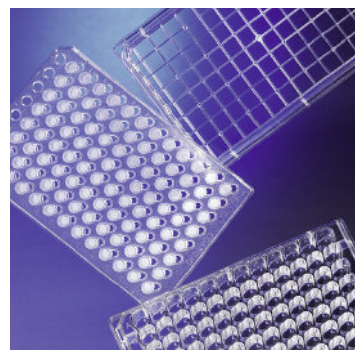
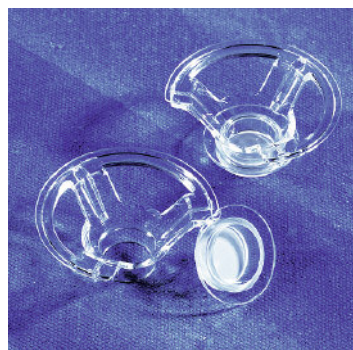


Transwell® Permeable Supports Selection and Use Guide

CORNING

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Introduction

Cell and tissue culture techniques are becoming increasingly important for basic and applied life science research. The development of new culture vessels and cell attachment substrates is currently being driven by the need to produce an environment that resembles the *in vivo* state as closely as possible to enable the growth of specialized cell types. Consequently, using permeable supports with microporous membranes have become a standard method for culturing these cells. These permeable supports have allowed significant improvements in culturing polarized cells since these permeable supports permit cells to uptake and secrete molecules on both their basal and apical surfaces and thereby carry out metabolic activities in a more natural fashion.

Membrane filters have been used as cell growth substrates since the transfilter metanephric induction studies of Grobstein (Nature, 172:860-872; 1953). Adapted over the years to a variety of cell types and numerous applications, permeable supports treated for cell growth are now recognized as providing significant advantages over solid, impermeable cell growth substrates. For epithelial and other cell types, the use of permeable supports *in vitro* allows cells to be grown and studied in a polarized state under more natural conditions. Cellular differentiation can also proceed to higher levels resulting in cells that morphologically and functionally better represent their *in vitro* counterparts.

Cellular functions such as transport, absorption and secretion can also be studied since cells grown on permeable supports provide convenient, independent access to apical and basolateral plasma membrane domains. The use of permeable support systems for cell culture has proven to be an invaluable tool in the cell biology laboratory.

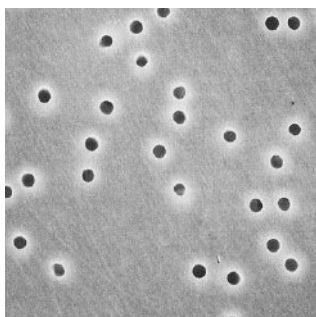
Selecting the Right Transwell® Membrane and Pore Size

Transwell permeable supports are available in three membrane materials: polycarbonate (PC), polyester (PET), and collagen-coated polytetrafluoroethylene (PTFE). See Table 1 for additional information on these membrane characteristics.

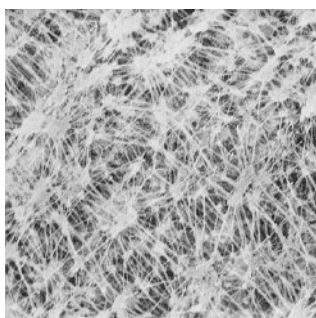
- ▶ Polyester Transwell-Clear inserts feature a microscopically transparent polyester membrane that is tissue culture treated for optimal cell attachment and growth. Transwell-Clear inserts provide better cell visibility under phase contrast microscopy and allow assessment of cell viability and monolayer formation.
- ▶ Polycarbonate Transwell inserts are available in a variety of pore sizes ranging from 0.4 μm to 8.0 μm . All are treated for optimal cell attachment.
- ▶ Transwell-COL inserts have a transparent (when wet), collagen-treated PTFE membrane that promotes cell attachment and spreading and allow cells to be visualized during culture. The Transwell-COL membrane has an equimolar mixture of types I and III collagen derived from bovine placentas. Unlike traditional coating techniques that result in occluding film layers, Corning's proprietary coating process results in a biologically stable collagen that covers every fibril of the filter matrix, thereby retaining the porosity of the membrane.

