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Corning Cell Culture Selection Guide

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CORNING
Discovering Beyond Imagination





Introduction

Corning Life Sciences is pleased to present our Cell Culture Selection Guide. In this guide, you will find a selection of Corning's newest and most requested products.

For up-to-date information on Corning Life Sciences' comprehensive range of products and services, go to www.corning.com/lifesciences where you can access:

- ▶ New Products Information
- ▶ Technical Information including:
 - Application Notes
 - Instruction Manuals
 - Product Bulletins
- ▶ Educational Opportunities
- ▶ Product Catalog Information
- ▶ Product Literature
- ▶ Complete Distributor Information

For additional product information, please visit www.corning.com/lifesciences, or call 1.800.492.1110. Customers outside the United States, please call 1.978.635.2200 or contact your local support office. See back cover.

Ordering Information

Corning products are available through any authorized Corning support office or distributor. Please see our web site for a complete listing.

To place an order, simply contact the distributor of your choice. For each requested product, provide the Corning catalog number, product description, and desired quantity.



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Overview

DESIGNED FOR PERFORMANCE

Corning Life Sciences offers a full line of cell culture products that are manufactured under strict process controls guaranteeing consistent product performance. All Corning Life Sciences plastics manufacturing facilities are ISO 9001:9002 registered. ISO registration is recognized worldwide as a standard of excellence for quality systems.

In addition, customers can now request a Certificate of Quality for any Corning® or Costar® cell culture product. This certificate details lot-specific information on component materials, sterility testing, pyrogen testing, cell attachment, and growth characteristics.

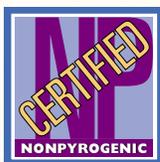
Also available are detailed product descriptions and drawings that highlight product dimensions and testing procedures. All are available simply by calling your local Corning Life Sciences office.



ADDITIONAL QUALITY ASSURANCES

Nonpyrogenic Certification

Most Corning and Costar cell culture products are certified nonpyrogenic with a documented endotoxin level of equal to or less than 0.1 EU/mL. Endotoxins have been shown to cause variability in cell culture. Nonpyrogenic certification is just another way Corning helps ensure consistent cell culture results. Corning also offers a detailed technical bulletin on the effects of endotoxins in cell culture. This may be obtained by calling your local Corning Life Sciences office or by downloading the bulletin from the Corning web site www.corning.com/lifesciences.



Lot Number Traceability

To ensure accurate lot number traceability in biotechnology research and production facilities, all Corning and Costar cell culture flasks and most roller bottles feature a lot number individually printed on each product. Lot number traceability helps simplify quality assurance procedures for tracking and monitoring production and research processes.

