TransStart® *Taq* DNA Polymerase

Cat. No. AP141
Concentration 2.5 units/μl
Storage at -20°C for two years

Description

TransStart® *Taq* DNA Polymerase is a novel hot-start enzyme. It uses two proprietary DNA binding proteins that at room temperature bind to the double-strand DNA template and primer, effectively neutralizing the DNA polymerase activity until denaturation occurs. As the denaturation step proceeds, the two proteins are inactivated, and the released primers and templates participate in the amplification reaction, enhancing PCR amplification efficiency.

Highlights

- Fidelity is 18 times that of *EasyTaq*® DNA Polymerase.
- Extension rate is about 1-2 kb/min.
- Specificity is superior to antibody blocking and chemical blocking of hot-start DNA polymerases.
- Prepare reactions at room temperature to reduce non-specific amplification and primer dimers.
- The use of Taq antibodies reduces the risk of potential DNA contamination from mammals.
- Unlike chemically modified Taq, no heating steps are required.
- Amplification of genomic DNA fragments (≤15 kb).

Applications

- Complex templates
- GC/AT-rich templates
- Multiplex PCR
- High yield PCR

Unit Definition

One unit of *TransStart*® *Taq* DNA Polymerase incorporates 10 nmol of deoxyribonucleotide into acid-precipitable material in 30 minutes at 74°C.

Quality Control

- Functional absence of double- and single-strand endonuclease activity; >99% homogeneous measured by SDS-PAGE.
- Each batch of *TransStart*® *Taq* DNA Polymerase has been assayed for amplification efficiency of the p53 gene from 10 ng of human genomic DNA.

Storage Buffer

20 mM Tris-HCl (pH 8.0), 0.1 mM EDTA, 1 mM DTT, 100 mM KCl, 50% glycerol, stabilizers

10×*TransStart*® *Taq* Buffer with 20 mM $MgSO_4$

500 mM Tris-HCl (pH 9.0), 200 mM $(NH_4)_2SO_4$, 20 mM $MgSO_4$, 10% glycerol, others

GC Enhancer

For better amplification of GC/AT-rich or complex templates, we recommend adding GC enhancer into PCR reaction. GC enhancer is provided at 10× concentration and can be used at 0.5×-5× concentration.

Kit Contents

Component	AP141-01/11	AP141-02/12	AP141-03/13
TransStart® Taq DNA Polymerase	250 U×1	500 U×1	500 U×6
10×*TransStart® Taq* Buffer	1.2 ml	1.2 ml×2	1.2 ml×12
2.5 mM dNTPs	-/800 µl×1	-/800 µl×2	-/1.2 ml×8
10×GC Enhancer	200 µl×1	400 µl×1	1 ml×1
6×DNA Loading Buffer	500 µl×1	1 ml×1	1 ml×2

Reaction Components

Component	Volume	Final Concentration
Template DNA	Variable	as required
Forward Primer (10 µM)	1 µl	0.2 µM
Reverse Primer (10 µM)	1 µl	0.2 µM
10×*TransStart® Taq* Buffer	5 µl	1×
2.5 mM dNTPs	4 µl	0.2 mM
TransStart® Taq DNA Polymerase	0.5-1 µl	1.25-2.5 units
Nuclease-free Water	Variable	-
Total volume	50 µl	-

Thermal cycling conditions

94°C	2-5 min	
94°C	30 sec	30-35 cycles
50-60°C	30 sec	
72°C	1-2 kb/min	
72°C	5-10 min	

Notes

- A final concentration of 2 mM $MgSO_4$ is sufficient for most targets amplification. For some targets, more Mg^{2+} may be required.
- For optinal results, we recommend to use the 100 mM $MgSO_4$ stock to prepare a titration from 2 mM to 4 mM (final concentration) in 0.25 mM increments.
- 0.5 µl (2.5 units) enzyme is enough for per 50 µl reaction. For better amplification, up to 1 µl (5 units) enzyme can be used.
- For amplification of GC/AT-rich templates and complex templates, we suggest to use GC Enhancer.

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