Millicell®-24 and Millicell-96

24-Well and 96-Well Cell Culture Devices

PR02400, Rev. B , 06/08

Introduction

The Millicell 24- and Millicell 96-well cell culture devices are designed to support cell attachment, growth and differentiation for many cell applications, including transport and migration. For example, after the formation of a differentiated cell monolayer, the device can then be used to measure the rate of known and unknown drug transport across the cell barrier. All procedures are designed to be carried out in a single device and can be performed using automation for cell seeding, cell feeding, washing and experimental procedures. Both the Millicell-24 and Millicell-96 devices allow the cells to be visualized during the feeding and experimental stages.

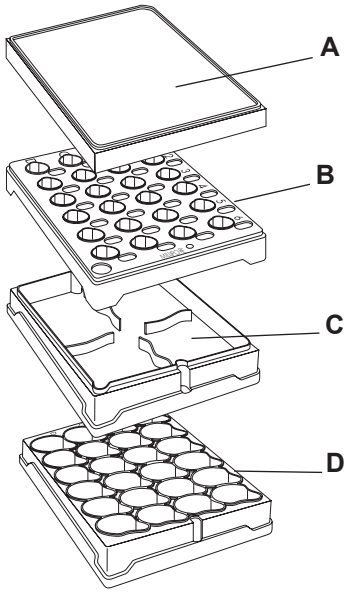
Device Storage

Store at room temperature. See expiration date on package label.

Recommended Seeding Densities

The Millicell devices are designed to support suspension and adherent cell growth and differentiation. It is highly recommended to optimize the seeding density of the applicable cell line by exploring a range of seeding densities. Seeding densities on both devices should be similar in terms of cell count per surface area. For example, the seeding density of a 21-day culture of Caco-2 cells is approximately 80,000–86,000 cells per cm^2 of membrane. This works out to 60,000 cells/well in the Millicell-24 device (using 400 µL/well) and 9,000 cells/well in the Millicell-96 device (using 75 µL/well). For a 3-day culture of MDCK, the seeding density is approximately 600,000–700,000 cells per cm^2 of membrane.

Millicell-24 Device Components



A — Lid

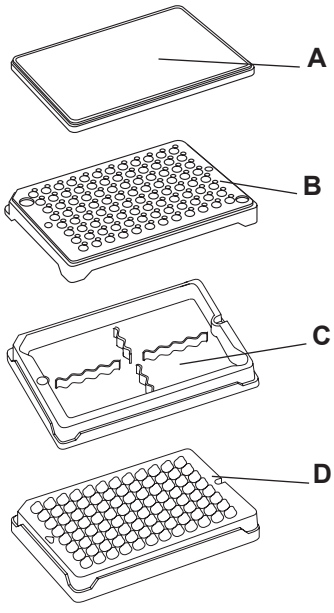
B — 24-well cell culture plate

C — Single-well feeder tray

D — 24-well receiver plate

See Product Ordering Information section for available component configurations.

Millicell-96 Device Components



A — Lid

B — 96-well cell culture plate

C — Single-well feeder tray

D — 96-well receiver plate

See Product Ordering Information section for available component configurations.

Seeding and Growing Cells in Millicell-24 or Millicell-96 Cell Culture Devices

NOTE: All steps must be performed using standard cell culture aseptic technique.

1. After counting the cells, determine the appropriate seeding densities for the filter plate wells. See “Recommended Seeding Densities” above.
2. Remove the lid from the assembly and add cell solution to filter plate wells while resting the tip of the aspirator above the apical assist feature inside each well.

   For Millicell-24 devices: Add 400 µL of cell solution per well.

   For Millicell-96 devices: Add 75 µL of cell solution per well.
3. Add cell growth medium to the single-well feeder tray or receiver plate using the basolateral access hole at the corner of the filter plate.

