

# Transwell® Permeable Supports

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CORNING

## Transwell® Permeable Supports

Transwell cell culture inserts are convenient, sterile, easy-to-use permeable support devices for the study of both anchorage-dependent and anchorage-independent cell lines.

- ▶ Designed to produce a cell culture environment that closely resembles the in vivo state
- ▶ Allows polarized cells to feed basolaterally and thereby carry out metabolic activities in a more natural fashion
- ▶ Unique self-centered hanging design prevents medium wicking between the insert and outer well
- ▶ Permits access to the lower compartment through windows in the insert wall
- ▶ Suspended design allows for undamaged co-culturing of cells in the lower compartment
- ▶ Available in a range of pore sizes and different membranes to satisfy diverse experimental requirements



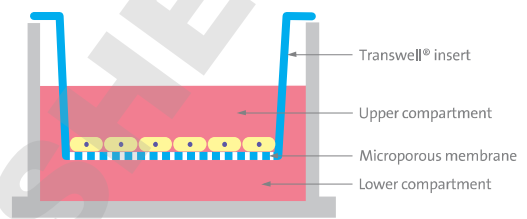
# Transwell® Permeable Supports

## Characteristics of Transwell Membranes

| Characteristics           | Polyester (PET)    | Polycarbonate      | PTFE/Collagen  |
|---------------------------|--------------------|--------------------|----------------|
| Optical properties        | Clear              | Translucent        | Clear when wet |
| Cell visibility           | Good               | Poor               | Cell outlines  |
| Tissue culture treated    | Yes                | Yes                | No             |
| Membrane thickness        | 10 µm              | 10 µm              | 50 µm          |
| Matrix/ECM coatable       | Yes                | Yes                | Yes            |
| Collagen treated          | No                 | No                 | Yes            |
| Available Pore Sizes (µm) | 0.4, 1.0, 3.0, 8.0 | 0.4, 3.0, 5.0, 8.0 | 0.4, 3.0       |

## Chemical Compatibility

All of the Transwell membranes are compatible with histological fixatives including methanol and formaldehyde. The polyester Transwell membranes have the best overall chemical resistance. These membranes (but not the polystyrene housings) are compatible with many alcohols, amines, esters, ethers, ketones, oils and some solvents, including many halogenated hydrocarbons and DMSO but are not recommended for use with strong acids and bases.



## Pore Density

Of the three types of Transwell membranes, only the collagen coated PTFE does not have a defined pore density because it is a tortuous path membrane. The two membranes with a nominally defined pore density are polycarbonate and polyester. The polyester Transwell membranes do not have as high a pore density as the polycarbonate Transwell but have better optical clarity as a result. The nominal pore densities for Corning® Polycarbonate and Polyester (PET) membranes are given in the following table.

## Nominal Pore Densities for Transwell Polyester and Polycarbonate Membranes

| Pore Size | Nominal Pore Density                                      |                                                             |
|-----------|-----------------------------------------------------------|-------------------------------------------------------------|
|           | Polycarbonate Membrane Transwell (pores/cm <sup>2</sup> ) | Transwell-Clear Polyester Membrane (pores/cm <sup>2</sup> ) |
| 0.4 µm    | 1 x 10 <sup>8</sup>                                       | 4 x 10 <sup>6</sup>                                         |
| 1.0 µm    | n/a                                                       | 1.6 x 10 <sup>6</sup>                                       |
| 3.0 µm    | 2 x 10 <sup>6</sup>                                       | 2 x 10 <sup>6</sup>                                         |
| 5.0 µm    | 4 x 10 <sup>5</sup>                                       | n/a                                                         |
| 8.0 µm    | 1 x 10 <sup>5</sup>                                       | 1 x 10 <sup>5</sup>                                         |