Table 1. Characteristics of Transwell Membranes

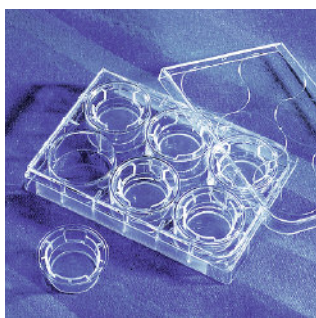
Characteristics	Polyester (PET)	Polycarbonate (PC)	Collagen-coated (PTFE)
Optical properties	Clear	Translucent	Clear when wet
Cell visibility	Good	Poor	Cell outlines
Tissue culture treated	Yes	Yes	No
Membrane thickness	10 μm	10 μm	50 μm
Matrix/ECM coatable	Yes	Yes	Yes
Collagen treated	No	No	Yes
Available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



SEM of the surface of a 0.4 μm pore polycarbonate membrane



SEM of a PTFE membrane showing its pore structure



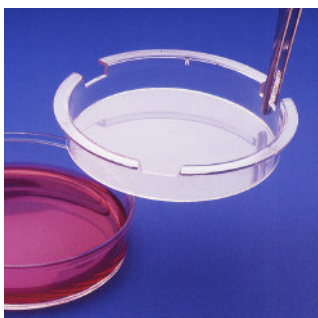
The polyester Transwell-Clear inserts in a 6 well plate show the clarity of the membrane



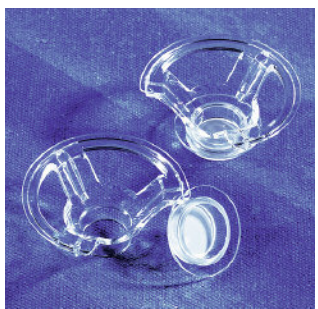
These 12 mm diameter Transwell inserts have a polycarbonate membrane



24.5 mm Transwell-COL insert being placed into a 6 well microplate.



75 mm Transwell insert and 100 mm dish bottom



Snapwell inserts are designed for use with diffusion or Ussing chambers.

Selecting Pore Sizes

Selecting the correct pore size for experiments using Transwell® permeable supports is also very important. Table 2 reviews common permeable support applications along with recommended pore sizes. The smallest pore size Transwell membranes (0.4 µm) are primarily used in drug transport studies and in studies requiring the formation of a fully differentiated monolayer of cells.

Cell invasion, chemotaxis and motility studies are usually done in Transwell membranes with 3.0 µm or larger pores. The ability of cells to migrate through pores of a membrane is dependent on the cell line used and the culture conditions, as well as the pore size. Cell migration will not occur with pores smaller than 3.0 µm. For critical experiments, Corning suggests experimenting with appropriate controls with a range of pore sizes to determine which size works best with your cell cultures and your specific application. As an alternative, follow recommendations in published scientific literature. For additional application and use information, please refer to the Transwell Bibliography on the Technical Information section of the Corning Life Sciences web site (www.corning.com/lifesciences) that lists over 800 literature references using Transwell permeable supports.

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 membrane does not have a defined pore density because it is a tortuous path membrane. The two membranes with nominally defined pore densities are polycarbonate and polyester. The 0.4 µm polyester Transwell membranes do not have as high a pore density as the polycarbonate Transwell membranes but have better optical clarity as a result. The nominal pore densities for Corning® polycarbonate and polyester membranes are given in Table 3.

Selecting the Right Transwell Plates

Transwell permeable support units come in three basic designs:

- ▶ Traditional Transwell plate inserts that are used individually in 6, 12, and 24 well plates or 100 mm dishes;
- ▶ HTS Transwell-24 and HTS Transwell-96 insert plates that are mounted in special holders to allow for automation and ease of handling;
- ▶ Snapwell™ inserts for use in diffusion or Ussing chambers.

More detailed information on each of these products is found below and in the ordering section.

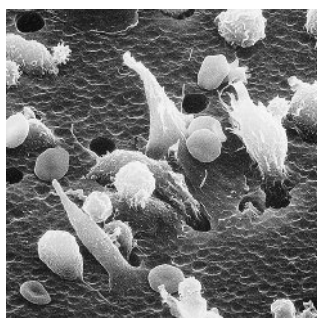
Traditional Transwell Permeable Supports

Transwell inserts are available in four membrane diameters: 6.5 mm (24 well plate), 12 mm (12 well plate), 24 mm (6 well plate) and 75 mm (100 mm dish) formats. See Table 4 for cell growth areas provided by these sizes.

