ReadyAgarose™ Gels
Instruction Manual

Catalog
161-3000

Bio-Rad Laboratories, Inc.
2000 Alfred Nobel Dr., Hercules, CA 94547 USA
510-741-1000

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BIO-RAD

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Section 1
General Information

1.1 ReadyAgarose Gel Specifications

Gel material	0.8%, 1% Gels: Certified™ molecular biology agarose 3% Gels: Certified low range ultra agarose
Gel dimensions (W x L)	Mini gel: 6.6 cm x 10 cm; wide mini gel: 15.1 cm x 10 cm; 96 Plus gel: 15.1 cm x 10 cm
Gel thickness	5.5 mm

Optimal resolution range

Gel Percentage	Mini and Wide Mini Gels	96 Plus Gels
0.8%	300–20,000 bp	N/A
1%	200–10,000 bp	500–10,000 bp
3%	20–2,000 bp	20–2,000 bp

Tray dimensions	Mini tray: 7 x 10 cm; wide mini tray: 15.6 x 10 cm; 96 Plus tray: 15.6 x 10 cm
Tray material	UV-transparent acrylic
Packaging tray lid material	PETG
Storage conditions	Store label side up at 4–22°C; DO NOT FREEZE.

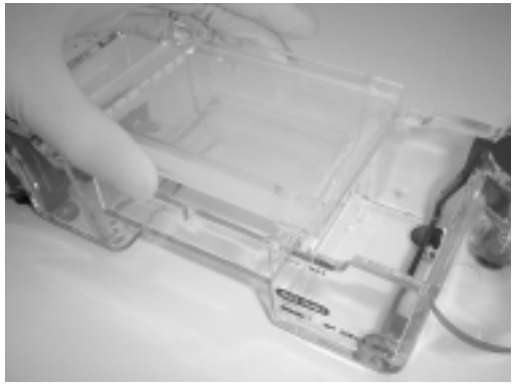
1.2 ReadyAgarose Comb Configurations

Gel Type	Comb	Load Volume	Comments
Mini	8-well	20 µl	
Mini	12-well	10 µl	
Wide mini	20-well	20 µl	
Wide mini	32-well	15 µl	Multichannel pipet compatible, 12 µl
Wide mini	2 x 32-well	15 µl	Multichannel pipet compatible, 12 µl
96 Plus	4 x 26-well	15 µl	Multichannel pipet compatible, 12 µl

Section 2
Basic Operation

2.1 Setting Up and Running ReadyAgarose Gels

1. Each ReadyAgarose gel is packaged individually in a foil bag. Open the bag by pulling at the tear notch. Carefully remove the gel from the foil bag. Remove the protective gel tray cover.



2. Place the gel in the recommended Bio-Rad Sub-Cell® GT cell. The two auto-lock tabs on the tray fit into the grooves on the sides of the Bio-Rad Sub-Cell GT, which correctly positions the tray. Make sure the wells are oriented toward the cathode (black negative electrode). ReadyAgarose gels are designed to work with most subcells. See section 2.2 if you need to remove the auto-lock tabs and section 3.3 for a list of compatible subcells.

3. Fill the Sub-Cell GT with electrophoresis buffer so that 2–3 mm of buffer is above the gel. For best results, do not fill buffer above the sides of the tray. For ReadyAgarose gels containing ethidium bromide, additional ethidium bromide can be added to the running buffer at a concentration of 0.5 µg/ml to avoid faint bands near the bottom of the gel. To ensure 2–3 mm of buffer over the gel when using a Bio-Rad Sub-Cell GT, use 210 ml buffer with the Mini-Sub® cell GT and 550 ml with the wide Mini-Sub cell GT.

4. Load samples and standards. For the ReadyAgarose 96 Plus gels, load the DNA standard or marker in the outer two wells (labeled “M” in the top row).

