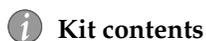




Contents

Catalog No.
10416014

Size
50 µg



Kit contents



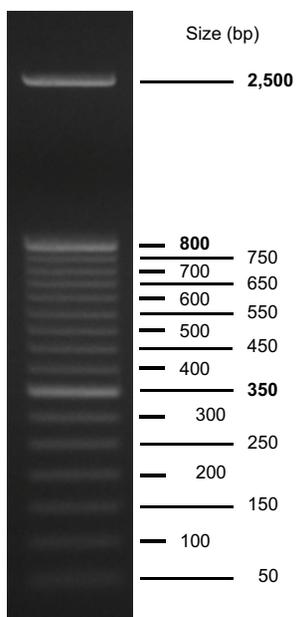
Storage

- Product is shipped at [ambient temperature](#).
- Store at -20°C.



Product description

- The Invitrogen™ 50 bp DNA Ladder is designed for sizing and quantification of double stranded DNA on 2% agarose gels.
- The 50 bp DNA Ladder consists of 17 individual chromatography-purified DNA fragments ranging in size from 50 bp to 2,500 bp.
- Three reference bands at 2,500 bp, 800 bp, and 350 bp are included for easy orientation.
- The ladder is supplied with 6X TrackIt™ Cyan/Orange Loading Buffer for sample DNA.



Important guidelines

- Do not heat the 50 bp DNA Ladder before loading.
- Load the same volume of DNA sample and DNA ladder.
- For quantification, adjust the concentration of the sample to equalize it approximately with the amount of DNA in the nearest band of the ladder.
- For DNA bands visualization with GelRed™ use gel staining after electrophoresis to avoid aberrant DNA migration.



Guidelines for agarose gel preparation

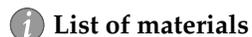
- Determine the required agarose concentration for your gel based on the size of DNA fragments to be separated.

Fragment size	Recommended agarose gel %	
	1X TAE	1X TBE
800–10,000	0.8	0.7
400–8,000	1.0	0.85
300–7,000	1.2	1.0

- Prepare agarose in a flask with 2-4 times the volume of the agarose solution.
- Exercise caution when handling microwaved agarose. The solution may become superheated and foam over when agitated.
- Refer to the product insert for [UltraPure™ Agarose](#) for detailed instructions on agarose preparation.



Required materials



List of materials

- Visit our [product pages](#) for additional information and protocols.
- Go online to view related [DNA ladders and markers](#).
- For support, visit thermofisher.com/support.



Online resources



Guidelines for staining gels

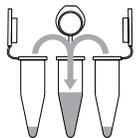
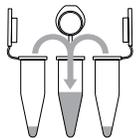


Troubleshooting



Limited product warranty and disclaimer details

Prepare DNA ladders and samples for electrophoresis

Step	Action												
<p>1</p> 	<p>Cast agarose gel</p> <ol style="list-style-type: none"> Prepare agarose solution (w/v) for the gel percentage appropriate for separating your DNA fragments. Microwave agarose solution. Cast agarose gel. 												
<p>2</p> 	<p>Prepare DNA ladder</p> <ol style="list-style-type: none"> Thaw, mix and briefly centrifuge each component before use. Add the following components to prepare enough ladder for a single 5 mm well. <table border="1"> <thead> <tr> <th>Component</th> <th>Volume</th> </tr> </thead> <tbody> <tr> <td>DNA ladder ^[1]</td> <td>1 μL (500 ng)</td> </tr> <tr> <td>6X TrackIt™ Cyan/Orange Loading Buffer</td> <td>1 μL</td> </tr> <tr> <td>Water, nuclease free</td> <td>4 μL</td> </tr> </tbody> </table> <p>[1] Scale components up or down depending upon width of wells. Modify volume by 0.2 μL (0.1 μg of DNA) for each 1 mm of width.</p> <ol style="list-style-type: none"> Mix gently. Load DNA ladder on gel. 	Component	Volume	DNA ladder ^[1]	1 μ L (500 ng)	6X TrackIt™ Cyan/Orange Loading Buffer	1 μ L	Water, nuclease free	4 μ L				
Component	Volume												
DNA ladder ^[1]	1 μ L (500 ng)												
6X TrackIt™ Cyan/Orange Loading Buffer	1 μ L												
Water, nuclease free	4 μ L												
<p>3</p> 	<p>Prepare samples</p> <ol style="list-style-type: none"> Dilute your sample with 6X TrackIt™ Cyan/Orange Loading Buffer (Cat. no. 10482028): mix 1 volume of loading dye with 5 volumes of the DNA samples. Mix gently. Load DNA ladder on gel. 												
<p>4</p> 	<p>Perform electrophoresis</p> <ol style="list-style-type: none"> Add appropriate amount of UltraPure TAE or UltraPure TBE buffer to chamber. Set appropriate voltage and perform electrophoresis of samples. <table border="1"> <thead> <tr> <th>DNA size</th> <th>Voltage</th> <th>Buffer</th> </tr> </thead> <tbody> <tr> <td><1 kb</td> <td>5–10 V/cm</td> <td>TBE</td> </tr> <tr> <td>1–5 kb</td> <td>4–10 V/cm</td> <td>TAE or TBE</td> </tr> <tr> <td>>5 kb</td> <td>1–3 V/cm</td> <td>TAE</td> </tr> </tbody> </table>	DNA size	Voltage	Buffer	<1 kb	5–10 V/cm	TBE	1–5 kb	4–10 V/cm	TAE or TBE	>5 kb	1–3 V/cm	TAE
DNA size	Voltage	Buffer											
<1 kb	5–10 V/cm	TBE											
1–5 kb	4–10 V/cm	TAE or TBE											
>5 kb	1–3 V/cm	TAE											
<p>5</p> 	<p>Stain agarose gel</p> <ol style="list-style-type: none"> Incubate gel in staining buffer for 30 minutes. Visualize DNA ladder and samples. <ul style="list-style-type: none"> Use UV transilluminator to detect DNA bands stained with ethidium bromide. Use blue light transilluminator to detect DNA bands stained with SYBR™ stains. 												