



Power Matrix Slides

- User's Guide -

Product description

PowerMatrix Slides are designed to immobilize nucleotides for microarray applications. The slides are coated with proprietary polymer materials, which create a three dimensional matrix-like binding surface. This unique substrate contains multi-functional binding groups allowing more efficient immobilization, better uniformity and spot morphology, and higher reproducibility.

Either side of a slide may be used. If the slides come with bar-code labels, please use the side with bar-code labels.

Storage and handling

Handle with care. Use the slides in a clean environment. Avoid direct contact with the slide surface. Any foreign material may affect the quality of arrays to be printed on the slides.

Store desiccated at room temperature.

Safety and warning

For research only. Not recommended for clinical diagnostic uses unless otherwise instructed. Do not use on human or animals.

Support

For support, please call 1.877.316.7308 or 408.737.1702, or email your questions to support@fullmoonbiosystems.com.

Materials supplied by users

- 2x Oligo Printing Buffer (Full Moon BioSystems, Inc., P/N: SPB 01, 25mL), or 150 mM Sodium Phosphate, pH: 8.5 – 9.5.
- 65 – 75% Humidity chamber, commercially available or homemade. (If you do not already have a humidity chamber, you can construct one with materials readily available in your lab. Locate a container with two shelves and a plastic or glass tray. Please make sure that the container can be tightly sealed when closed. In the tray, add 100g solid sodium chloride and 40 – 50 mL water. Place the saturated sodium chloride mixture in the tray at the bottom of a container. This forms a chamber with relative humidity of 65 – 75 %.)
- Incubator with 100% relative humidity at 42 °C, commercially available or homemade. (A homemade incubator can be put together in your lab. Add 50 mL water in shallow plastic tray. Place the tray at the bottom of a container with tight seals. The amount of water may vary dependent upon the size of the container. Place the unit into an oven or incubator set at 42 °C. This forms an environment with 100% relative humidity.)
- Slide racks
- Staining jars or containers
- Deionized water
- Nuclease free water
- Compressed nitrogen or centrifuge
- Speed Vac
- Orbital shaker
- Heat block at 90 – 95 °C
- Ice
- Coverslips
- Post-printing/Pre-hybridization treatment solution
 - 2x SSC/0.2% SDS/0.1% BSA, preheated to 55 °C
- FMB Oligo Hybridization Buffer (Full Moon BioSystems, Inc., P/N: FMB HBO 01, 500µL)
- Post-hybridization processing
 - Wash Solution 1: 0.2x SSC/0.2%SDS, pre-heated to 55 °C
 - Wash Solution 2: 0.2x SSC, pre-heated to 55 °C

Protocol

1. Printing targets

- a. Dissolve nucleotides to a final concentration of 0.5 – 1.0 $\mu\text{g}/\mu\text{L}$ in 1x Oligo Printing Buffer (Full Moon BioSystems, Inc., P/N: SPB 01. Dilute 2x Oligo Printing Buffer 1:1 with Dnase-free water.). Alternatively, 150mM Sodium Phosphate (pH: 8.5~9.5) may be used.
- b. Transfer the targets to a 96 or 384 microplate with $\sim 20 \mu\text{L}/\text{well}$.
- c. Gently tap the plate to bring liquids to the bottom of wells.
- d. Set up array spotter and print slides according to manufacturer's protocol.

2. Post-printing treatment

- a. Transfer the slides to a slide rack.
- b. Incubate the slides in a chamber with 65 – 75% relative humidity for 10-12 hours. (Please refer to page 3 for construction of a homemade humidity chamber.)
- c. Remove slides from the humidity chamber; allow the slides to dry at room temperature for 20 to 30 minutes.

Note: If you plan to store the printed arrays for future use, stop here and follow the instructions to prepare the slides for storage.

Storage of printed slides: Place the printed slides in a clean slide box. Insert the slide box into a plastic bag and seal the bag securely to prevent moisture. The slides may be store at 2 – 8 $^{\circ}\text{C}$ for 3 to 6 months.

3. Pre-hybridization treatment

- a. Prepare pre-treatment solution (2x SSC/0.2% SDS/0.1% BSA), and pre-heat it to 55 $^{\circ}\text{C}$.
- b. Place the slides in a staining jar set on an orbital shaker. Immerse the slides with the pre-treatment solution. Shake gently for 20 to 30 minutes at room temperature.
- c. Remove the slides from the pre-treatment solution.

- d. Rinse the slides **thoroughly** with running deionized water or by immersing in fresh deionized water five times.
- e. Dry the slides by centrifugation or blow dry using a gentle stream of compressed nitrogen (approx. 20 – 30 psi).

4. Preparation of probes for hybridization

- a. We recommend using 35 μL of probe mixture for each hybridization reaction on a slide with a full-size coverslip (60mm x 24mm). The amount of mixture may vary depending on the size of the printed area and coverslip.
- b. Spin dry fluorescently labeled probes in a Speed Vac.
- c. For each reaction, re-suspend the probes in 3 μL of nuclease free water.
- d. Quickly vortex and centrifuge for 30 seconds.
- e. Denature the probes on a heat-block at 95°C for 5 minutes.
- f. Remove the probe mixture from the heat-block and immediately place it on ice.
- g. Add 32 μL of chilled Oligo Hybridization Buffer (Full Moon BioSystems, Inc., P/N: FMB HBO 01) to the probes.
- h. Preserve the mixture on ice.

5. Hybridization

- a. Quickly vortex the probe mixture before applying it to the printed slides.
- b. Place 35 μL of the probe mixture on each slide.
- c. Carefully place a hybridization coverslip on top of the arrays. Use extra care – avoid air bubble formation under the cover.
- d. Incubate the slides in a humidified chamber with 100% humidity, at 42 °C or the temperature suitable for your samples for 12 – 14 hours.

6. Post-hybridization processing

Note: Do not allow the slides to dry between washes.

- a. Preheat Wash Solution 1 (0.2x SSC, 0.2% SDS) and Wash Solution 2 (0.2x SSC) to 55 °C.
- b. Remove hybridization covers by quickly rinsing the slides under running deionized water. Transfer the slides to a slide rack.

- c. Place the slides in a staining jar or container set on a orbital shaker. Immerse the slides in Wash Solution 1. Shake for 20 minutes at room temperature.
- d. Transfer the slides to a second staining dish with Wash Solution 2. Gently dip the slides up and down for one minute at room temperature. Repeat twice. Be sure to use **fresh** wash solution each time.
- e. Rinse the slides three to five times with fresh deionized water at room temperature.

Note: It is crucial to remove all SDS from slide surface. Any SDS residue may cause high background fluorescence. Please be sure to wash the slides thoroughly.

- f. Dry the slides immediately with a gentle stream of compressed nitrogen (approx. 20 – 30 psi) or by centrifugation.
- g. The slides are now ready for scanning.