Several membrane types and a large selection of pore sizes are available with each of these units. The self-centering design prevents medium from wicking between the sides of the insert and the well wall. The hanging design keeps the Transwell membrane about a millimeter off the bottom of the well. This prevents co-cultured cell monolayers in the bottom of the well from being scratched or disturbed when the insert is moved. Windows or openings in the sides of the Transwell insert allow access to the bottom compartment.

Table 2. Permeable Support Application Selection Chart

Applications	Recommended Pore Sizes
Transport and Permeability Studies ▶ Macromolecules, ions, water, small molecular weight solutes, hormones, growth factors, etc.	0.4, 1.0, 3.0 μm
Cell Polarity ▶ Polarized distribution of ion channels, enzymes, transport proteins, receptors, lipids ▶ Sorting and targeting ▶ Polarity development and maintenance ▶ Synthesis and assembly of tight junctions	0.4, 1.0, 3.0 μm
Endocytosis ▶ Protein turnover ▶ Membrane recycling ▶ Receptor-ligand interactions for growth factors, hormones, antibodies, viruses, toxins	0.4, 1.0, 3.0 μm
Drug Transport ▶ Localization of receptors and polarity of drug responses ▶ Drug effects on vascular permeability ▶ Drug transport across epithelial (Caco-2 cells) and endothelial barriers ▶ Drug transport across brain microvessel endothelial cells	0.4, 1.0, 3.0 μm
Metastatic Potential and Invasion ▶ Tumor invasion and metastasis ▶ Clonogenic assays ▶ Invasion inhibitors ▶ Extracellular matrix effects	5.0, 8.0 μm
Chemotaxis/Motility Studies ▶ Phagocytosis ▶ Chemotactic and haptotactic response of formed elements in blood ▶ Migration of tissue macrophages	3.0, 5.0, 8.0 μm
Co-culture ▶ Cell-cell interactions ▶ Cell-substrate interactions ▶ Tumor heterogeneity ▶ Cell-matrix interactions ▶ Feeder layers and feeder layers for stem cell cultures	0.4, 1.0, 3.0 μm
Microbial Pathogenesis ▶ Virus, bacteria, parasite attachment to host cell plasma membrane ▶ Invasion and penetration of epithelial barriers ▶ Microbial receptors ▶ Drug effects on microbial receptors	0.4, 1.0, 3.0 μm
Tissue Remodeling ▶ Wound healing ▶ Angiogenesis ▶ Re-epithelialization ▶ Inflammation	0.4, 1.0, 3.0 μm
In Vitro Fertilization ▶ Granulosa cell culture ▶ Steroidogenesis ▶ Endocrine and paracrine factors affecting granulosa differentiation, blastocyst hatching from zona pellucida, substrate attachment, and trophoblast cell outgrowth	0.4, 1.0, 3.0 μm



SEM of macrophages on a Transwell® polycarbonate membrane (Courtesy of B. Wetzel, S. Wahl, E. Westbrook and L. Altma, NIH, Bethesda, MD).

Table 3. Nominal Pore Densities for Transwell® Polyester and Polycarbonate Membranes

Pore Size*	Nominal Pore Density*	
	Polycarbonate Membrane	Polyester Membrane
0.4 µm	1 x 10 ⁸ pores/cm ²	4 x 10 ⁶ pores/cm ²
1.0 µm	Not available	1.6 x 10 ⁶ pores/cm ²
3.0 µm	2 x 10 ⁶ pores/cm ²	2 x 10 ⁶ pores/cm ²
5.0 µm	4 x 10 ⁵ pores/cm ²	Not available
8.0 µm	1 x 10 ⁵ pores/cm ²	1 x 10 ⁵ pores/cm ²

* Values are reported as nominal and may vary due to inherent variability of the manufacturing process. To ensure success, we recommend that researchers validate their methods independent from our reported values.

