Product Information	
Manta 1.0 DNA Polymerase	
Part Number	P7140-HC-L
Concentration	400,000 U/mL
Unit Size	100,000 U
Storage Temperature	-25°C to -15°C
Lot Number	
Reference Number	

Product Description: Manta 1.0 DNA Polymerase (exo-) is a recombinant Bst DNA Polymerase (large fragment) from a thermostable strain of Bacillus (1). The protein has a strong strand-displacement activity, and deficient in both proofreading (3'→5') and nick-translation (5'→3') nuclease activities.

Product Specifications						
P7140						
Assay	**SDS Purity**	**Specific Activity**	**SS Exonuclease**	**DS Exonuclease**	**DS Endonuclease**	***E. coli* DNA Contamination**
Units Tested	**n/a**	**n/a**	**4000**	**4000**	**4000**	**4000**
Specification	>99%	400,000 U/mg	<5.0% Releases	<1.0% Released	No Conversion	<10 copies

Source of Protein: A recombinant *E. coli* strain carrying the Manta 1.0 DNA Polymerase (exo-) gene.

Unit Definition: 1 unit is defined as the amount of polymerase required to convert 10 nmol of dNTPs into acid insoluble material in 30 minutes at 65°C.

Molecular weight: 66.2 kDa

Quality Control Analysis:

Unit Activity is measured using a 2-fold serial dilution method. Dilutions of enzyme batch were made in 1X reaction buffer and added to 50 µL reactions containing Calf Thymus DNA, 1X PCR Buffer II, ^{3}H-dTTP, and 100 µM dNTPs. Reactions were incubated 10 minutes at 65°C, plunged on ice, and analyzed using the method of Sambrook and Russell (2).

Protein Concentration (OD_{280}) is determined by OD_{280} absorbance.

Physical Purity is evaluated by SDS-PAGE of concentrated and diluted enzyme solutions followed by silver stain detection. Purity is assessed by comparing the aggregate mass of contaminant bands in the concentrated sample to the mass of the protein of interest band in the diluted sample.

Single-Stranded Exonuclease is determined in a 50 µL reaction containing a radiolabeled single-stranded DNA substrate and 10 µL of enzyme solution incubated for 4 hours at 37°C.

Double-Stranded Exonuclease is determined in a 50 µL reaction containing a radiolabeled double-stranded DNA substrate and 10 µL of enzyme solution incubated for 4 hours at 37°C.

Double-Stranded Endonuclease is determined in a 50 µL reaction containing 0.5 µg of plasmid DNA and 10 µL of enzyme solution incubated for 4 hours at 37°C.

***E. coli* 16S rDNA Contamination** is evaluated using 5 µL replicate samples of enzyme solution denatured and screened in a TaqMan qPCR assay for the presence of contaminating *E. coli* genomic DNA using oligonucleotide primers corresponding to the 16S rRNA locus.

Supplied in: 10 mM Tris-HCl, 50 mM KCl, 1mM DTT, 0.1 mM EDTA, < 0.1% Triton X-100, 50% glycerol (pH 7.5 at 25°C)

Supplied with:

10X PCR Buffer II (B7140): 200 mM Tris-HCl, 100 mM KCl, 100 mM $(NH_4)_2SO_4$, 20 mM $MgSO_4$, 1.0% Triton X-100 (pH 8.8 at 25°C)

Usage Instructions:

Manta 1.0 DNA Polymerase exhibits strong strand displacement activity and can be used in various nucleic acid amplification methods, such as isothermal, whole genome, and multiple displacement amplifications.

Reaction Conditions

Optimal reaction temperature is between 60-65°C.
10X Reaction Buffer contains 2 mM $MgSO_4$ at 1X. No dNTPs included in the buffer.
For optimization, add $MgSO_4$ up to 10 mM, and Manta 1.0 Polymerase up to 1.6 U/µL.

Notes:

Specific activity measured under above conditions is approximately 3X higher than cited by Kiefer et al. when using activated calf thymus DNA as a substrate.

References:

1. Kiefer, et al. Structure 15 January 1997. 5, 95-108.
2. Sambrook, J. et al. (1989) Cold Spring Harbor Laboratory Press, Molecular Cloning: A Laboratory Manual., (2nd ed.), 5.40-5.43.

Disclaimer:

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