5. Place the lid on the Sub-Cell GT, aligning the color-coded banana plugs and jacks. Set voltage conditions and start the run. To obtain the best results with

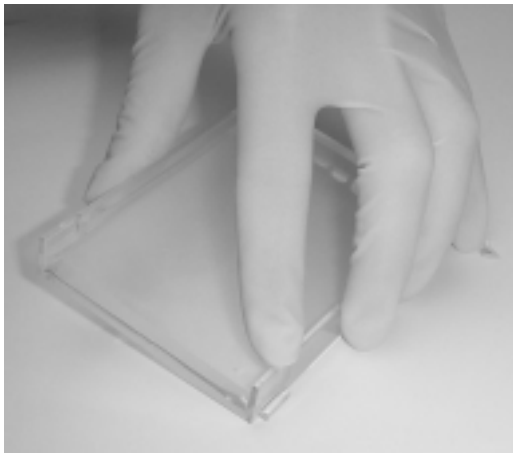
ReadyAgarose gels, a voltage gradient of 3–6.5 V/cm (measured as the distance between the electrodes) should be used (A setting of 75 V for the Mini-Sub cell GT and wide Mini-Sub cell GT creates a voltage gradient of 5 V/cm).

6. After electrophoresis is complete, turn off the power supply and disconnect the electrical leads. Remove the gel from the Sub-Cell.

7. For ReadyAgarose gels without ethidium bromide, a gel stain is required to visualize the nucleic acids in the gel. We suggest using the following method for staining with ethidium bromide (for staining with other fluorescent stains or silver, follow the manufacturer’s instructions). Transfer the agarose gel to a staining dish with 0.5 µg/ml ethidium bromide. Stain the gel for 15–30 min. Remove excess stain from the gel by placing it in water for 10–30 min.

8. ReadyAgarose gels can be viewed by placing the UV-transparent tray containing the agarose gel directly on a UV transilluminator. Alternatively, the agarose gel can be removed from the tray before UV visualization for maximum sensitivity.

2.2 Removing the Auto-Lock Tabs



1. To use ReadyAgarose gels with non-Bio-Rad Sub-Cell GT cells, one or both of the auto-lock tabs may need to be removed for the tray to fit into these cells.
2. To remove the auto-lock tabs, place the “gel” (tray with gel) at approximately a 45º angle, with one length of the tray touching the bench. Place a finger over the auto-lock tab and press down to break the tab off of the tray as shown in the figure above.

Section 3
Electrophoresis Information

3.1 Electrophoresis Buffers

DNA agarose electrophoresis is usually conducted with either Tris-acetate-EDTA (TAE) or Tris-borate-EDTA (TBE) buffer. While TAE provides faster electrophoretic migration of linear DNA, TBE buffers have a stronger buffering capacity for longer or higher voltage electrophoresis runs.

Buffer	Formulation
1x TAE buffer	40 mM Tris, pH 7.6, 20 mM acetic acid, 1 mM EDTA
1x TBE buffer	89 mM Tris, pH 7.6, 89 mM boric acid, 2 mM EDTA
5x Nucleic acid sample buffer	50 mM Tris, 25% glycerol, 5 mM EDTA, 0.2% Bromophenol Blue, 0.2% Xylene Cyanole FF

3.2 Relative Sample Migration Rates

Voltage	Voltage Gradient	Bromophenol Blue Migration Rate
30 V	2 V/cm	1.2 cm/hr
45 V	3 V/cm	1.9 cm/hr
60 V	4 V/cm	2.8 cm/hr
75 V	5 V/cm	3.8 cm/hr
90 V	6 V/cm	4.9 cm/hr
105 V	7 V/cm	5.5 cm/hr

3.3 Loading Dye Migration Characteristics*

Agarose Concentration	Xylene Cyanole	Bromophenol Blue
0.8%	7,000 bp	800 bp
1%	6,000 bp	700 bp
3%	300 bp	50 bp

*Approximate

3.4 Submerged Horizontal Electrophoresis Subcell Compatibility

ReadyAgarose gels are designed to fit most subcells. ReadyAgarose mini gels will fit subcells that are 7.1 cm wide (inside dimension). ReadyAgarose wide mini gels will fit subcells that are 15.6 cm wide (inside dimension). ReadyAgarose gels are compatible with the subcells listed below.

Company	ReadyAgarose Mini Gel	ReadyAgarose Wide Mini Gel and ReadyAgarose 96 Plus Gel
Bio-Rad	Mini Sub-Cell GT	Wide Mini-Sub cell GT
Life Technologies	Horizon 11-14, Horizon 20-25, Model H5, Sunrise 12-16	Model H4, Sunrise 24-24
Owl Separations	EasyCast Minigel B1A, B1, B2, Buffer Puffer	Centipede wide format, Gator large format A2, Gator large format A3
E-C Apparatus	Mini Sub	Midi Sub, Maxi Sub
C.B.S. Scientific	MGU-202T, MGU-252T, MGU-402T	Horizontal gel system
Amersham	Hoefer HE33 mini, Hoefer HE99X	GNA 200
Stratagene	Joule Box Horizontal elec. app.	Horizontal elec. app.