Table 4. Transwell Permeable Support Growth Areas

Transwell Insert Diameter*	Multiple Well Plate or Dish Style	Insert Membrane Growth Area*
4.26 mm	96 well	0.143 cm ²
6.5 mm	24 well	0.33 cm ²
12 mm	12 well	1.12 cm ²
24 mm	6 well	4.67 cm ²
75 mm	100 mm dish	44 cm ²

* Values are reported as nominal and may vary due to inherent variability of our manufacturing process. To insure success, we recommend that researchers validate their methods independent from our reported values.

HTS Transwell Permeable Support Plates

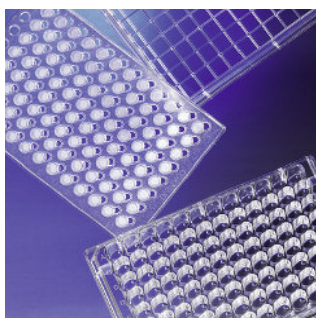
The HTS Transwell Permeable Support Plates are arrays of either 24 or 96 individual Transwell inserts connected by a rigid, robotics-friendly holder that enables all of the Transwell-24 or Transwell-96 inserts to be handled as a single unit. This makes HTS Transwell systems ideal tools for running automated, high throughput drug transport (Caco-2 cells) cell toxicity studies or cell migration and invasion studies.

The HTS Transwell-96 Well Permeable Supports have multiple components: a 96 well insert support plate with a choice of either 1.0 µm or 8.0 µm pore polyester, or 0.4 µm, 3.0 µm, or 5.0 µm pore polycarbonate membranes; a Reservoir Plate with a removable media stabilizer for feeding cultures; a 96 well Receiver Plate for use in assays (black or clear); and two lids to minimize evaporation and protect against contamination. Each well insert has a 0.143 cm² membrane area and large apical and basolateral access ports for feeding and sampling.

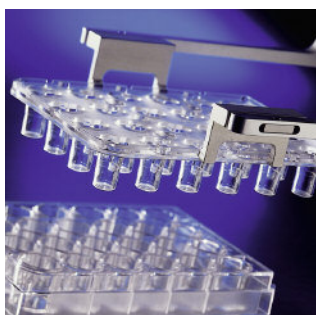
The HTS Transwell-24 Well Permeable Support is available with a treated polycarbonate membrane in either 0.4 µm or 3.0 µm pore sizes or a 0.4 µm pore polyester membrane and provides an excellent substrate for cell attachment, growth, and differentiation. An open culture reservoir plate is used to reduce liquid handling during cell feeding (medium can be exchanged all at once). Once the cell layers are confluent, the HTS Transwell-24 insert is transferred to a standard Corning® 24 well microplate for running experiments.

Snapwell™ Inserts

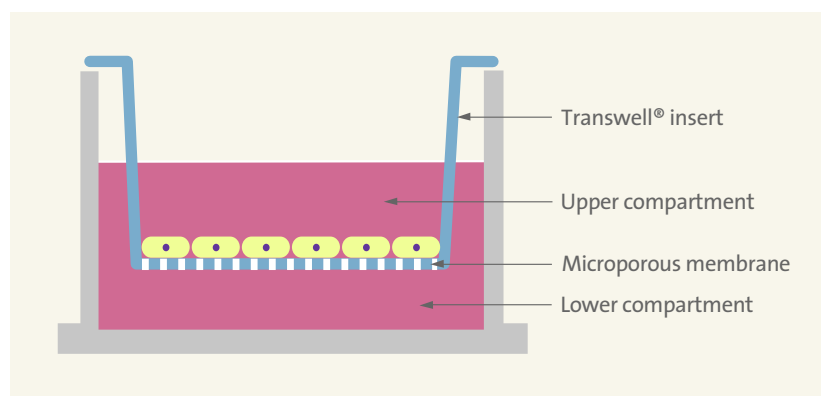
The Snapwell insert is a modified Transwell culture insert that contains a 12 mm diameter tissue culture treated polycarbonate or clear polyester membrane supported by a detachable ring. Available in 0.4 or 3.0 µm pore sizes, these inserts are primarily used for transport and electrophysiological studies. Once cells are grown to confluence, this ring-supported membrane can be placed into either vertical or horizontal diffusion or Ussing chambers. Chambers are available from Harvard Apparatus: www.harvardapparatus.com.



The HTS-96 System is ideal for high throughput transport studies.



HTS Transwell Systems are designed for use with robotics.