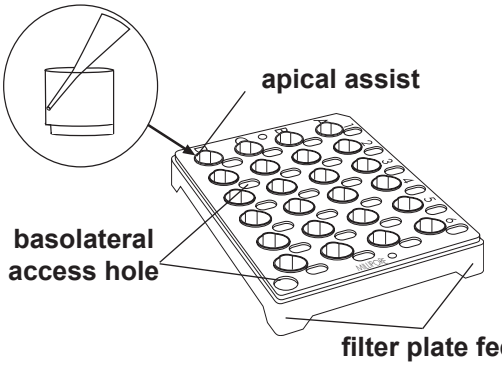
   For single-well feeder trays: Add 22–28 mL of cell growth medium.

   For 24-well receiver plates: Add 800 µL of cell growth medium.

   For 96-well receiver plates: Add 250 µL of cell growth medium.
4. Incubate at 37 °C, 5–6% CO_2, 95% humidity.

   NOTE: Use care to avoid tilting the plate and spilling the media when moving the plate in and out of the incubator.

Millicell-24 plates have 24 wells, as shown below. Millicell-96 plates have 96 wells.



Feeding Cells

When feeding cells, aspirating the volume in the single-well feeder tray using the basolateral access hole in the filter plate is recommended. Then, aspirate the medium from the filter plate wells while resting the tip of the aspirator above the apical assist feature inside each well. **Use care to avoid contacting the filter inside the wells when removing or adding medium.** Add back growth medium to the filter plate wells first (at the apical assist). Then, add cell medium to the single-well feeder tray using the basolateral access hole.

It is also possible to feed the plates by separating the filter and receiver/feeder plates and utilizing the filter plate “feet.” This feature allows you to place the filter plate and lid down on a solid sterile surface without any contamination. When using the Millicell-24 plate, allow the plate assembly to rest for 15 seconds after removing it from the incubator to minimize media movement in the single-well feeder tray.

General Specifications

	24-Well Plate	96-Well Plate
Materials of Construction		
Plate, tray, and lid:	Clear polystyrene	Clear polystyrene
Membrane:	Polycarbonate or PET	Polycarbonate or PET
Growth/Transport Assembly		
Length × width:	128 mm × 85 mm	128 mm × 85 mm
Height of plate assembly:	20.32 mm	20.32 mm
Active membrane area:	0.7 cm^2	0.11 cm^2
Capacity		
Filter wells:	Max. 800 µL	Max. 200 µL
24-well receiver plate:	Max. 1100 µL	
96-well receiver plate:		Max. 400 µL
Typical Operating Volume		
Filter wells:	400 µL	75 µL
24-well receiver plate:	800 µL	
96-well receiver plate:		250 µL
Single-well feeder tray:	22–28 mL	24–32 mL

Properties

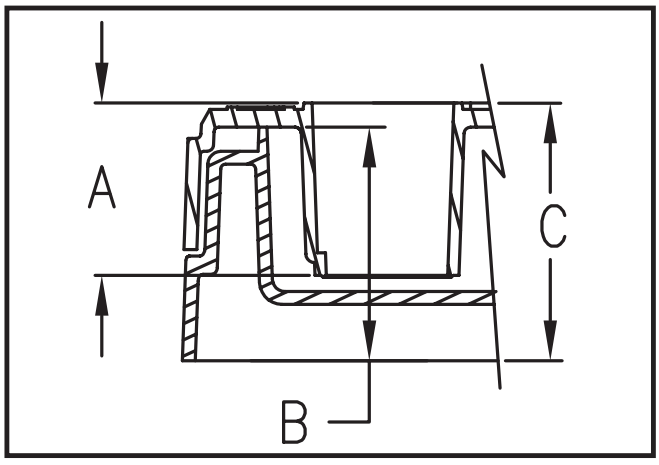
These sterile devices are tissue culture treated (filter plates only) and gamma irradiated (all components), ready for use as received. Extra cellular matrix (ECM) coating is not typically required for cell adhesion but may be added for cell-specific requirements.

Automation Specifications

Plates and components are compatible with manual or robotic handling. When using a plate stacker, place an extra plate on top of the stack to ensure all plates are dispensed evenly.

