No	No	No	No	No
Supplied Concentration	N/A	5 Units/µL	5 Units/µL	10 Units/µL	2.5 Units/µL	2 Units/µL	5 Units/µL
Storage Temperatures	4°C	-20°C	-20°C	-20°C	-20°C	-20°C	-20°C

\* Assumption of 95°C, 15 seconds denaturation per cycle

\*\* pH optimum measured at 72°C