

# Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis System

**Instructions for Use** 





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#### 6. Maintenance and Cleaning

Disconnect the power supply from the Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis Tank before cleaning. The inside of tank, tray, and combs may be cleaned with a suitable laboratory detergent and water. Immediately dry all components with soft cloth or tissue. The use of organic solvents such as acetone or ethanol must be voided.

## 7. System and Parts

Individual parts of the Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis System can be ordered (Table 2).

| Table 2: The Worgan SSP Maxi Get Electrophoresis System and parts | Table 2: The Morgan <sup>TM</sup> | <sup>1</sup> SSP Maxi Gel Eleo | ctrophoresis System an | d parts. |
|---|-----------------------------------|--------------------------------|------------------------|----------|
|---|-----------------------------------|--------------------------------|------------------------|----------|

| Catalog No. | Catalog No. Product Name                                 |         |
|-------------|--|---------|
| 38371       | Morgan <sup>TM</sup> SSP Maxi Gel Electrophoresis System | 1 set   |
| 38372       | Morgan <sup>TM</sup> SSP Maxi Gel Electrophoresis Tank   | 1 set   |
| 38373       | Morgan <sup>TM</sup> SSP Maxi Gel Casting Assembly Unit  | 1 set   |
| 38374       | Morgan <sup>TM</sup> SSP Maxi Gel Tray                   | 1 piece |
| 38375       | Maxi Combs (51 wells, 1mm thick)                         | 4 piece |



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#### 4. Warning and Safety

- 4.1 HIGH VOLTAGE! DANGER! The MorganTM SSP Maxi Gel Electrophoresis System is powered with high voltage power supply. It should be always operated with extreme caution.
- 4.2 Always wear protective suit and gloves in the laboratory.
- 4.3 Always turn off the power supply before opening the apparatus.
- 4.4 Never operate damaged or leaking equipment.
- 4.5 The MorganTM SSP Maxi Gel Electrophoresis System is intended for research use only.

## 5. Questions and Trouble Shooting

- **Q1.** The gel is broken when removing the Morgan<sup>TM</sup> SSP Maxi Gel Tray from the assembly casting unit. What do you suggest?
- A1. Gently release the sides of the gel from the rubber pads with a pipette tip before loosening the casting dam.
- Q2. Why does electrophoresis take much longer than the expected run time?
- A2. Check the running buffer and make sure it was correctly prepared and diluted to appropriate concentration. Incorrect salt concentration of the buffer or evaporation of water may produce higher current levels and result in a lower voltage gradient and longer run times.
- Q3. Why do I have trouble loading my samples into a well?
- A3. Insufficient sample buffer density may cause the diffusion of sample during loading.
- Q4. After the power is turned on, the indicating dye does not migrate into the gel. What would solve this?
- A4. Make sure the power supply and the leads are connected correctly.
- Q5. After staining the gel, no samples bands were shown. What can be wrong?
- A5. Insufficient ethidium bromide concentration in the gel or inappropriate staining procedure may be the cause. If the sample is still not seen by lengthening the staining procedure, there may not be enough DNA in the sample.

#### 1. General Information

#### 1.1 Components of Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis System

| Morgan <sup>TM</sup> SSP Maxi Gel Electrophoresis System (Fig. 1) | <u>Quantity</u> |
|---|-----------------|
| Morgan <sup>TM</sup> SSP Maxi Gel Electrophoresis Tank (1)        | 1 set           |
| Morgan <sup>TM</sup> SSP Maxi Gel Casting Assembly Unit (2)       | 1 set           |
| Morgan <sup>TM</sup> SSP Maxi Gel Tray (3)                        | 1 piece         |
| Maxi Combs (4)  | 4 pieces        |
| Wires (5)   | 1 piece         |

#### Figure 1: Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis System



#### **1.2 Introduction**

Texas BioGene's Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis System is designed for fast DNA and PCR amplicons separation in an ultra-compact, horizontal format. The system includes the: 1) Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis Tank, 2) Morgan<sup>TM</sup> SSP Maxi Gel Casting Assembly Unit, 3) Morgan<sup>TM</sup> SSP Maxi Gel Tray and 4) Maxi combs. Power supply is not included in this system.

The Morgan<sup>TM</sup> SSP Maxi Gel Casting Assembly Unit provides a horizontal platform for gel casting. The Morgan<sup>TM</sup> SSP Maxi Gel Tray is UV-transmissible and allows casting of a gel with 85 x 163 mm<sup>2</sup> in size. The combs are specially designed to allow easy-loading of samples into the wells. Up to 204 PCR reactions can be analyzed in few minutes with Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis System.

#### 2. Casting Agarose Gels

- 2.1 Set up the Morgan<sup>TM</sup> SSP Maxi Gel Casting Assembly Unit with reference to Figure 2.
- 2.2 Level the Platform with the Leveling Screws and Bubble Level.

Figure 2: Morgan<sup>TM</sup> SSP Maxi Gel Casting Assembly Unit



- 2.3 Place the Morgan<sup>TM</sup> SSP Maxi Gel Tray into the Morgan<sup>TM</sup> SSP Maxi Gel Casting Assembly Unit. Turn the Locking Screw to seal the sides of the Morgan<sup>TM</sup> SSP Maxi Gel Tray.
- 2.4 About 140 mL agarose gel solution is required for making a piece of gel. Gels with various agarose percentages can be prepared according to Table 1.
- 2.5 Allow the agarose gel solution to cool to around 70°C before pouring. Pour the gel solution into the gel tray and then place the combs.
- 2.6 Allow the gel to solidify at room temperature. The gel will appear opaque when it is completely solidified

- 2.7 After the gel is solidified, remove the combs by gently pulling upwards.
- 2.8 Gently remove the Morgan<sup>™</sup> SSP Maxi Gel Tray from the Morgan<sup>™</sup> SSP Maxi Gel Casting Assembly Unit.

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|-----------------------------------|-----------------------|-------------|-------------|--|--|
| Gel (%)                           | Separation Range (bp) | Agarose (g) | Buffer (mL) |  |  |
| 0.5                               | 1,000 - 20,000        | 0.7         | 140         |  |  |
| 1.0                               | 500-6,000             | 1.4         | 140         |  |  |
| 1.5                               | 200-3,000             | 2.1         | 140         |  |  |
| 2.0                               | 100-2,000             | 2.8         | 140         |  |  |

#### Table 1: Agarose gel preparation

#### 3. Sample Loading and Running Gels

- 3.1 Place 300 mL running buffer in the Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis Tank.
- 3.2 DNA migrates from the cathode (-) to the anode (+). Orient the agarose gel in the Morgan<sup>TM</sup> SSP Maxi Gel Electrophoresis Tank so that the wells are at the side of the cathode.
- 3.3 Check all wells for air bubbles and remove with a pipette.
- 3.4 Load the marker and samples into the wells. Up to 15  $\mu L$  of sample can be loaded into each well.
- 3.5 Put the tank lid in place and correctly connect the power supply cables.
- 3.6 Select the optimal voltage and time, turn on the power supply and begin electrophoresis.
- 3.7 Turn off the power supply and remove the gel from the tank when electrophoresis is finished.