For research use only

ISO9001

# 50bp DNA Ladder Marker, Concentrated

| Product | Conc. | Cat. No. | Remarks |
|---|---|---|---|
| **50bp DNA Ladder Marker, Concentrated** | 250 µl (34 µg) | EBM-1004C | Concentrated type in TE buffer |

## Description

The 50bp DNA ladder marker is a mixture of specially designed double-stranded DNA fragments for determining the exact size of PCR products and engineered DNA fragments. The 50bp DNA ladder marker consists of 15 DNA fragments ranging in size from 50 to 1,500 bp. For easy size reference on the gel electrophoresis, the 500 bp and 1,000 bp are two to three times more brighter than the other bands. This ladder marker can be stained with ethidium bromide or any other known DNA staining methods.

The 34 µg of marker DNA is contained in 250 µl TE buffer. Before start, optimal concentration and loading volume should be empirically determined by users to get the best result. This product is supplied with 1 ml of 6x gel loading buffer to dilute marker DNA.

## Storage Buffer

- Marker DNA : 34 µg in 250 µl TE buffer
- 6x Gel loading buffer : 60 mM Tris-HCl, pH8.0, 6 mM EDTA, 30% Glycerol, 0.03% Bromophenol Blue, and 0.03% Xylene Cyanol

## Recommended Storage Condition

- -20℃ for 2 years
- 4℃ for 6 months
- Room temperature (20-25℃) for 2 months

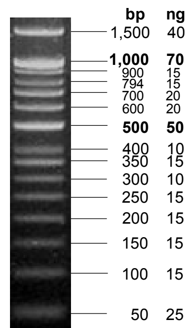
## Usage Information

- Recommended loading : 100-500 ng/well according to the gel size, well size, and running length.
- Range : 50 – 1,500 bp
- Number of bands : 15

## Cautions

- Always use the fresh tip to take out marker solution.
  (If you do not, trace amount of contaminated DNases from buffer tank may degrade marker DNA rapidly)
- Don't boil the product.
- Use appropriate % of gels for separation of 50 to 1,500 bp sizes
  (2 to 3% agarose gel is recommended)
- Confirm that the concentration of DNA staining dye is optimal before use.
  (Breakage or suboptimal concentration of ethidium bromide in gel is a main cause of low estimation of marker concentration or your DNA. 5 ng of DNA should be seen in normal condition)
- Loading volume and concentration should be optimized by gel size, well size, and running length.
- Low sized DNA bands can be gradually disappeared as running is progressing.
  (This is because some DNA is getting out from gel to buffer during horizontal electrophoresis, not because the DNA concentration is incorrect. This will be the same for your DNA)

**50bp DNA Ladder Marker**




**340 ng/lane** ;
2% agarose in 0.5x TBE, stained with ethidium bromide

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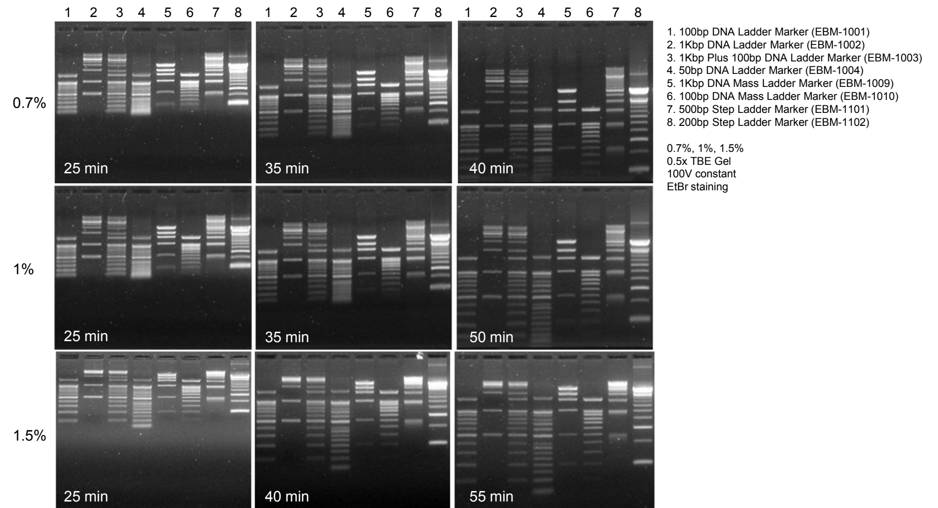
## Migration Patterns in Different % of Agarose Gels




## Recommended Gel Percentages for Separation of Linear DNA

| Agarose Gel, % | Range of Separation, bp | Polyacrylamide Gel, % | Range of Separation, bp |
|---|---|---|---|
| 0.5 | 1,000 - 30,000 | 3.5 | 100 - 1,000 |
| 0.7 | 800 - 12,000 | 5 | 80 - 500 |
| 1 | 500 - 10,000 | 8 | 60 - 400 |
| 1.2 | 400 - 7,000 | 12 | 40 - 200 |
| 1.4 | 200 - 4,000 | 20 | 5 - 100 |
| 2 | 50 - 2,000 | | |

## DNA Size Migration with Sample Loading Dyes

| Agarose Concentration, % | Xylene cyanol FF | Bromophenol blue | Orange G |
|---|---|---|---|
| 0.7 - 1.7 | ~4000 bp | ~300 bp | ~50 bp |
| 2.5 - 3.0 | ~800 bp | ~100 bp | ~30 bp |

## Composition of Gel Electrophoresis Buffers

| Buffer | Working Concentration | | Stock Concentration (per Liter) | | |
|---|---|---|---|---|---|
| Tris-acetate (TAE) | 1x | 20 mM Tris-acetate<br>1 mM EDTA | 20x | Tris base<br>Glacial acetic acid<br>0.5 M EDTA (pH8.0) | 96.9 g<br>22.84 ml<br>40 ml |
| Tris-borate (TBE) | 0.5x | 45 mM Tris-borate<br>1 mM EDTA | 10x | Tris base<br>Boric acid<br>0.5 M EDTA (pH8.0) | 108 g<br>55 g<br>40 ml |