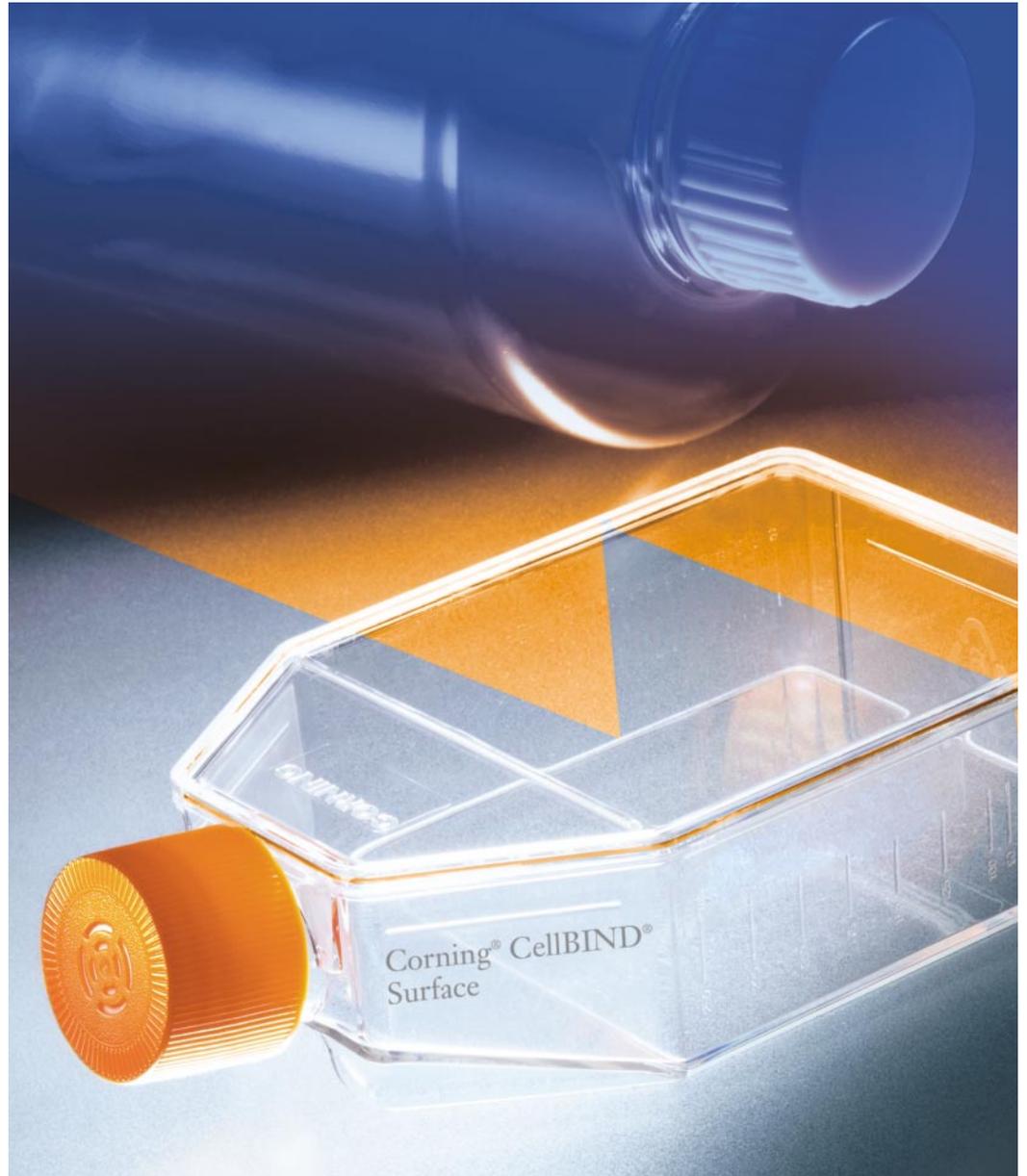


Consistent Surface Chemistry

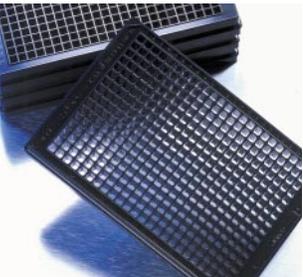
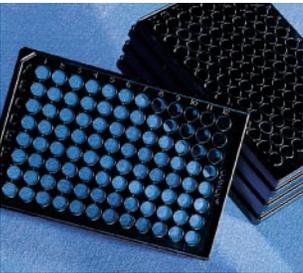
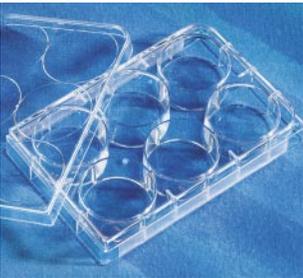
All Corning and Costar cell culture products are produced in ISO-certified facilities. Cell culture products are made from USP Class VI materials in accordance with documented manufacturing procedures. By carefully controlling both the materials we use and our manufacturing process, Corning is able to provide consistent surface chemistries across our entire line of cell culture products. This consistency increases the researcher's ability to produce reliable results.

Corning® CellBIND® Surface

A NOVEL SURFACE FOR IMPROVED CELL ATTACHMENT, SERUM REDUCTION,
OR THE ELIMINATION OF COATINGS



Corning® CellBIND® Surface



Corning CellBIND Surface is now available on flasks, CellSTACK® Culture Chambers, multiple well plates, 96 and 384 well plates, dishes, and roller bottles.

Increase Cell Growth and Yields with Corning CellBIND Surface

Corning Life Sciences is proud to introduce the new Corning CellBIND culture surface, the first novel cell culture surface treatment in over 20 years. The Corning CellBIND surface enhances cell attachment under difficult conditions, such as reduced-serum or serum-free medium, resulting in higher cell yields.

Developed by Corning scientists, this patented technology (U.S. Patent No. 6,617,152) uses a microwave plasma process for treating the culture surface. This process improves cell attachment by incorporating significantly more oxygen into the cell culture surface, rendering it more hydrophilic (wettable) and increasing surface stability.

Benefits

- ▶ More quickly adapts cells to reduced-serum or serum-free conditions
- ▶ May eliminate the need for tedious, time-consuming, expensive and low stability biological coatings
- ▶ Requires no refrigeration or special handling and is stable at room temperature
- ▶ Better cell attachment leads to increased cell growth and yields



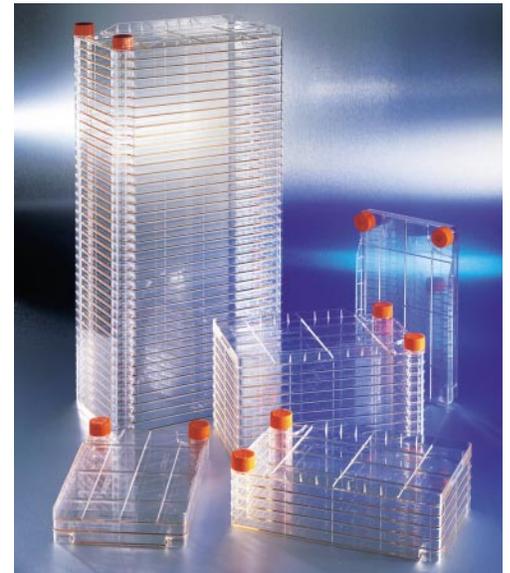
- ▶ More consistent and even cell attachment
- ▶ Reduces premature cell detachment from confluent cultures especially in roller bottles

Same High Quality Standards as Other Corning Vessels

- ▶ Manufactured from optically clear polystyrene
- ▶ Rigorous QC testing for consistency and reproducibility
- ▶ Certified nonpyrogenic and sterile
- ▶ Printed lot numbers for quality assurance and tracking
- ▶ Corning CellBIND Surface logo differentiates from standard treatment cell culture products and avoids mix-ups

Cell Dissociation Recommendations

Culture inoculating and harvesting should be performed in the same manner as methods currently being employed. Both enzymatic and nonenzymatic dissociating solutions have been successfully used to remove cells from Corning CellBIND surfaces. These include: Trypsin-EDTA, Accutase®, Versene®, Dispase®, and Citric Saline. Some dissociating agents, such as Dispase or Versene, should be removed by centrifugation prior to plating the cells.



Enhancement Attachment of LNCaP Cells to the Corning® CellBIND® Surface*

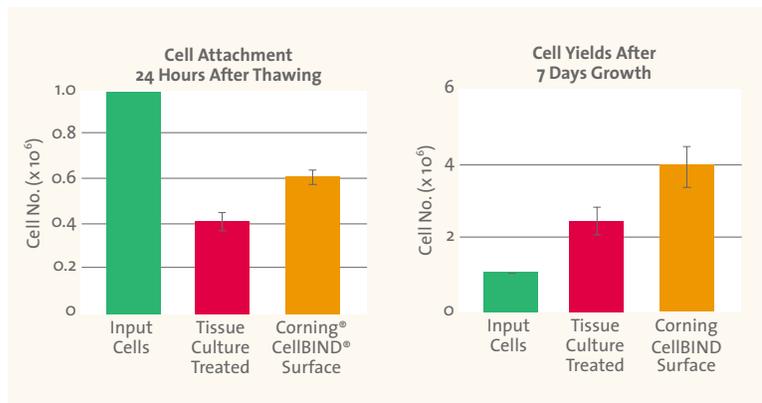


Figure 1. Left: Adherent cell recovery and growth of LNCaP cells 24 hours post-seeding. Data is average ± standard error from 3 independent experiments. Right: Average ± standard error from 3 independent experiments for 7 day growth after initial attachment.