## Growth Areas and Recommended Medium Volumes for Transwell Permeable Supports

| Transwell Insert Diameter (mm) | Insert Membrane Growth Area (cm <sup>2</sup> ) | Multiple Well Plate or Dish Type | Volume Added per Plate Well (mL) | Volume Added to Inside of Transwell Insert (mL) |
|--------------------------------|------------------------------------------------|----------------------------------|----------------------------------|-------------------------------------------------|
| 4.26                           | 0.143                                          | HTS 96                           | 0.235                            | 0.075                                           |
| 6.5                            | 0.33                                           | 24 well                          | 0.6                              | 0.1                                             |
| 12                             | 1.12                                           | 12 well                          | 1.5                              | 0.5                                             |
| 24                             | 4.67                                           | 6 well                           | 2.6                              | 1.5                                             |
| 75                             | 44                                             | 100 mm dish                      | 13                               | 9                                               |

# Transwell® Permeable Supports


## Corning® HTS Transwell-96 Well Permeable Support Systems and Plates



HTS Transwell-96 System

- ▶ The HTS Transwell-96 Well Permeable Support has an array of 96 wells with membrane inserts connected by a rigid, robotics-friendly tray that enables all 96 inserts to be handled as a single unit
- ▶ Cell growth area is 0.143 cm<sup>2</sup>/well
- ▶ Choice of either polyester (PET) membrane (0.4 μm, 1.0 μm, 8.0 μm pore sizes) or polycarbonate (PC) membrane (0.4 μm, 3.0 μm, 5.0 μm pore sizes)
- ▶ Large apical and basolateral access ports allow efficient media sampling and facilitate automated or manual access
- ▶ Optimized for automation, improved gripping surface, and standard bar codes
- ▶ The untreated reservoir plate allows for simultaneous feeding of 96 wells and comes with a removable media stabilizer to reduce the risk of spills during handling
- ▶ The tissue culture-treated receiver plate isolates each well to enable 96 individual assays
- ▶ The HTS Transwell-96 Systems (0.4 μm PC and 1.0 μm PET) are packaged with the 96 well insert plate in a reservoir plate and includes the 96 well receiver plate with lid.
- ▶ The HTS Transwell-96 Well Plates (3.0 and 5.0 μm PC, 8.0 μm PET) are packaged with the 96 well insert plate in the 96 well receiver plate with lid. Reservoir plates may be purchased separately.

### HTS Transwell-96 Well Permeable Supports Ordering Information

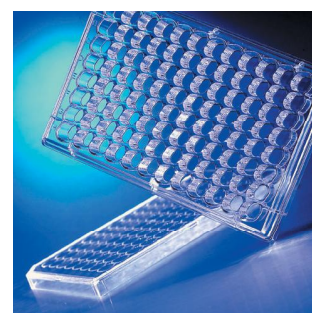
| Cat. No.                                                                                | Description                                                        | Membrane Pore Size (μm) | Membrane | Qty/Pk | Qty/Cs |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------|----------|--------|--------|
| 3381                                                                                    | HTS Transwell-96 System, reservoir and receiver plates with 2 lids | 0.4                     | PC       | 1      | 1      |
| 3391                                                                                    | HTS Transwell-96 System, reservoir and receiver plates with 2 lids | 0.4                     | PC       | 1      | 5      |
| 3380                                                                                    | HTS Transwell-96 System, reservoir and receiver plates with 2 lids | 1.0                     | PET      | 1      | 1      |
| 3392                                                                                    | HTS Transwell-96 System, reservoir and receiver plates with 2 lids | 1.0                     | PET      | 1      | 5      |
| 3385                                                                                    | HTS-Transwell-96 Well Plate, receiver plate and lid, individual    | 3.0                     | PC       | 1      | 2      |
| 3386                                                                                    | HTS-Transwell-96 Well Plate, receiver plate and lid, bulk          | 3.0                     | PC       | 4      | 8      |
| 3387                                                                                    | HTS-Transwell-96 Well Plate, receiver plate and lid, bulk          | 5.0                     | PC       | 4      | 8      |
| 3388                                                                                    | HTS-Transwell-96 Well Plate, receiver plate and lid, individual    | 5.0                     | PC       | 1      | 2      |
| 3374                                                                                    | HTS-Transwell-96 Well Plate, receiver plate and lid, individual    | 8.0                     | PET      | 1      | 2      |
| 3384                                                                                    | HTS-Transwell-96 Well Plate, receiver plate and lid, bulk          | 8.0                     | PET      | 4      | 8      |
| 3382                                                                                    | HTS Transwell-96 receiver plate with lid                           | n/a                     | n/a      | 10     | 10     |
| 3383                                                                                    | HTS Transwell-96 reservoir plate media stabilizer and lid          | n/a                     | n/a      | 10     | 10     |
|  3583 | HTS Transwell-96 black receiver plate with lid                     | n/a                     | n/a      | 10     | 10     |
| 3783                                                                                    | HTS-Transwell-96 white receiver plate and lid                      | n/a                     | n/a      | 10     | 10     |