Total Assembly Dimensions

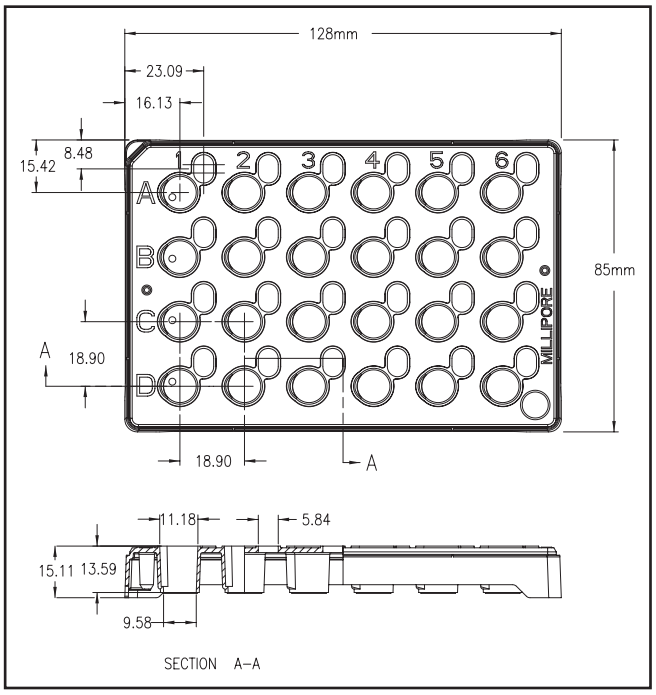
The figure below represents the dimensions in millimeters of the assembled 24- and 96-well Millicell cell culture devices.



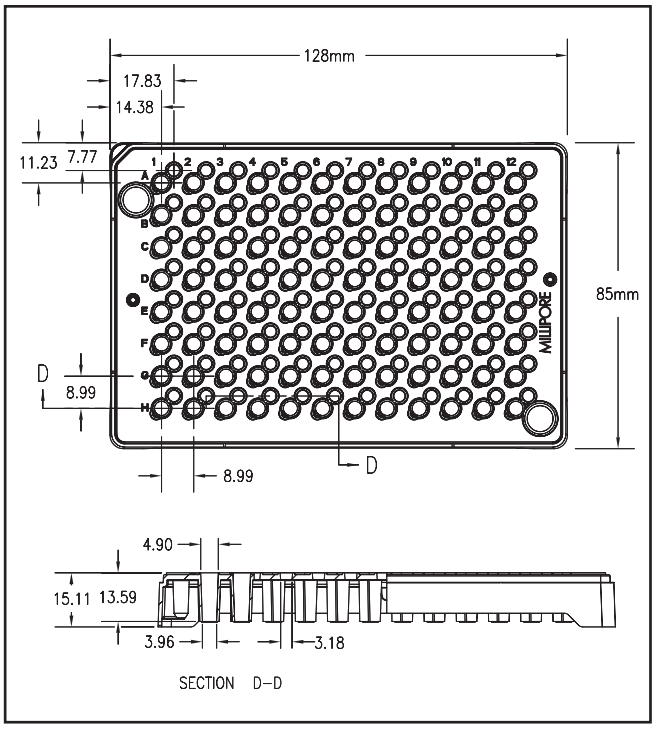
Detailed Dimensions of Millicell Cell Culture Devices