The porous bottom of the insert provides independent access to both sides of a cell monolayer giving researchers a versatile tool to study cell transport and other metabolic activities *in vitro*.

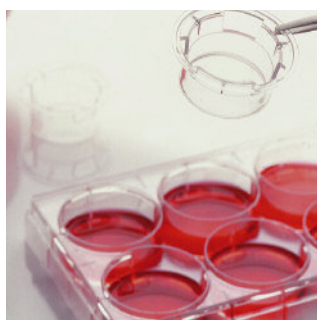
Using Transwell® Permeable Supports

Helpful Hints

1. Cell morphology and cell densities on permeable supports are influenced by filter pore size.
2. Larger pore sizes may permit some cell types to migrate through the pores on the permeable support.
3. Cells grown on permeable supports are often sensitive to initial seeding density for good cell attachment. On first use, try bracketing a range of seeding densities for optimum growth (typically 10^3 to 10^5 cells/cm²).
4. Cell attachment and spreading may be improved by preincubating permeable supports in medium prior to seeding.
5. Cells requiring extracellular matrix coatings on plastic substrates may also require them on permeable supports.
6. The Transwell-Clear insert contains a transparent tissue culture treated polyester membrane that allows easier viewing of cells using phase contrast microscopy.
7. The Transwell-COL insert contains a PTFE membrane that has been treated with an equimolar mixture of types I and III bovine placental collagens. This results in a biologically stabilized collagen matrix covering the fibrils of the filter membrane. These Transwell inserts are excellent for the growth of cells requiring a biological coating.

General Directions for Use

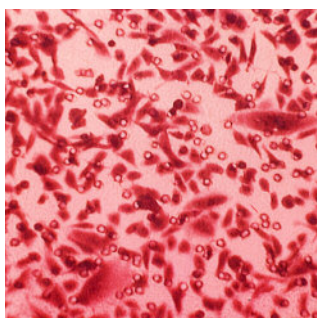
1. Transwell inserts are used by first adding medium to the multiple well plate well, then adding the Transwell insert, and then adding the medium and cells to the inside compartment of the Transwell insert. Recommended medium volumes are shown in Table 5.
2. An initial equilibrium period may be used to improve cell attachment by adding medium to the multiple well plate well and then to the Transwell insert. The plate should then be incubated for at least one hour or even overnight at the same temperature that will be used to grow the cells. The cells are then added in fresh medium to the Transwell insert and returned to the incubator.
3. The medium level can be checked periodically and fresh medium added as required.
4. Transwell inserts have three openings for standard pipette tips to allow samples to be added or removed from the lower compartment.



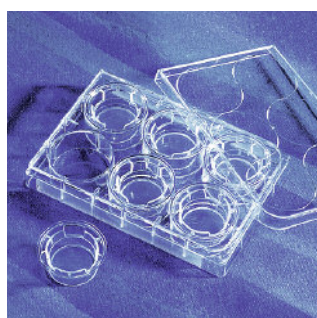
Add the medium to the culture plate first, then add the medium and cells to the Transwell insert.



The three side wall openings for pipette tip access can be seen in this 24 mm polycarbonate membrane Transwell insert.



Fixed and crystal violet stained CHO-K1 cells on a 3 µm PET membrane.



24 mm Transwell-Clear Insert

Table 5. Recommended Transwell® Permeable Support Medium Volumes

Transwell Insert Diameter*	Insert membrane Growth Area*	Multiple Well Plate or Dish Type	Volume Added per Plate Well	Volume Added to Inside of Transwell Insert
4.26 mm	0.143 cm ²	96 well	0.235 mL	0.075 mL
6.5 mm	0.33 cm ²	24 well	0.6 mL	0.1 mL
12 mm	1.12 cm ²	12 well	1.5 mL	0.5 mL
24 mm	4.67 cm ²	6 well	2.6 mL	1.5 mL
75 mm	44 cm ²	100 mm dish	13 mL	9 mL

* Values are reported as nominal and may vary due to inherent variability of the manufacturing process. To ensure success, we recommend that researchers validate their methods independent from our reported values.