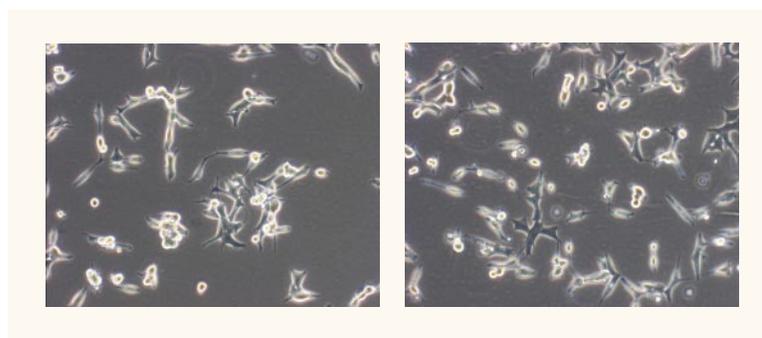


Figure 2. Attachment of LNCaP cells. Cells were thawed and plated onto the Corning CellBIND Surface (right) or tissue culture treated (left) T25 flasks. 24 hours post seeding a random field was viewed by light microscopy (100X magnification).

*From *Enhanced Attachment of LNCaP Cells to the Corning CellBIND Surface*, Corning SnAPPSHOT publication CLS-AN-048.

Corning CellBIND Surface Product Ordering Information

Cat. No.	Description	Qty/ Pk	Qty/ Cs
<i>Roller Bottles</i>			
3907	Roller Bottle, 850 cm ² , Corning CellBIND Surface, Easy Grip Cap, Sterile	2	40
431134	Expanded Surface Roller Bottle, 1700 cm ² , Corning CellBIND Surface, PS, Easy Grip Cap, Sterile	20	20
431329	Roller Bottle, 850 cm ² , Corning CellBIND Surface, Vent Cap, Sterile	2	40
431344	Roller Bottle, 850 cm ² , Corning CellBIND Surface, Easy Grip Cap, Sterile	22	44
<i>Flasks</i>			
3289	Flask, 25 cm ² , Corning CellBIND Surface with Vent Cap, Sterile	20	200
3290	Flask, 75 cm ² , Corning CellBIND Surface with Vent Cap, Sterile	5	100
3291	Flask, 150 cm ² , Corning CellBIND Surface with Vent Cap, Sterile	5	50
3292	Flask, 175 cm ² , Corning CellBIND Surface with Vent Cap, Sterile	5	50
3293	Flask, 225 cm ² , Corning CellBIND Surface with Vent Cap, Sterile	5	25
3298	Flask, 175 cm ² , Corning CellBIND Surface with Phenolic Cap, Sterile	5	50
431328	Flask, 175 cm ² , Corning CellBIND Surface, Bar coded with Vent Cap, Sterile	7	84
431346	Expanded Surface Flask, 235 cm ² , Corning CellBIND Surface, with Bar Code, Vent Cap, Sterile	7	42
3068	RoboFlask® Tissue Culture Vessel for Automation, 92.6 cm ² growth area, Corning CellBIND Surface, with Bar Code, Septum Cap, Sterile	10	50
3067	RoboFlask Tissue Culture Vessel for Automation, 92.6 cm ² growth area, Corning CellBIND Surface, with Bar Code, Septum Cap, Sterile	20	100



Corning® CellBIND® Surface Product Ordering Information (Continued)



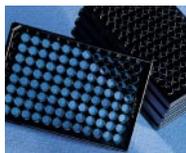
Cat. No.	Description	Qty/ Pk	Qty/ Cs
<i>CellSTACK® Culture Chambers</i>			
3330	CellSTACK-1 Chamber, 636 cm ² growth area, Corning CellBIND Surface, Sterile	1	8
3310	CellSTACK-2 Chamber, 1,272 cm ² growth area, Corning CellBIND Surface, Sterile	1	5
3311	CellSTACK-5 Chamber, 3,180 cm ² growth area, Corning CellBIND Surface, Sterile	1	2
3320	CellSTACK-10 Chamber, 6,360 cm ² growth area, Corning CellBIND Surface, Sterile	1	6
3321	CellSTACK-40 Chamber, 25,440 cm ² growth area, Corning CellBIND Surface, Sterile	1	2

Dishes

3294	Dish, 35 x 10 mm style, Corning CellBIND Surface, Sterile	10	210
3295	Dish, 60 x 15 mm style, Corning CellBIND Surface, Sterile	7	126
3296	Dish, 100 x 20 mm style, Corning CellBIND Surface, Sterile	5	40

Multiple Well Plates

3335	6 Well Plate, Corning CellBIND Surface, Clear, Sterile, with Lid	5	50
3336	12 Well Plate, Corning CellBIND Surface, Clear, Sterile, with Lid	5	50
3337	24 Well Plate, Corning CellBIND Surface, Clear, Sterile, with Lid	5	50

Microplates

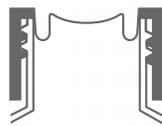
3300	96 Well Plate, Corning CellBIND Surface, Clear Bottom, Sterile, with Lid	5	50
3340	96 Well Plate, Corning CellBIND Surface, Black/Clear Bottom, Sterile, with Lid	5	50
3683	384 Well Plate, Corning CellBIND Surface, Black/Clear Bottom, Sterile, with Lid	10	50

Cell Culture Flasks

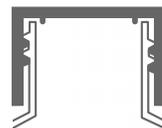
Corning® and Costar® flasks are available in a variety of sizes, designs and cap styles to meet your needs.

