

## Product Description

This product consists of 6 double-stranded DNA fragments: 2,000 bp, 1,000 bp, 750 bp, 500 bp, 250 bp, and 100 bp, mixed with loading dye. This product use for DNA molecular weight standard in agarose gel electrophoresis. The concentration of the 750 bp double-stranded DNA fragment in DL2000 DNA Ladder is 100 ng/5  $\mu$ L, showing a bright band, the DNA concentration of all other bands is 50 ng/5  $\mu$ L. This product is suitable for the analysis of DNA bands in agarose gel electrophoresis and is not recommended for polyacrylamide gel electrophoresis.

## Components

Components	BR1B202-01	BR1B202-02
DL2000 DNA Ladder*	1 $\times$ 250 $\mu$ L	1 $\times$ 500 $\mu$ L

\*This reagent already contains Tris-HCl, EDTA, Glycerol, Bromophenol Blue, Xylene Cyanol, etc.

## Storage

Store at -20 $\pm$ 5 $^{\circ}$ C.

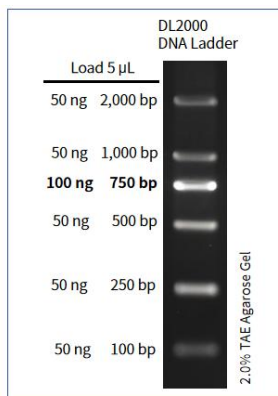
## Notes

- 1.For Research Use Only. Not for use in diagnostic procedures.
- 2.Please thaw and mix thoroughly before use. Avoid repeated freezing and thawing.
- 3.Please use high quality agarose, freshly prepared agarose gel, and replace the buffer in time to avoid affecting the electrophoresis results.
- 4.Gel selection: The concentration of the agarose gel is critical for the separation of DNA fragments. Higher concentration of agarose gel has better separation performance for short DNA fragments, while lower concentration of agarose gel facilitate separation of long DNA fragments. We recommend high-concentration gel (2% Agarose) for short fragment DNA, low-concentration gel (0.8% Agarose) for long fragment DNA.
- 5.For your safety and health, please wear a lab coat and disposable gloves when operating.

## Protocol

- 1.This product is ready-to-use. Load 5  $\mu$ L DNA Ladder on gel (We recommended to increase the loading amount if using wells).
- 2.The recommended electrophoresis condition is 1 $\times$ TAE buffer, 0.8-2.0% agarose gel, and a voltage of 4-10 V/cm between the positive and negative electrodes.
- 3.This product has been added with two electrophoresis indicators, Xylene Cyanol and Bromophenol Blue. When using a 1% agarose gel, the Xylene Cyanol band is located at approximately 2 kb, and the Bromophenol Blue band is located at approximately 400 bp.
- 4.Use UV transilluminator to detect DNA bands stained with nucleic acids stain dye.

The figure below shows the electrophoresis images of DNA Ladder.



## FAQ

1. Why are there no bands visible in my DNA ladder gel lane?

Insufficient loading amount: Appropriately increase the loading amount of DNA Ladder.

Excessive electrophoresis time: The DNA band may have run out of the gel, and the electrophoresis time needs to be shortened.

Tracer dye interference: The band may be covered by the dye. It is recommended to reduce the dye concentration or replace the dye.

No nucleic acid dye added: Ensure that an appropriate amount of nucleic acid dye has been added to the gel.

2. Why are the bands diffused or poorly separated?

DNA degradation: Ensure that the DNA sample is complete and avoid repeated freezing and thawing or nuclease contamination.

Too low voltage: Appropriately increase the electrophoresis voltage (5-8 V/cm).

Excessive loading amount: Reduce the loading amount to avoid too wide bands.

Improper gel concentration: Choose an appropriate agarose concentration according to the size of the DNA fragment (such as 1% Agarose for 1-10 kb fragments).

Poor gel quality: Use high-quality agarose and ensure it is fully dissolved.

3. Why is the size of the sample band inconsistent with that of the DNA Ladder band?

Differences in electrophoresis conditions: DNA migration is affected by factors such as structure (such as bound proteins), gel concentration, and buffer ionic strength, Improper dye ratio (such as insufficient EB dosage) will cause migration rate deviation. Sample problems: High salt concentration changes the electric field distribution, leading to abnormal migration, the loading volume differs greatly from that of the Marker.

4. Why are the small molecular bands of DNA Ladder weaker?

Nucleic acid dyes with positive charges migrate in the opposite direction to nucleic acids in the electric field. Small molecular DNA runs ahead and binds less dye, so it is weaker, which is a normal phenomenon.