- Cell monolayers may be fixed and stained while in the Transwell insert using standard cytological techniques. Avoid using solvents that dissolve polystyrene or the polycarbonate or polyester membrane materials. Processing steps may be carried out by sequentially moving the Transwell insert through a series of multiple well plate wells containing the appropriate reagents. Protocols for fixing and staining Transwell inserts are available on the Corning Life Sciences web site: www.corning.com/lifesciences/technical_information/techdocs/transwell_staining_protocol.pdf.
- If it is necessary to remove cells from Transwell membranes, we recommend rinsing both the Transwell insert and the plate well. Then the dissociating solution should be added to both the well and the Transwell insert and incubated until the cells begin to come off. A protocol, *Trypsinization Procedure for Transwell Inserts* (www.corning.com/lifesciences), for removing cells from Transwell inserts is available in the technical section of the Corning Life Sciences web site.
- Corning recommends using a Micromatic 8-channel Aspirator (Cat. No. 6113, www.cadencescience.com) for removing medium from HTS Transwell-96 systems. These aspirators are designed to remove medium and solutions from the upper wells without damaging the sensitive cell monolayers.
- The polycarbonate or polyester membrane with the fixed and stained cells attached may be removed from the Transwell insert by carefully cutting around the membrane edges with a scalpel.
- The collagen-coated PTFE membrane is fragile and requires careful handling during removal. A wetted cellulosic membrane filter should be placed in direct contact with the underside of the Transwell insert membrane before it is cut out with a scalpel. The wetted, more rigid, cellulosic filter will serve as a support for the collagen-coated membrane.

Ordering Information

Polyester (PET) Membrane Transwell-Clear Inserts

Transwell-Clear inserts feature a thin, microscopically transparent polyester membrane that is tissue culture treated for optimal cell attachment and growth. Transwell-Clear inserts provide excellent cell visibility under phase contrast microscopy and allow assessment of cell viability and monolayer formation. Transwell-Clear inserts are available sterile and preloaded in 6, 12 and 24 multiple well plates. All plates come with lids.

Cat. No.	Membrane Diameter* (mm)	Growth Surface Area* (cm ²)	Membrane Pore Size (µm)	Inner Packaging	Inserts/Case
3470	6.5	0.33	0.4	12 inserts/24 well plate	48
3472	6.5	0.33	3.0	12 inserts/24 well plate	48
3460	12	1.12	0.4	12 inserts/12 well plate	48
3462	12	1.12	3.0	12 inserts/12 well plate	48
3450	24	4.67	0.4	6 inserts/6 well plate	24
3452	24	4.67	3.0	6 inserts/6 well plate	24

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Collagen-Coated Transwell®-COL Inserts

Transwell-COL inserts have a transparent when wet, collagen-treated PTFE membrane that promotes cell attachment and spreading and allows cells to be visualized during culture. The Transwell-COL membrane has an equimolar mixture of types I and III collagen derived from bovine placentas. Unlike traditional coating techniques that result in occluding film layers, Corning's proprietary coating process results in a biologically stable collagen that covers every fibril of the filter matrix, thereby retaining the porosity of the membrane. Transwell-COL inserts are sterile and individually blister packed. Appropriate multiple well plates are included in each case. All plates come with lids.

Cat. No.	Membrane Diameter* (mm)	Growth Surface Area* (cm ²)	Membrane Pore Size (µm)	Inner Packaging	Multiple Well Plate	Inserts/ Case
3495	6.5	0.33	0.4	Individually wrapped	2-24 well	24
3496	6.5	0.33	3.0	Individually wrapped	2-24 well	24
3493	12	1.12	0.4	Individually wrapped	2-12 well	24
3494	12	1.12	3.0	Individually wrapped	2-12 well	24
3491	24	4.67	0.4	Individually wrapped	4-6 well	24
3492	24	4.67	3.0	Individually wrapped	4-6 well	24

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Netwell™ Inserts and Accessories



Netwell Inserts

- ▶ Costar® Netwell inserts have polyester mesh bottoms attached to polystyrene inserts
- ▶ Used as tissue carriers, supports and strainers for culture of small organs, tissue slices or explants at the air-media interface
- ▶ Provide coarse filtration of tissue homogenates, cell suspensions and microcarriers
- ▶ Handy carrier for immunocytochemical staining of tissue slices (see accessories below)
- ▶ 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