- › Manufactured from optically clear virgin polystyrene
- › Treated for optimal cell attachment
- › Printed with lot numbers for ease in traceability
- › 100% integrity tested
- › Sterilized by gamma irradiation
- › Certified nonpyrogenic

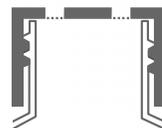
Flask Cap Styles



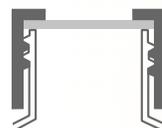
Plug seal caps feature one-piece linerless construction and are designed for use in closed systems, providing a liquid- and gas-tight seal. When loosened, this cap can also be used in open systems. This cap design was a Corning innovation that first appeared in 1974.



Phenolic style caps are designed (when loosened) for use in open systems requiring gas exchange. With the caps slightly loosened, gas is exchanged between the environments inside and outside of the flask.



Vent caps contain a 0.2 µm nonwetable membrane sealed to the cap, providing consistent, sterile gas exchange while minimizing the risk of contamination. These caps are highly recommended for use in all CO₂ incubators, especially for long-term use. The vent cap was a Corning innovation that first appeared in 1988.



Septum caps maintain a closed sterile environment within the RoboFlask™ vessel. The septum allows for adding or removing cells and solutions with a blunt tip cannula while reducing the opportunity for contamination. The septum is pre-split to prevent coring of the septum by the cannula. The cap may also be removed to allow pipette access (up to 5 mL) or assist in harvesting of cells. This cap septum is validated for multiple entries.

Flask Neck Styles



Straight neck flasks are ideal for larger medium volumes since this design reduces medium sloshing into the cap.



Canted neck flasks allow easier pouring and improved access to the flask for pipetting or scraping. The canted neck design was a Corning innovation that first appeared in 1974.



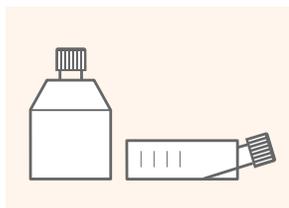
Angled neck improves pipette access and reduces medium sloshing into the neck. This patented design was a Corning innovation that first appeared in 1988.

Flask Shapes

Choosing a flask shape is usually a matter of personal preference:



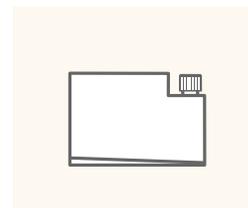
Triangular and modified triangular flasks offer good pipette and cell scraper access to the corners. The wider base provides added stability.



Rectangular flasks have a ramp from the bottom to the canted neck for easier pouring and pipette access. Most canted neck flasks also have an antitip skirt to enhance stability.



Angled neck and traditional straight neck flasks utilize the entire bottom area for cell growth. Their design saves on space and reduces medium sloshing into the neck.



RoboFlask™ vessels are robotics-compatible cell culture flasks offering 92.6 cm² cell growth surface area. The flasks are designed for use in automated cell culture systems utilizing a microplate-size format.



3056 25 cm² Triangular Flask with Vent Cap

Corning® Cell Culture Flask Ordering Information

25 cm² Growth Area Flasks

Cat. No.	Surface	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
430168	TC	Rectangular	Canted	Plug Seal	20	500
430372	TC	Rectangular	Canted	Phenolic-Style	20	500
430639	TC	Rectangular	Canted	Vent Cap	20	200
3055	TC	Triangular	Angled	Phenolic-Style	20	500
3056	TC	Triangular	Angled	Vent Cap	10	200
3289	Corning® CellBIND® Surface	Rectangular	Canted	Vent Cap	20	200
3815	Ultra-Low Attachment	Rectangular	Canted	Vent Cap	6	24

75 cm² Growth Area Flasks

Cat. No.	Surface	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
430641	TC	Rectangular	Canted	Vent Cap	5	100
430720	TC	Rectangular	Canted	Plug Seal	5	100
430725	TC	Rectangular	Canted	Phenolic-Style	5	100
3275	TC	Modified triangular	Straight	Phenolic-Style	5	100
3276	TC	Modified triangular	Straight	Vent Cap	5	100
3290	Corning CellBIND Surface	Rectangular	Canted	Vent Cap	5	100
3814	Ultra-Low Attachment	Rectangular	Canted	Vent Cap	4	24



430639 25 cm² Canted Neck Flask with Vent Cap



430641 75 cm² Canted Neck Flask with Vent Cap



430725 75 cm² Canted Neck Flask with Phenolic-Style Cap



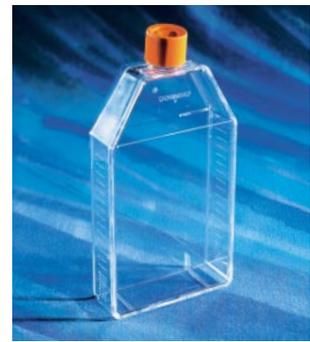
3275 75 cm² Triangular Flask with Phenolic-Style Cap



3070 RoboFlask® Cell Culture Vessel with Septum Cap



431306 175 cm² Flask with Vent Cap and Bar Code



430823 150 cm² Canted Neck Flask with Plug Seal Cap

92.6 cm² Growth Area RoboFlask™ Vessels

Cat. No.	Description	Qty/Pk	Qty/Cs
3070	RoboFlask Cell Culture Vessel for automation, tissue culture treated, with bar code, septum cap, sterile	20	100
3071	RoboFlask Cell Culture Vessel for manual use, tissue culture treated, with bar code, flat cap (without septum), sterile	20	100
3069	RoboFlask Cell Culture Vessel for automation, tissue culture treated, with bar code, septum cap, sterile	10	50
3059	RoboFlask Cell Culture Vessel for manual use, tissue culture treated, with bar code, flat cap (without septum), sterile	10	50
3067	RoboFlask Cell Culture Vessel for automation, Corning® CellBIND® surface treatment with bar code, septum cap, sterile	20	100
3068	RoboFlask Cell Culture Vessel for automation, Corning CellBIND surface treatment with bar code, septum cap, sterile	10	50

Cell Culture Flask Application Tip

Corning recommends 0.2 to 0.3 mL of medium per cm² of growth area.