HTS Transwell-96 White Receiver Plate



HTS Transwell-96 Reservoir Plate



HTS Transwell-96 Receiver Plate

# Transwell® Permeable Supports



HTS Transwell-24 Well Permeable Support

## Corning HTS Transwell-24 Well Permeable Supports

- ▶ The HTS Transwell-24 Well Permeable Support has an array of 24 wells with membrane inserts connected by a rigid, robotics-friendly tray that enables all 24 Transwell inserts to be handled as a single unit
- ▶ Cell growth area is 0.33 cm<sup>2</sup>/well
- ▶ Choice of either polyester (PET) membrane (0.4 μm pore size) or polycarbonate (PC) membrane (0.4 μm, 3.0 μm pore sizes)
- ▶ Treated for optimal cell attachment
- ▶ Individual pack has 2 HTS Transwell-24 units loaded into 24 well plates and two open reservoirs
- ▶ Bulk pack has 12 HTS Transwell-24 units loaded into 24 well plates only. Reservoirs may be purchased separately

## HTS Transwell-24 Well Permeable Supports Ordering Information

| Cat. No. | Description                        | Membrane Pore Size (μm) | Membrane | Qty/Pk | Plates/Cs |
|----------|------------------------------------|-------------------------|----------|--------|-----------|
| 3396     | HTS Transwell-24, individual       | 0.4                     | PC       | 1      | 2         |
| 3397     | HTS Transwell-24, bulk             | 0.4                     | PC       | 12     | 12        |
| 3398     | HTS Transwell-24, individual       | 3.0                     | PC       | 1      | 2         |
| 3399     | HTS Transwell-24, bulk             | 3.0                     | PC       | 12     | 12        |
| 3395     | HTS Transwell nontreated reservoir | n/a                     | n/a      | 12     | 48        |
| 3378     | HTS Transwell-24, bulk             | 0.4                     | PET      | 12     | 12        |
| 3379     | HTS Transwell-24, individual       | 0.4                     | PET      | 1      | 2         |

## Transwell Polycarbonate Membrane Insert

- ▶ 10 μm thick translucent membrane
- ▶ Pore sizes ranging from 0.4 μm to 8 μm diameters
- ▶ Tissue culture treated for optimal cell attachment
- ▶ Membrane must be stained for cell visibility

