Bsa I (GMP-grade)

Introductions

Bsa I is a commonly used class IIS restriction enzyme that recognizes and cleaves specific deoxynucleotide sequences and is widely used in gene synthesis, cloning, DNA sequence analysis, and other fields

This product is a protein mutant encoded by the Bsa I gene of Bacillus stearothermophilus expressed by recombinant E. coli.The production process strictly controls host protein residues and nucleic acid residues, and conforms to GMP production and quality management practices.

Its identification sequence and cutting site are as follows:

5'·····GGTCTC(N)↓·····3'

3'·····CCAGAG(NNNNN)↑·····5'

Composition and storage conditions

Components \ Size	20 KU	200 KU	1000 KU	Storage
Bsa I (20 KU/mL)	1 mL	10 mL	50 mL	-70°C or below
10× Bsa I Buffer	2 mL	20 mL	100 mL	-70°C or below
Shipping: Dry Ice	**Shelf life:** 2 years			

Quality Control

Parameter	Standard
Bsa I	
Appearance	Clear and transparent solution
pH	7.0-8.0
Purity	≥ 95%
Activity	16-24 KU/mL
Endonuclease Residues	20 U enzyme incubated with substrate at 37°C for 4 hours, substrate

	degradation < 20%
Exonuclease Residues	20 U enzyme incubated with substrate at 37°C for 4 hours, substrate degradation < 10%
RNase Residues	20 U enzyme incubated with substrate at 37°C for 4 hours, substrate degradation < 10%
Non-specific nuclease Residues	20 U enzyme incubated with substrate at 37°C for 16 hours, substrate degradation < 10%
Bacterial Endotoxins	≤ 50 EU/mL
Host Protein Residues	≤ 100 ng/mL
Host DNA Residues	≤ 5 ng/mL
10× Bsa I Reaction buffer	
pH	7.5-8.5
Electrical conductivity	34-42 mS/cm

Experimental operation

I Rapid DNA digestion process:

1. Refer to the following table to add the reaction system to the ice operation:

Reagent	Plasmid DNA
DNA	~1 μg
10× Bsa I Buffer	2 μL
Bsa I	1 μL
Nuclease-free Water	To 20 μL

2. Gently stroke or flick the wall of the tube to mix well (never vortex) and then instantaneously centrifuge to collect the wall-mounted droplets.
3. Incubate at 37 °C for 60 min.
4. Incubation at 80°C for 20 min to inactivate the enzyme and stops the reaction (or EDTA at a final concentration of 50 mM can be added to stop the reaction).

II Double or multi-digestion:

1. The amount of each endonuclease is 1 μL and the reaction system is appropriately expanded as needed.

2. The sum of the volumes of all endonucleases should not exceed 1/10 of the total reaction system.

3. If the optimal reaction temperature of several endonucleases selected is different, the digestion should be started with the enzyme with the lowest optimal temperature, and then the enzyme with the higher optimal temperature should be added to incubate at a higher temperature.

Product description

1. **Enzyme activation unit (U) definition**：At 37 °C, the amount of enzyme required to completely cleave 1 μg of internal control DNA (containing a BsaI resection site) within 1 h is defined as 1 active unit.
2. **Stored solution composition:** 10 mM Tris-HCl(pH 7.4 @ 25℃), 200 mM NaCl, 1 mM DTT, 0.1 mM EDTA, 200 μg/mL Recombinant Albumin, 50% Glycerol。
3. **10× Bsa I buffer**： 500 mM Potassium Acetate, 200 mM Tris-acetate(pH 7.9 @ 25℃), 100 mM Magnesium Acetate, 1 mg/mL Recombinant Albumin。