Cell Culture Flask Selection Tip

The 235 cm² Expanded Surface flask has the same footprint as the 175 cm² flasks.

150 cm² Growth Area Flasks

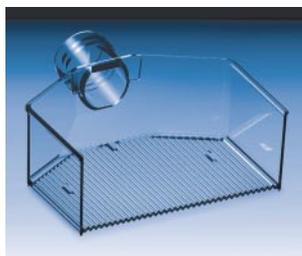
Cat. No.	Surface	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
430823	TC	Rectangular	Canted	Plug Seal	5	50
430824	TC	Rectangular	Canted	Phenolic-Style	5	50
430825	TC	Rectangular	Canted	Vent Cap	5	50
3291	Corning CellBIND Surface	Rectangular	Canted	Vent Cap	5	50

162 cm² Growth Area Flasks

Cat. No.	Surface	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
3150	TC	Traditional	Straight	Phenolic-Style	5	25
3151	TC	Traditional	Straight	Vent Cap	5	25

175 cm² Growth Area Flasks

Cat. No.	Surface	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
431079	TC	Rectangular	Angled	Plug Seal	5	50
431080	TC	Rectangular	Angled	Vent Cap	5	50
431085	TC	Rectangular	Angled	Phenolic-Style	5	50
431306*	TC	Rectangular	Angled	Vent Cap	7	84
431328*	CorningCellBIND Surface	Rectangular	Angled	Vent Cap	7	84
3292	CorningCellBIND Surface	Rectangular	Angled	Vent Cap	5	50
3298	CorningCellBIND Surface	Rectangular	Angled	Phenolic-Style	5	50



431346 235 cm² Expanded Growth Area Flask with Bar Code

*Flask prelabeled with bar code, validated for use with SelecT™ Robotic System.



431082 225 cm² Angled Neck Flask with Vent Cap

225 cm² Growth Area Flasks

Cat. No.	Surface	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
431081	TC	Traditional	Angled	Plug Seal	5	25
431082	TC	Traditional	Angled	Vent Cap	5	25
3000	TC	Rectangular	Canted	Phenolic-Style	4	24
3001	TC	Rectangular	Canted	Vent Cap	4	24
3293	Corning® CellBIND® Surface	Traditional	Angled	Vent Cap	5	25

235 cm² Expanded Growth Area Flask

Cat. No.	Surface	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
431346*	Corning CellBIND Surface	Rectangular	Angled	Vent Cap	7	42

*Flask prelabeled with bar code for use with SelectT™ Robotic System.

Cell Yields and Recommended Medium Volume



3001 225 cm² Canted Neck Flask with Vent Cap

Corning® and Costar® Flasks	Approximate Growth Area (cm ²)	Average Cell Yield*	Recommended Medium Volume (mL)	Maximum Working Volume (mL)†
25 cm ²	25	2.5 x 10 ⁶	5 - 7.5	10
75 cm ² Canted neck	75	7.5 x 10 ⁶	15 - 22.5	60
75 cm ² Straight neck	75	7.5 x 10 ⁶	15 - 22.5	90
RoboFlask™ Vessel	93	9.4 x 10 ⁶	20 - 30	70
150 cm ²	150	1.5 x 10 ⁷	30 - 45	210
175 cm ²	175	1.75 x 10 ⁷	35 - 52.5	250
225 cm ²	225	2.25 x 10 ⁷	45 - 67.5	370
235 cm ²	235	2.35 x 10 ⁷	47 - 70.5	250

*Assumes an average yield of 1 x 10⁵ cells/cm² from a 100% confluent culture. Yields from many cell types can be lower than this.

†Maximum working volume is the amount a flask can hold in the horizontal position when filled to the neck.

Cell Culture Dishes



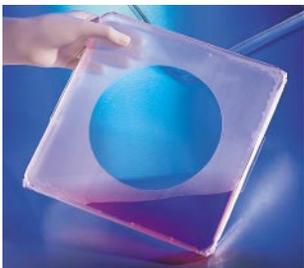
3296 Corning® CellBIND® Surface 100 mm Dishes



430196 Gridded 60 mm Dish

Corning Cell Culture Treated Dishes

- ▶ Corning CellBIND Surface is a novel cell culture treatment that increases surface wettability for more even and consistent cell attachment
- ▶ Ultra Low Attachment dishes feature a covalently bound hydrogel layer that minimizes cell attachment, protein absorption and cellular activation
- ▶ 6-pack carriers with only 10 dishes/bag are available for 100mm dishes (Cat No. 430293)
- ▶ 245 mm square dishes offer 500cm² growth surface
- ▶ Unique spillguard film protects 245 mm square dishes (Cat. No. 431112) against media spills during handling and transport to incubator
- ▶ Manufactured from optically-clear virgin polystyrene
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic
- ▶ Have stacking beads to aid in handling
- ▶ Supplied with vents to provide consistent gas exchange

431110 500 cm² Cell Culture Dish431112 500 cm² DW Spillguard Dish

Cell Culture Dish Application Tips

- ▶ The 150 and 245 mm culture dishes make excellent carriers and incubator trays for 35 and 60 mm dishes. This helps prevent spills and reduces opportunities for contamination.
- ▶ Corning recommends 0.2 to 0.3 mL of medium per cm² of growth area.