## Transwell Polycarbonate Membrane Permeable Support Ordering Information

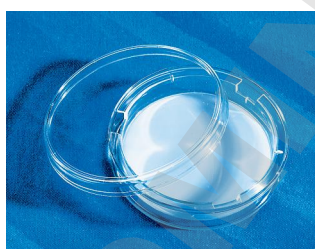
| Cat. No. | Membrane Diameter (mm) | Growth Surface Area (cm <sup>2</sup> ) | Membrane Pore Size (μm) | Multiple Well Plate | Inner Packaging          | Inserts/Cs |
|----------|------------------------|----------------------------------------|-------------------------|---------------------|--------------------------|------------|
| 3413     | 6.5                    | 0.33                                   | 0.4                     | 24 well             | 12/plate*                | 48         |
| 3415     | 6.5                    | 0.33                                   | 3.0                     | 24 well             | 12/plate*                | 48         |
| 3421     | 6.5                    | 0.33                                   | 5.0                     | 24 well             | 12/plate <sup>*,**</sup> | 48         |
| 3422     | 6.5                    | 0.33                                   | 8.0                     | 24 well             | 12/plate <sup>*,**</sup> | 48         |
| 3401     | 12                     | 1.12                                   | 0.4                     | 12 well             | 12/plate                 | 48         |
| 3402     | 12                     | 1.12                                   | 3.0                     | 12 well             | 12/plate                 | 48         |
| 3412     | 24                     | 4.67                                   | 0.4                     | 6 well              | 6/plate                  | 24         |
| 3414     | 24                     | 4.67                                   | 3.0                     | 6 well              | 6/plate                  | 24         |
| 3428     | 24                     | 4.67                                   | 8.0                     | 6 well              | 6/plate                  | 24         |
| 3419     | 75                     | 44                                     | 0.4                     | —                   | 1/dish                   | 12         |
| 3420     | 75                     | 44                                     | 3.0                     | —                   | 1/dish                   | 12         |

\*6.5 mm membrane diameter are packaged 12 inserts in a 24 well plate, 4 plates per case.

\*\*3421 and 3422 are 12 μm thick.

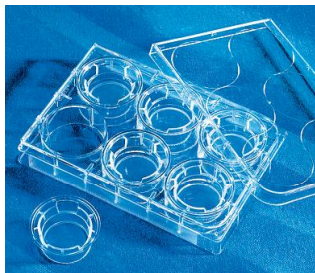


3401 12 mm Polycarbonate Transwell Insert



3419 75 mm Polycarbonate Transwell Insert

# Transwell® Permeable Supports



3450 24 mm Transwell-Clear Insert

## Transwell-Clear Polyester Membrane Insert

- ▶ 10 µm thick transparent membrane
- ▶ Tissue culture treated for optimal cell attachment
- ▶ Excellent cell visibility with phase contrast microscopy

### Transwell-Clear Insert Ordering Information

| Cat. No.        | Membrane Diameter (mm) | Growth Surface Area (cm <sup>2</sup> ) | Pore Size (µm) | Multiple Well Plate | Inner Packaging* | Inserts/Cs |
|-----------------|------------------------|----------------------------------------|----------------|---------------------|------------------|------------|
| 3450            | 24                     | 4.67                                   | 0.4            | 6 well              | 6/plate          | 24         |
| 3452            | 24                     | 4.67                                   | 3.0            | 6 well              | 6/plate          | 24         |
| 3460            | 12                     | 1.12                                   | 0.4            | 12 well             | 12/plate         | 48         |
| 3462            | 12                     | 1.12                                   | 3.0            | 12 well             | 12/plate         | 48         |
| 3470            | 6.5                    | 0.33                                   | 0.4            | 24 well             | 12/plate*        | 48         |
| 3472            | 6.5                    | 0.33                                   | 3.0            | 24 well             | 12/plate*        | 48         |
| <b>New</b> 3464 | 6.5                    | 0.33                                   | 8.0            | 24 well             | 12/plate*        | 48         |

\*6.5 mm membrane diameter are packaged 12 inserts in a 24 well plate, 4 plates per case.