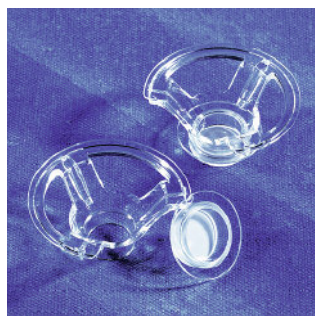
Cat. No.	Membrane Diameter (mm)	Polyester Membrane Mesh Size (µm)	Color	Inner Packaging	Qty/Cs
3477	15	74	n/a	12/plate	48
3478	15	500	n/a	12/plate	48
3479	24	74	n/a	6/plate	48
3480	24	500	n/a	6/plate	48
<i>Netwell Reagent Tray</i>					
3517	n/a	n/a	black	n/a	200
3519	n/a	n/a	white	n/a	200
<i>Netwell Carrier</i>					
3520	15	n/a	n/a	n/a	8
3521	24	n/a	n/a	n/a	8



12 mm Polycarbonate Transwell Insert



75 mm Polycarbonate Transwell Insert



Snapwell Inserts with polycarbonate (lower) and polyester (upper) membranes

Polycarbonate Membrane Transwell® Inserts

These Transwell inserts feature a thin, translucent polycarbonate membrane available in six pore sizes ranging from 0.4 μm to 8.0 μm . All are treated for optimal cell attachment. They are supplied sterile and come preloaded in multiple well plates or dishes. The polycarbonate membrane is compatible with most organic fixatives and stains. All plates come with lids.

Cat. No.	Membrane Diameter* (mm)	Growth Surface Area* (cm ²)	Membrane Pore Size (μm)	Inner Packaging	Inserts/Case
3413	6.5	0.33	0.4	12 inserts/24 well plate	48
3415	6.5	0.33	3.0	12 inserts/24 well plate	48
3421	6.5	0.33	5.0	12 inserts/24 well plate	48
3422	6.5	0.33	8.0	12 inserts/24 well plate	48
3401	12	1.12	0.4	12 inserts/12 well plate	48
3402	12	1.12	3.0	12 inserts/12 well plate	48
3412	24	4.67	0.4	6 inserts/6 well plate	24
3414	24	4.67	3.0	6 inserts/6 well plate	24
3428	24	4.67	8.0	6 inserts/6 well plate	24
3419	75	44	0.4	1 insert/100 mm dish	12
3420	75	44	3.0	1 insert/100 mm dish	12

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Snapwell™ Inserts

The Snapwell insert is a modified Transwell culture insert that contains a 12 mm diameter tissue culture treated membrane supported by a detachable ring. Once cells are grown to confluence, this ring-supported membrane can be placed into either vertical or horizontal diffusion or Ussing chambers. Chambers are available from Harvard Apparatus (www.harvardapparatus.com). Snapwell inserts are provided sterile and preloaded in 6 well plates. All plates come with lids.

Cat. No.	Membrane Diameter (μm)*	Growth Surface Area* (cm ²)	Membrane Pore Size (μm)	Membrane Material	Inner Packaging	Inserts/Case
3407	12 mm	1.12	0.4	Polycarbonate	6 inserts/6 well plate	24
3801	12 mm	1.12	0.4	Clear Polyester	6 inserts/6 well plate	24
3802	12 mm	1.12	3.0	Polycarbonate	6 inserts/6 well plate	24

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HTS Transwell-24 System showing both the culture reservoir and the 24 well microplate.

HTS Transwell®-24 Well Permeable Supports

The HTS Transwell-24 System has an array of 24 wells with permeable inserts connected by a rigid, robotics-friendly tray that enables all 24 Transwell inserts to be handled as a single unit. The individually packaged product consists of two individually wrapped HTS Transwell-24 units loaded into open reservoirs and includes two 24 well plates. The bulk packaged products consist of 12 HTS Transwell-24 units loaded into 24 well plates only. Open reservoirs can be purchased separately.