Corning® Cell Culture Dish Ordering Information

Cat. No.	Surface	Dish Style* (mm)	Approx. Height (mm)	Growth Area (cm ²)	Qty/Pk	Qty/Cs
3294	Corning CellBIND® Surface	35	10	8	10	210
430165	TC	35	10	8	20	500
430166	TC	60	15	21	20	500
3295	Corning CellBIND Surface	60	15	21	7	126
3261	Ultra-Low Attachment	60	15	21	5	20
3262	Ultra-Low Attachment	100	20	55	5	20
430196	TC	60 with 2 mm grid	15	21	20	500
3296	Corning CellBIND Surface	100	20	55	5	40
430167	TC	100	20	55	20	500
430293	TC	100	20	55	10	480
430599	TC	150	25	148	5	60
431110	TC	245	25	500	4	16
431112	TC	245	25	500	4	16

*Dish style (mm) = actual growth surface diameters: 35 mm dish = 33.9 mm; 60 mm dish = 51.4 mm; 100 mm dish = 80.5 mm; 150 mm dish = 134.5 mm. The square dishes have interior bottom dimensions of 224 mm x 224 mm.

Corning Nontreated Cell Culture Dishes

- ▶ Manufactured from optically clear virgin polystyrene
- ▶ Not cell culture treated for applications where cell attachment is not desired
- ▶ Have stacking beads to aid in handling
- ▶ Supplied with vents to provide consistent gas exchange
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Corning Nontreated Cell Culture Dish Ordering Information

Cat. No.	Dish Style* (mm)	Height (mm)	Approx. Growth Area (cm ²)	Qty/Pk	Qty/Cs
430588	35	10	8	20	500
430589	60	15	21	20	500
430591	100	20	55	20	500
430597	150	25	148	5	60
431111†	245	25	500	4	16

*Note: Dish style (mm) = actual growth surface diameters: 35 mm dish = 33.9 mm; 60 mm dish = 51.4 mm; 100 mm dish = 80.5 mm; 150 mm dish = 134.5 mm.

†Cat. No. 431111 is a square dish with interior bottom plate dimensions of 224 mm x 224 mm.

Expected Cell Yields and Recommended Medium Volumes

Corning Dishes	Approximate Growth Area (cm ²)	Average Cell Yield*	Recommended Medium Volume (mL)†
35 mm	8	8.0 x 10 ⁵	1.6 - 2.4
60 mm	21	2.1 x 10 ⁶	4.2 - 6.3
100 mm	55	5.5 x 10 ⁶	11 - 16.5
150 mm	148	1.48 x 10 ⁷	30 - 45
245 mm (square)	500	5.0 x 10 ⁷	100 - 150

*Assumes an average yield of 1 x 10⁵ cells/cm² from a 100% confluent culture.

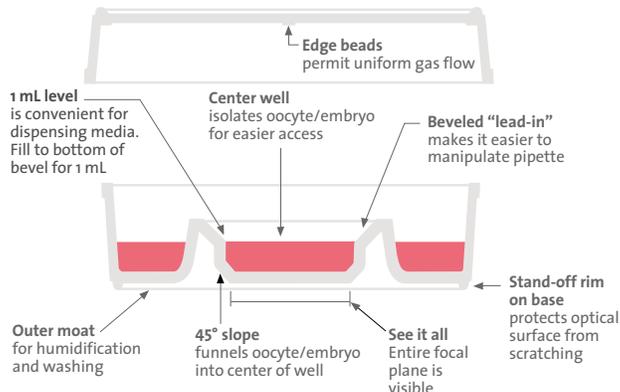
†Yields from many cell types can be lower than this.



3260 IVF Culture Dish

Costar® IVF Culture Dish

- ▶ 20 mm center well
- ▶ Inner well holds 3 mL of medium while the outer well holds 10 mL
- ▶ Treated for optimal cell attachment
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic
- ▶ For research use only



Costar IVF Culture Dish Ordering Information

Cat. No.	Size (mm)	Description (mm)	Center Well (mm)	Qty/Pk	Qty/Cs
3260	60	60 x 15	20	20	500

Ultra-Low Attachment Dishes and Plates

The Ultra-Low Attachment surface is a unique covalently bonded hydrogel surface that is hydrophilic and neutrally charged. It minimizes cell attachment, protein absorption and enzyme activation. The surface is noncytotoxic, biologically inert and nondegradable.



3261 and 3262 Ultra-Low Attachment Dishes

Ultra-Low Attachment Dishes Ordering Information

Cat. No.	Dish Style (mm)*	Height (mm)	Growth Area (cm ²)	Qty/Pk	Qty/Cs
3261	60	15	21	5	20
3262	100	20	55	5	20

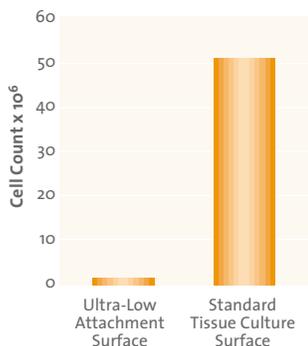
*60 mm dish = 51.4 mm; 100 mm dish = 80.5 mm

Ultra-Low Attachment Plates Ordering Information

Cat. No.	Plate Type	Diameter (mm)	Growth Area (cm ²)	Qty/Pk	Qty/Cs
3471	6 well plate	34.8	9.5	1	24
3473	24 well plate	15.6	1.9	1	24
3474	96 well plate	6.4	0.32	1	24

Ultra-Low Attachment Flasks Ordering Information

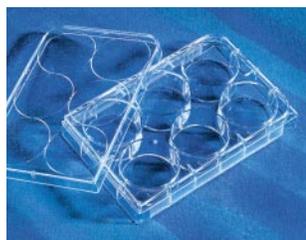
Cat. No.	Flask Type	Cap Style	Growth Area (cm ²)	Qty/Pk	Qty/Cs
3815	Rectangular	Vent	25	6	24
3814	Rectangular	Vent	75	4	24



Comparison of Cell Attachment in Ultra-Low vs. Standard Tissue Culture Treated Plates

Vero cells plated at 2.6×10^6 cells per well grown for 4 days at 37°C in a 5% CO₂ environment show a 99% reduction in cellular attachment vs. standard culture treated product.