Section 4
Troubleshooting

Problem	Possible Cause	Solution
Curved bands, smiles	Sample overload	Reduce total sample volume
	Glycerol concentration is too high	Reduce final glycerol concentration to ~ 5%
Band smearing	Excessive voltage and heating	1. Reduce voltage
		2. Check buffer composition
	Sample spilled out of well	1. Apply sample carefully
		2. Ensure correct loading dye concentration is used
	Salt concentration in sample too high	Reduce salt concentration
Slanted lanes	Subcell not level	Level subcell or place on leveling table
Broad distorted bands	Sample concentration too high	Reduce total concentration of nucleic acid in the sample

Section 5
Ordering Information

ReadyAgarose Mini Gels

TBE Mini Gels	8-Well	12-Well
0.8%	161-3001	161-3007
0.8% plus EtBr*	161-3002	161-3008
1%	161-3003	161-3009
1% plus EtBr	161-3004	161-3010
3%	161-3005	161-3011
3% plus EtBr	161-3006	161-3012
TAE Mini Gels	**8-Well**	**12-Well**
0.8%	161-3013	161-3019
0.8% plus EtBr	161-3014	161-3020
1%	161-3015	161-3021
1% plus EtBr	161-3016	161-3022
3%	161-3017	161-3023
3% plus EtBr	161-3018	161-3024
1%	161-3057 (2 X 8-well)	

ReadyAgarose Wide Mini Gels

TBE Wide Mini Gels	20-Well	32-Well	2 x 32-Well
0.8%	161-3025	161-3031	
0.8% plus EtBr	161-3026	161-3032	
1%	161-3027	161-3033	161-3037
1% plus EtBr	161-3028	161-3034	161-3038
3%	161-3029	161-3035	161-3039
3% plus EtBr	161-3030	161-3036	161-3040
TAE Wide Mini Gels	**20-Well**	**32-Well**	**2 x 32-Well**
0.8%	161-3041	161-3047	
0.8% plus EtBr	161-3042	161-3048	
1%	161-3043	161-3049	161-3053
1% plus EtBr	161-3044	161-3050	161-3054
3%	161-3045	161-3051	161-3055
3% plus EtBr	161-3046	161-3052	161-3056

ReadyAgarose 96 Plus Gels

96 Plus Gels	TBE	TAE
1% plus EtBr	161-3060	161-3063
3% plus EtBr	161-3062	161-3065

*Ethidium bromide

ReadySub-Cell™ Systems

170-4487	Mini ReadySub-Cell GT System, for ReadyAgarose gels, includes subcell unit only
170-4489	Wide Mini ReadySub-Cell GT System, for ReadyAgarose gels, includes subcell unit only

Electrophoresis Buffers and Stains

161-0743	50x Tris/Acetic Acid/EDTA, 1 L
161-0773	50x Tris/Acetic Acid/EDTA, 5 L cube
161-0733	10x Tris/Boric Acid/EDTA, 1 L
161-0770	10x Tris/Boric Acid/EDTA, 5 L cube
161-0774	20x SSC, 1 L
161-0775	20x SSC, 5 L cube
161-0433	Ethidium Bromide Solution, 10 ml, 10 mg/ml
161-0430	Ethidium Bromide Tablets, 10 x 11 mg

Nucleic Acid Standards

170-8361	EZ Load™ HT Molecular Marker, 100 bp–2 kb
170-8362	EZ Load HT Molecular Marker, 500 bp–10 kb
170-8351	20 bp EZ Load Molecular Ruler
170-8352	100 bp EZ Load Molecular Ruler
170-8353	100 bp PCR EZ Load Molecular Ruler
170-8200	AmpliSize® Molecular Ruler
170-8354	500 bp EZ Load Molecular Ruler
170-8355	1.0 kb EZ Load Molecular Ruler
170-8205	2.5 bp Molecular Ruler