Key	Dimension	24-Well Plate	96-Well Plate
	Filter Plate Length	127.76 mm	127.76 mm
	Filter Plate Width	85.47 mm	85.47 mm
	Filter Plate Height	15.11 mm	15.11 mm
B	Receiver Plate Height (single or multi-well)	18.42 mm	18.42 mm
C	Height of Assembly (filter plate and receiver plate)	20.32 mm	20.32 mm
	Well Spacing	18.90 mm	8.99 mm
	Basolateral Well		
	A1 offset to the side	23.09 mm	17.83 mm
	A1 offset to the top	8.48 mm	7.77 mm
	Well Diameter	5.84 mm	3.18 mm
	Well depth (filter plate and single-well feeder tray)	14.86 mm	14.61 mm
	Well depth (filter plate and multi-well receiver plate)	14.99 mm	14.61 mm
	Apical Well		
	A1 offset to the side	16.13 mm	14.38 mm
	A1 offset to the top	15.42 mm	11.23 mm
A	Well Depth	13.59 mm	13.59 mm
	Well Diameter — Top	11.18 mm	4.90 mm
	Well Diameter — Bottom	9.58 mm	3.96 mm
	Lid Length	127.64 mm	127.64 mm
	Lid Width	85.34 mm	85.34 mm
	Lid Height	8.51 mm	8.51 mm

Detailed Dimensions of Millicell-24 Cell Culture Device



Detailed Dimensions of Millicell-96 Cell Culture Device



Product Ordering Information

This section lists the catalogue numbers for Millicell-24 and -96 devices and accessories. See the Technical Assistance section for information about contacting Millipore. You can also buy Millipore products on-line at www.millipore.com.

The quantity in parentheses indicates the number of components provided in each package.

Millicell-24 Cell Culture Insert Plates

Components	Pore Size	Membrane	Cat. No.	Qty/Pk
24-well cell culture plate (1), single-well feeder tray (1), 24-well receiver plate (1), lid (2)	0.4 µm	PCF	PSHT 010 R1	1/pk
	3 µm	PCF	PSST 010 R1	1/pk
	5 µm	PCF	PSMT 010 R1	1/pk
	8 µm	PCF	PSET 010 R1	1/pk
	1 µm	PET	PSRP 010 R1	1/pk
24-well cell culture plate (5), single-well feeder tray (5), lid (5)	0.4 µm	PCF	PSHT 010 R5	5/pk
	1 µm	PET	PSRP 010 R5	5/pk
24-well cell culture plate (5), 24-well receiver plate (5), lid (5)	3 µm	PCF	PSST 010 R5	5/pk
	5 µm	PCF	PSMT 010 R5	5/pk
	8 µm	PCF	PSET 010 R5	5/pk
Accessories				
24-well receiver plate (5), lid (5)			PSMW 010 R5	5/pk
Single-well feeder tray (5), lid (5) (for use with 24-well cell culture plate only)			PSSW 010 R5	5/pk

Millicell-96 Cell Culture Insert Plates

Components	Pore Size	Membrane	Cat. No.	Qty/Pk
96-well cell culture plate (1), single well feeder tray (1), 96-well receiver plate (1), lid (2)	0.4 µm	PCF	PSHT 004 R1	1/pk
96-well cell culture plate (1), single-well feeder tray (1), 96-well receiver plate, (1), lid (2)	1 µm	PET	PSRP 004 R1	1/pk
96-well cell culture plate (5), single-well feeder tray (5), lid (5)	0.4 µm	PCF	PSHT 004 R5	5/pk
96-well cell culture plate (5), single-well feeder tray (5), lid (5)	1 µm	PET	PSRP 004 R5	5/pk
96-well cell culture plate (5), 96-well receiver plate (10), lid (5)	0.4 µm	PCF	PSHT 004 S5	5/pk
Accessories				
96-well receiver plate (5), lid (5)			MACA C0R S5	5/pk
Additional Equipment				
Millicell ERS System			MERS 000 01	5/pk
Stericup® sterile filter device			SCGP U05 RE	12/pk
Millex®-GP 0.22 µm 33 mm filter unit			SLGP 033 RS	50/pk
ECL Cell Attachment Matrix			08-110	5 mg

Some Millicell Cell Culture Devices have been tested for use in stem cell research applications. The tests involved growing murine stem cells on Millicell plates for five passages, then confirming pluripotency by cell morphology and staining for alkaline phosphatase, NANOG, and Oct-4. To find out which plates have been tested, go to www.millipore.com/stem-cell-tested.

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Technical Assistance

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