Multiple Well Plates



3516 6 Well Culture Plate



3513 12 Well Culture Plate



3524 24 Well Culture Plate



3548 48 Well Culture Plate

Costar® 6, 12, 24, and 48 Well Cell Culture Plates

- ▶ Corning® CellBIND® Surface is a novel cell culture treatment that increases surface wettability for more even and consistent cell attachment
- ▶ Ultra-Low Attachment plates feature a covalently bound hydrogel layer that minimized cell attachment, protein absorption and cellular activation
- ▶ Flat bottoms
- ▶ Nonreversible lids with condensation rings to reduce contamination
- ▶ Individual alphanumeric codes for well identification
- ▶ Uniform footprint for ease in stacking
- ▶ Treated for optimal cell attachment (except where noted)
- ▶ Sterilized by gamma irradiation
- ▶ Certified nonpyrogenic

6, 12, 24, and 48 Well Plates Ordering Information

Cat. No.	Surface	Plate Type	Qty/Pk	Qty/Cs
6 Well Plates				
3335	Corning® CellBIND® Surface	Standard clear plate	5	50
3506	TC	Standard clear plate	5	100
3516	TC	Standard clear plate	1	50
3471	Ultra-Low Attachment	Standard clear plate with hydrogel*	1	24
12 Well Plates				
3336	Corning CellBIND Surface	Standard clear plate	5	50
3512	TC	Standard clear plate	5	100
3513	TC	Standard clear plate	1	50
24 Well Plates				
3337	Corning CellBIND Surface	Standard clear plate	5	50
3524	TC	Standard clear plate	1	100
3526	TC	Standard clear plate	1	50
3527	TC	Standard clear plate	5	100
3473	Ultra-Low Attachment	Standard plate with hydrogel*	1	24
48 Well Plates				
3548	TC	Standard clear plate	1	100

*This covalently bonded hydrogel surface minimizes cell attachment, protein absorption, enzyme activation and cellular activation. The surface is noncytotoxic, biologically inert and nondegradable.

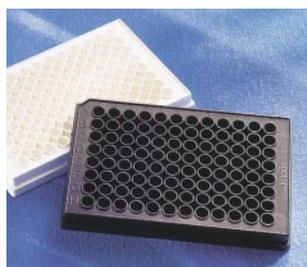
Well Dimensions, Expected Cell Yields, and Recommended Medium Volumes

Cell Culture Plates	Well Diameter (Bottom, mm)	Single Well Only				Entire Plate		
		Approx. Growth Area (cm ²)	Average Cell Yield*	Total Well Volume (mL)	Working Volume (mL)	Approx. Growth Area (cm ²)	Average Cell Yield*	Working Volume (mL)
6 well	34.8	9.5	9.5 x 10 ⁵	16.8	1.9 - 2.9	57	5.7 x 10 ⁶	11.4 - 17.1
12 well	22.1	3.8	3.8 x 10 ⁵	6.9	0.760 - 1.14	45.6	4.56 x 10 ⁶	9.1 - 13.7
24 well	15.6	1.9	1.9 x 10 ⁵	3.4	0.380 - 0.570	45.6	4.56 x 10 ⁶	9.1 - 13.7
48 well	11	0.95	8.0 x 10 ⁴	1.6	0.19 - 0.285	45.6	38.4 x 10 ⁶	9.1 - 13.7

*Assumes an average yield of 1 x 10⁵ cells/cm² from a 100% confluent culture. Yields from many cell types can be lower than this.



3596 96 Well Culture Plate

3610 and 3603
96 Well Clear Bottom Plates3917 and 3916
96 Well Solid Plates

Corning® and Costar® 96 Well Cell Culture Plates

- ▶ Corning® CellBIND® Surface is a novel cell culture treatment that increases surface wettability for more even and consistent cell attachment
- ▶ Ultra-Low Attachment plates feature a covalently bound hydrogel layer that minimized cell attachment, protein absorption and cellular activation
- ▶ Flat bottoms (except where noted)
- ▶ Nonreversible lids with condensation rings to reduce contamination (except where noted)
- ▶ Treated for optimal cell attachment (except where noted)
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic
- ▶ Individual alphanumeric codes for well identification

Black plates are designed to lower background in fluorescent assays and reduce crosstalk. White plates are designed for luminescent assays. Some plates have the Corning® CellBIND® surface or a poly-D-lysine coating to enhance cell attachment. Corning offers many other 96 well plate types for applications other than cell culture; for a complete listing, check the catalog at www.corning.com/lifesciences.

96 Well Plate Ordering Information

Cat. No.	Surface	Description	Qty/ Pk	Qty/ Cs
Clear Plates				
3300	Corning CellBIND Surface	Standard clear plate	5	50
3596	TC	Standard clear plate	1	50
3997	TC	Standard clear plate	10	50
3598	TC	Standard clear plate	5	100
3599	TC	Standard clear plate	1	100
3585	TC	Standard clear plate with special low evaporation lid	5	50
3595	TC	Standard clear plate with special low evaporation lid	1	50
3697	TC	96 well half area clear plate	20	100
3790	TC	96 well round bottom, polypropylene plate with polystyrene lid	1	50
3799	TC	96 well round bottom clear plate	1	50
3894	TC	96 well V-bottom clear plate	1	50
3665	poly-D-lysine	Standard clear plate, coated	20	100
9102	TC	8-well strip plate, assembled 12 strips per plate	1	50
3474	Ultra-Low Attachment	Standard clear plate with hydrogel*	1	24
White Plates				
3917	TC	Solid white plate	20	100
3362	TC	Solid white plate without lid	25	100
3688	TC	96 well half area solid white plate	20	100
3885	TC	96 well half area white plate with clear bottom	20	100
3610	TC	White plate with clear bottom	1	48
3903	TC	White plate with clear bottom	20	100
3666	poly-D-lysine	White plate with clear bottom	20	100
Black Plates				
3340	Corning CellBIND Surface	Black plate with clear bottom	5	50
3916	TC	Solid black plate	20	100
3875	TC	96 well half area solid black plate	20	100
3882	TC	96 well half area black plate with clear bottom	20	100
3603	TC	Black plate with clear bottom	1	48
3904	TC	Black plate with clear bottom	20	100
3667	poly-D-lysine	Black plate with clear bottom	20	100
3614	TC	Black plate with special optics, ultrathin, clear bottom, without lid	20	100

