

DM2000 DNA Marker

Cat. No.: D1521305 | Pack size: 500 µL; 5×500 µL | Storage: -20°C; avoid repeated freezing and thawing

Overview

DNA Marker consists of purified double-stranded DNA of various molecular weights and is a ready-to-use molecular weight standard. The molecular weight and concentration of samples can be estimated based on the position and brightness of bands after electrophoresis. This product is pre-mixed with loading buffer and can be directly loaded for electrophoresis. In addition to verification by agarose electrophoresis, most bands have undergone strict PAGE testing, with no issues such as "double bands" or multiple bands for DNA molecules of the same size observed in PAGE gels. When agarose gels contain macromolecular dyes (e.g., GelRed), adding an electrophoresis enhancer (main component: macromolecular nucleic acid dye) can effectively reduce band smearing of the Marker during electrophoresis. Aladdin GelRed-prestained series products are also available for selection.

Experimental Procedures

Add 5 µL of Marker to the agarose gel well (5 mm) for electrophoresis; the loading volume can be adjusted according to the well size.

Precautions

"Band smearing" is a common phenomenon during electrophoresis when macromolecular dyes (e.g., GelRed) are added to agarose gels. It often manifests as relatively bright low-molecular-weight bands, relatively dim high-molecular-weight bands, overall band sagging, and adhesion between bands. Our experiments reveal that the root cause of this phenomenon is insufficient dye concentration in the gel.

Unlike small-molecular-weight water-soluble dyes such as EB, GelRed has extremely low solubility in water, and the recommended working concentration of commercially available GelRed differs greatly from that of EB. Good electrophoresis results are generally obtained when a GelRed-containing gel is first used. However, if the gel is reused or soaked in electrophoresis buffer for too long, the dye in the gel leaches into the buffer, further reducing the dye concentration in the gel. Low-molecular-weight DNA bands enter the gel first and bind to the dye, leaving insufficient dye for subsequent high-molecular-weight DNA, resulting in "band smearing".

Two Approaches to Improve "Band Smearing" in Agarose Gel Electrophoresis (Containing Macromolecular Nucleic Acid Dyes)

Increase the relative dye concentration	Reduce dye loss
• Add electrophoresis enhancer (main component: nucleic acid dye) to the Marker in advance. • Increase the dye concentration in the gel (e.g., use 10000× dye at 5000×). • Reduce the loading volume of DNA Marker.	• Avoid repeated use of the gel (dye migrates upward out of the gel during electrophoresis). • Prevent prolonged soaking of the gel in electrophoresis buffer to avoid dye leaching.

Specifications

Item	Information
Synonyms	2 kb DNA Marker 2000 bp DNA Marker
Specifications & Purity	BioReagent, ready-to-use, Suitable for molecular biology, for NA electrophoresis, for PAGE, 100-2000 bp, 7 bands, 100 bp/ 250 bp/ 500 bp/ 750 bp (Reference Band)/ 1000 bp/ 1500 bp/ 2000 bp
Stability And Storage	Store at room temperature or 2-8°C short term (12 months). Store at -20°C long term (60 months). Avoid freeze/thaw cycle.
Storage	Store at -20°C, Avoid repeated freezing and thawing
Shipped In	• Ice chest + Ice pads. This product requires cold chain shipping. Ground and other economy services are not available.

Images

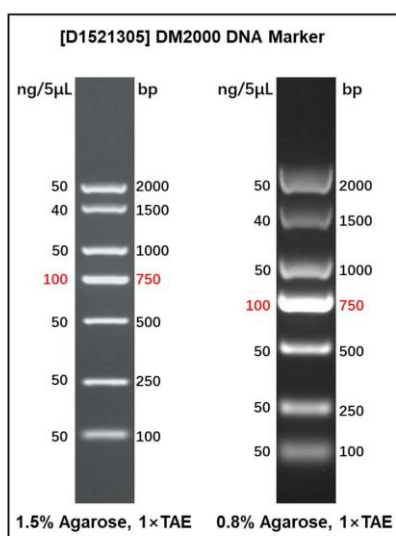


Figure 1. Gel image: DM2000 DNA Marker (D1521305)

Samples: Lysates at 5 µL per lane. DM2000 DNA Marker (D1521305) consists of 7 linear double-stranded DNA fragments, with sizes ranging from 100 bp to 2000 bp, specifically 100 bp, 250 bp, 500 bp, 750 bp, 1000 bp, 1500 bp, and 2000 bp. The 750 bp band is highlighted (with a higher intensity) compared to the other bands, facilitating observation after electrophoresis.

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