## Transwell-COL Collagen-Coated Membrane Insert

- ▶ Transparent PTFE membrane coated with type I and III collagen
- ▶ Promotes cell attachment and spreading
- ▶ Inserts are individually packaged

### Transwell-COL Insert Ordering Information

| Cat. No. | Membrane Diameter (mm) | Growth Surface Area (cm <sup>2</sup> ) | Membrane Pore Size (µm) | Multiple Well Plate | Inserts/Cs |
|----------|------------------------|----------------------------------------|-------------------------|---------------------|------------|
| 3491     | 24                     | 4.67                                   | 0.4                     | 6 well              | 24         |
| 3492     | 24                     | 4.67                                   | 3.0                     | 6 well              | 24         |
| 3493     | 12                     | 1.12                                   | 0.4                     | 12 well             | 24         |
| 3494     | 12                     | 1.12                                   | 3.0                     | 12 well             | 24         |
| 3495*    | 6.5                    | 0.33                                   | 0.4                     | 24 well             | 24         |
| 3496*    | 6.5                    | 0.33                                   | 3.0                     | 24 well             | 24         |

\*Includes twenty-four 6.5 mm inserts packaged separately with two 24 well plates.



3491 24 mm Transwell-COL Collagen-Coated Insert

## Snapwell™ Inserts

- ▶ A modified Transwell permeable support containing a 12 mm diameter membrane supported by a detachable ring
- ▶ Once cells are grown to confluence on the Snapwell insert, the ring can be placed in a vertical or horizontal diffusion chamber\*
- ▶ Packaged in 6 well plates

### Snapwell Insert Ordering Information

| Cat. No. | Membrane Pore Size (µm) | Membrane        | Inner Packaging | Inserts/Cs |
|----------|-------------------------|-----------------|-----------------|------------|
| 3407     | 0.4                     | Polycarbonate   | 6/plate         | 24         |
| 3801     | 0.4                     | Clear Polyester | 6/plate         | 24         |

\*Diffusion Chambers are available through Harvard Apparatus ([www.harvardapparatus.com](http://www.harvardapparatus.com))



3407 12 mm Snapwell Inserts

# Transwell® Permeable Supports



Netwell Inserts

## Netwell™ Inserts and Accessories

- ▶ Costar® Netwell inserts have polyester mesh bottoms attached to polystyrene inserts
- ▶ They are used as tissue carriers, supports and strainers for culture of small organs, tissue slices or explants at the air-media interface
- ▶ Handy carrier for immunocytochemical staining of tissue slices (see accessories below)
- ▶ Provides coarse filtration of tissue homogenates, cell suspensions and microcarriers
- ▶ Available in two mesh sizes and diameters
- ▶ Preloaded in 6- or 12-well microplates
- ▶ 24 mm Netwell inserts fit in Corning 50 mL plastic centrifuge tubes

### Netwell Inserts Ordering Information

| Cat. No. | Diameter | Polyester Membrane | Color | Inner     | Qty/Cs |
|----------|----------|--------------------|-------|-----------|--------|
|          | (mm)     | Mesh Size (µm)     |       | Packaging |        |
| 3477     | 15       | 74                 | n/a   | 12/plate  | 48     |
| 3478     | 15       | 440                | n/a   | 12/plate  | 48     |
| 3479     | 24       | 74                 | n/a   | 6/plate   | 48     |
| 3480     | 24       | 440                | n/a   | 6/plate   | 48     |

## Netwell Accessories



Netwell Accessories

- ▶ Specially designed Netwell carriers and handles allow simultaneous processing of up to 12 samples per carrier
- ▶ Polystyrene reagent trays are available in white for colorimetric reaction contrast, or black for better visibility of tissue sections
- ▶ Each carrier kit contains eight carriers and eight handles

### Netwell Accessories Ordering Information

| Cat. No. | Description                 | Qty/Cs |
|----------|-----------------------------|--------|
| 3517     | Netwell Reagent Tray, black | 200    |
| 3519     | Netwell Reagent Tray, white | 200    |
| 3520     | Netwell Carrier Kit, 15 mm  | 8      |
| 3521     | Netwell Carrier Kit, 24 mm  | 8      |

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