Thermo
SCIENTIFIC

PRODUCT INFORMATION

Bsm DNA Polymerase, Large Fragment

#EP0691 1600 u

Lot: **Expiry Date:**

Concentration: 8 u/µl

Supplied with: 1.25 ml of 10X *Bsm* Buffer

Store at -20°C

www.thermoscientific.com/fermentas

Description

Bsm DNA Polymerase, Large Fragment is a portion of DNA polymerase of *Bacillus smithii*, which catalyzes 5'→3' synthesis of DNA and lacks 5'→3' and 3'→5' exonuclease activities. *Bsm* DNA Polymerase, Large Fragment has a strong strand displacement activity and is active in a wide range of temperatures from 30°C to 63°C, with an optimum of activity at 60°C. *Bsm* DNA Polymerase, Large Fragment is an enzyme with high functional similarity to *Bst* DNA Polymerase, Large Fragment and can replace it in most applications. The enzyme is not suitable for use in PCR.

Applications

- Isothermal DNA amplification by the method of:
  - loop- mediated isothermal amplification (LAMP) (1, 2),
  - whole genome amplification (WGA) (3),
  - ramification amplification (RAM) (4).
- Random- primed DNA labeling
- Labeling by fill-in 5'-overhangs of dsDNA

Source

E.coli cells with a cloned part of *polA* gene from *Bacillus smithii*.

Definition of Activity Unit

One unit of the enzyme catalyzes the incorporation of 10 nmol of deoxyribonucleotides into a polynucleotide fraction (adsorbed on DE-81) in 30 min at 60°C. Activity assayed in the following mixture: 10 mM Tris-HCl (pH 7.5 at 37°C), 10 mM $MgCl_2$, 100 µg/ml BSA, 0.75 mM activated salmon milt DNA, 0.2 mM of each dNTP, 0.4 MBq/ml [^{3}H]-dTTP.

Storage Buffer

The enzyme is supplied in: 10 mM Tris-HCl (pH 7.5), 50 mM KCl, 1 mM DTT, 0.1 mM EDTA, 0.15% (v/v) Triton X-100 and 50% (v/v) glycerol.

10X *Bsm* Buffer

200 mM Tris-HCl (pH 8.8 at 25°C), 100 mM KCl, 100 mM $(NH_4)_2SO_4$, 20 mM $MgSO_4$, 1% (v/v) Tween 20.

Inactivation

Inactivated by heating at 80°C for 10 min.

CERTIFICATE OF ANALYSIS

E.coli Genomic DNA Assay

No detectable *E.coli* genomic DNA in 8 u of the enzyme using qPCR assay with primers and probes specific to 23S rRNA gene.

Endodeoxyribonuclease Assay

No conversion of covalently closed circular DNA to nicked DNA was detected after incubation of 40 units of *Bsm* DNA Polymerase, Large Fragment with 1 µg of pUC19 DNA for 4 hours at 37°C.

Ribonuclease Assay

No RNA degradation was observed after incubation of 80 ng 2 kb RNA transcript with 16 units of *Bsm* DNA Polymerase, Large Fragment for 4 hours at 37°C.

Labeled Oligonucleotide (LO) Assay

No degradation of single-stranded and double-stranded labeled oligonucleotide was observed after incubation with 16 units of *Bsm* DNA Polymerase, Large Fragment for 4 hours at 37°C.

Quality authorized by:  Jurgita Zilinskiene

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References

1. Tsugunori Notomi, et al., Loop-mediated isothermal amplification of DNA, Nucleic Acids Res., v. 28, No. 12, e63, 2000.
2. Masaki Imai, et al., Rapid diagnosis of H5N1 avian influenza virus infection by newly developed influenza H5 hemagglutinin gene-specific loop-mediated isothermal amplification method, Journal of Virological Methods, 141, 173-180, 2007.
3. Dean, F.B., et al., Comprehensive human genome amplification using multiple displacement amplification, Proc. Natl. Acad. Sci. USA, 99, 5261-5266, 2002.
4. Jizu Yi, et al., Molecular Zipper: a fluorescent probe for real-time isothermal DNA amplification, Nucleic Acids Res., v. 34, No. 11, e81, 2006.

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Use of this enzyme in certain applications may be covered by patents and may require a license.

PRODUCT USE LIMITATION

This product is developed, designed and sold exclusively *for research purposes and in vitro use only.* The product was not tested for use in diagnostics or for drug development, nor is it suitable for administration to humans or animals.
Please refer to www.thermoscientific.com/fermentas for Material Safety Data Sheet of the product.