Creative Enzymes
Diagnostic Enzymes

High Fidelity KOD DNA Polymerase

Product Information

Cat#	POL-023
Notes	Cloning of PCR Products: Since the PCR products generated by this enzyme have been blunted, blunt-end cloning can be employed. In this case, if the vector has been dephosphorylated, the PCR product must be phosphorylated, or primers with 5'-phosphate groups should be used. Additionally, due to the blunted ends of the PCR products, direct TA cloning is not feasible. Setting PCR Conditions: The standard enzyme usage is 1 U per 50 µl reaction. Extension reactions are performed at 68°C at a rate of 1 kb/min. If smeared bands appear, reduce the $MgSO_4$ concentration; if amplification cannot be confirmed, increase the $MgSO_4$ concentration. High GC Content Templates: Adding DMSO to a final concentration of 2–5% in the reaction mixture can improve results. When using RT reaction mixture as template: Excessive carryover of RT reaction mixture may inhibit PCR. It is recommended that the volume of RT reaction mixture carried over into PCR be less than 1/25 (preferably less than 1/50) of the total PCR volume. This eliminates the need to consider the effects of Mg^{2+} and dNTPs in the RT reaction mixture; simply add the dNTPs and $MgSO_4$ supplied with the enzyme according to the basic reaction conditions. Primer Design: Primers with mismatches at the 3' end may be corrected by this enzyme.
Storage	Store at -20 °C.
Features	Excellent Fidelity KOD DNA polymerase is characterized by exceptionally high fidelity, and this product offers further enhanced fidelity—approximately 80 times that of Taq DNA polymerase. It is most suitable for cloning. Enhanced PCR Efficiency via Hot Start

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	Two anti-KOD monoclonal antibodies are premixed with the enzyme to suppress polymerase activity at room temperature (the primary cause of non-specific reactions) and 3'→5' exonuclease activity. These antibodies inactivate during the PCR denaturation step, leaving no impact on the amplification reaction. Enhanced Extension Capability and Amplification Efficiency Optimized reaction buffer components significantly improve extension capability and amplification efficiency compared to previous KOD DNA Polymerase formulations. Superior Thermal Stability With thermal stability surpassing Taq DNA Polymerase, higher denaturation temperatures can be set. This makes it particularly suitable for amplifying target fragments with high GC content prone to forming complex secondary structures.
Description	This product is a high-fidelity PCR enzyme developed based on KOD DNA polymerase. It offers the highest fidelity among our PCR enzymes. Through buffer component optimization and the adoption of a hot-start method, this enzyme achieves significantly enhanced fidelity and PCR efficiency compared to the original KOD DNA polymerase.
Applications	PCR
Specification	200 U
Expression System	E.coli
Activity Definitions	Under the activity measurement conditions at 75°C, the enzyme activity required to convert 10 nmoles of total nucleotides into acid-insoluble products within 30 minutes is defined as 1 U.

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