- ▶ Choice of either 0.4 µm polyester membrane or 0.4 µm and 3.0 µm pore polycarbonate membrane
- ▶ Cell growth area is 0.33 cm²/well
- ▶ Choice of either individual or bulk packaging
- ▶ HTS Transwell-24 Systems are all tissue culture treated and sterile

Cat. No.	Description	Membrane Material	Pore Size (µm)	Qty/Cs
3396	HTS Transwell-24 System: insert tray in a reservoir plate with lid, 1/pack; plus a separate 24 well receiver plate with lid, 1/pack	PC	0.4	2
3379	HTS Transwell-24 System: insert tray in a reservoir plate with lid, 1/pack; plus a separate 24 well receiver plate with lid, 1/pack	PET	0.4	2
3397	HTS Transwell-24 System, Bulk Packed: insert trays in 24 well plates with lids, 12/pack	PC	0.4	12
3378	HTS Transwell-24 System, Bulk Packed: insert trays in 24 well plates with lids, 12/pack	PET	0.4	12
3398	HTS Transwell-24 System: insert tray in a reservoir plate with lid, 1/pack; plus a separate 24 well receiver plate with lid, 1/pack	PC	3.0	2
3399	HTS Transwell-24 System, Bulk Packed: insert trays in 24 well plates with lids, 12/pack	PC	3.0	12
3395	HTS Transwell-24 Reservoir (Feeder) Plate and lid, not treated, 12/pack	NA	NA	48

6, 12, and 24 Well Cell Culture Plates

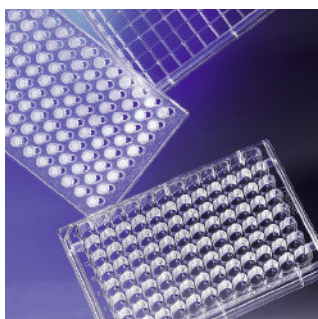
These multiple well plates are treated for optimal cell attachment, sterilized by gamma radiation and are certified nonpyrogenic. All plates have a uniform footprint and a raised bead to aid in stacking. Alphanumeric labels provide individual well identification. The 6.5, 12, and 24.5 mm Transwell inserts are designed to automatically center themselves when placed into the appropriate culture plate.



Corning offers a variety of multiple well plate designs and sizes.

Cat. No.	Number of Wells	Well Diameter* (mm)	Growth Surface Area* (cm ²)	Qty/Pk	Qty/Cs
3506	6	34.8	9.5	5	100
3516	6	34.8	9.5	1	50
3512	12	22.1	3.8	5	100
3513	12	22.1	3.8	1	50
3527	24	15.6	1.9	5	100
3526	24	15.6	1.9	1	50

* Values are reported as nominal and may vary due to inherent variability of the manufacturing process. To insure success, we recommend that researchers validate their methods independent from our reported values.



HTS Transwell-96 System showing the culture reservoir with removable media stabilizer (top), the 96 well insert tray (middle) and the 96 well receiver plate (bottom).

HTS Transwell®-96 Well Permeable Support Systems and Plates

The HTS Transwell-96 Well Permeable Support has an array of 96 wells with permeable inserts connected by a rigid, robotics-friendly tray that enables all 96 inserts to be handled as a single unit.

- ▶ HTS Transwell-96 insert membranes are all tissue culture treated and sterile
- ▶ Choice of either a polyester (PET) membrane (1.0 µm, 8.0 µm pore sizes) or polycarbonate (PC) membranes (0.4 µm, 3.0 µm, 5.0 µm pore sizes)
- ▶ Cell growth area is 0.143 cm²/well which is 20 to 50% greater than competitive devices
- ▶ Large apical and basolateral access ports for easier filling and sampling
- ▶ Removable media stabilizer reduces media spills during handling
- ▶ Automation optimized design with multichannel feeder ports, improved gripping surface and standard bar coding
- ▶ 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 µm and 5.0 µm PC, 8.0 µm PET) are packaged with the 96 well insert plate in a 96 well receiver plate with lid. Reservoir plates and black 96 well receiver plates may be purchased separately.

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	5	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	5	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, tissue culture treated	n/a	n/a	10	10
3383	HTS Transwell-96 reservoir plate with removable media stabilizer and lid, not treated	n/a	n/a	10	10
3583	HTS Transwell-96 black receiver plate with lid, tissue culture treated	n/a	n/a	10	10

For additional product or technical information, please visit www.corning.com/lifesciences or call 800.492.1110. Customers outside the United States, please call +1.978.442.2200 or contact your local Corning sales office listed below.

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