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Thermo Scientific Thermo-Start *Taq* DNA Polymerase

Description: Thermo-Start™ *Taq* DNA Polymerase is a chemically modified version of ThermoPrime *Taq* DNA Polymerase. It is completely inactive at room temperature, preventing the formation and subsequent amplification of non-specific products. The enzyme requires an **activation step at 95°C for 15 minutes**.

Enzyme Source: *Thermus aquaticus*

Concentration: 5 units/µl

Unit Definition: One unit of enzyme is defined as the amount that will incorporate 10nmoles of dNTPs into acid insoluble material in 30 minutes at 74°C under the analysis conditions below.

Associated Activities: Thermo-Start™ has 5' to 3' polymerization and exonuclease activity but lacks 3' to 5' exonuclease activity (proofreading).

Storage Conditions: Store Thermo-Start™ *Taq* DNA Polymerase at -20°C, in a constant temperature freezer for up to 12 months. Shipped on ice within the UK and on dry ice for international and within the US.

Kit Contents

Vial	Pack Size (cap color)		
	A	B	C
Thermo-Start Taq DNA Pol.	1 x 50µl (clear)	10 x 50µl (clear)	20 x 50µl (clear)
Thermo-Start PCR Buffer with $MgCl_2$	1 x 1.25ml (purple)	10 x 1.25ml (purple)	20 x 1.25ml (purple)

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Example of Protocol:

Mix and spin down the solutions prior to use

	Volume	Final Concentration 1X
Thermo-Start Taq DNA Pol. (5U/µl)	0.125µl	0.625 U
10X Thermo-Start PCR Buffer + 15mM $MgCl_2$	2.5µl	1X (+1.5mM $MgCl_2$)
dNTP Mix (20mM)	1µl	0.5mM of each nucleotide
Primer forward (10µM each)	1.25µl*	0.5µM*
Primer reverse (10µM each)	1.25µl*	0.5µM*
Water (PCR Grade)	variable	
DNA Template	0.5 - 10µl	0.5 - 125ng
Total Volume	25 µl	

*Scale up or down the volume and concentration as appropriate

Note: These recommendations are intended as basic guidelines.

Example of Program:

	Temp.	Time	Number of cycle
Initial Denaturation	**95°C**	**15 min**	**1 cycle**
Denaturation	95°C	20 sec	30 to 40 cycles
Annealing	50-65°C	30 sec	
Extension**	72°C	60 sec	
Final Extension	72°C	5 min	1 cycle

**Increase length of time in proportion to size of amplicon, Taq DNA Polymerase extends at approximately 1000 bp/min.

Incremental Activation:

For extra stringency, the enzyme can be activated gradually during the PCR in a series of steps. The initial activation step is replaced by longer (2 minutes) denaturation steps for the first 7–8 cycles of the reaction.

Analysis Conditions:

25mM	TAPS, pH 9.3 (at 25°C) [tris-(hydroxymethyl)-methyl-amino-propane sulfonic acid, sodium salt]
50mM	KCl
2mM	$MgCl_2$
1mM	β-mercaptoethanol
200µM	of each: dATP, dGTP, dTTP
100µM	[α^{32}P]-dCTP (0.05 to 0.1 Ci/mmol)
1.25µg/µl	activated salmon sperm DNA

Water added to a total volume of 50µl. Incubated at 74°C for 10 minutes. The enzyme is first treated with a 15 minute activation step at 95°C. The amount of incorporated dNTPs is determined by trichloroacetic acid precipitation.

Storage Buffer:

100mM	KCl
20mM	Tris-HCl, pH 9.2 (at 25°C)
0.1mM	EDTA (ethylenediaminetetraacetic acid)
1mM	DTT (dithiothreitol)
0.5%	Tween® 20
0.5%	Nonidet® P40
50% (v/v)	Glycerol

Ordering Information:

AB-1908/A	Thermo-Start *Taq* DNA Polymerase	250 units
AB-1908/B	Thermo-Start *Taq* DNA Polymerase	10 x 250 units
AB-1908/C	Thermo-Start *Taq* DNA Polymerase	100 x 250 units

For technical information or troubleshooting contact Thermo Scientific Genomics Tech Support:

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