96 Well Plate Ordering Information (Continued)

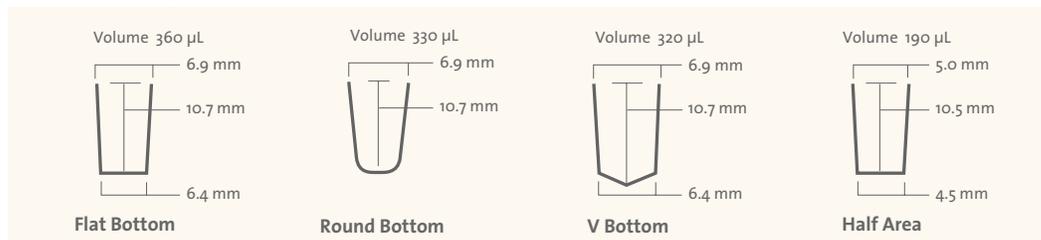
Lids and Tape

3099	–	Universal lid, sterile	25	50
3345	–	Breathable Sealing tape, sterile	50	500
3930	–	Rigid styrene lid with condensation rings, sterile	1	100
3931	–	Rigid styrene lid with condensation rings, sterile	25	50

*This covalently bonded hydrogel surface minimizes cell attachment, protein absorption, enzyme activation and cellular activation. The surface is noncytotoxic, biologically inert and nondegradable.

96 Well Cell Culture Plates

Well Geometry

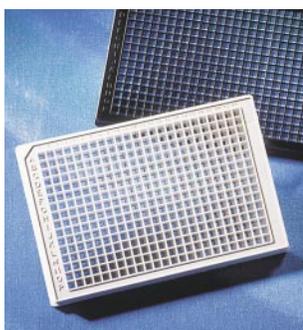


Well Dimensions, Expected Cell Yields, and Recommended Medium Volume

Cell Culture Plates	Well Diameter (Bottom, mm)	Single Well Only				Entire Plate		
		Approx. Growth Area (cm ²)	Average Cell Yield*	Total Well Volume (mL)	Working Volume (mL)	Approx. Growth Area (cm ²)	Average Cell Yield*	Working Volume (mL)
96 well flat bottom	6.4	0.32	3.2 x 10 ⁴	0.36	0.100 - 0.200	30.7	3.07 x 10 ⁶	9.6 - 19.2
96 well round bottom	6.4	NA [†]	NA [†]	0.33	0.100 - 0.200	NA [†]	NA [†]	9.6 - 19.2
96 well V bottom	6.4	0.38	3.8 x 10 ⁴	0.29	0.100 - 0.200	36.5	3.65 x 10 ⁶	9.6 - 19.2
96 half area	4.5	0.16	1.6 x 10 ⁴	0.19	0.050 - 0.100	15.4	1.54 x 10 ⁶	4.8 - 9.6

*Assumes an average yield of 1 x 10⁵ cells/cm² from a 100% confluent culture. Yields from many cell types can be lower than this.
[†]Because these wells are round, the surface area available for cell attachment is dependent on the medium volume used.

384 Well Cell Culture Plates



3707 and 3712
384 Well Clear Bottom Plates

- ▶ Flat bottoms and lids
- ▶ New low volume plates have only a 50 µL total well volume, with recommended working volume of 5 to 40 µL
- ▶ Treated for optimal cell attachment
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Black plates are designed to lower background in fluorescent assays and reduce crosstalk. White plates are designed for luminescent assays. Some plates have the Corning® CellBIND® Surface or a poly-D-lysine coating to enhance cell attachment. Corning offers many other 384 well plate types for applications other than cell culture; for a complete listing, check the catalog at www.corning.com/lifesciences.

384 Well Cell Culture Plate Ordering Information

Cat. No.	Surface	Description	Qty/Pk	Qty/Cs
<i>Clear Plates</i>				
3701	TC	Standard clear plate	20	100
3662	poly-D-lysine	Standard clear plate	20	100
<i>White Plates</i>				
3704	TC	Solid white plate	20	100
3707	TC	White plate with clear bottom	20	100
3663	poly-D-lysine	White plate with clear bottom	20	100
<i>Black Plates</i>				
3709	TC	Solid black plate	20	100
3712	TC	Black plate with clear bottom	20	100
3664	poly-D-lysine	Black plate with clear bottom	20	100
3683	Corning® CellBIND® Surface	Black plate with clear bottom	10	50
3542	TC	Low volume, black plate with clear bottom	10	50

Well Dimensions, Expected Cell Yields, and Recommended Medium Volumes

Cell Culture Plates	Well Diameter (Bottom, mm)	Single Well Only				Entire Plate		
		Approx. Growth Area (cm ²)	Average Cell Yield*	Total Well Volume (mL)	Working Volume (mL)	Approx. Growth Area (cm ²)	Average Cell Yield*	Working Volume (mL)
Standard 384 well	2.7 x 2.7 [†]	0.056	5.6 x 10 ³	0.125	0.025 - 0.050	21.5	2.15 x 10 ⁶	9.6 - 19.2
Low Volume 384 Well	2.0	0.031	3.1 x 10 ³	0.050	0.005 - 0.040	12.0	1.2 x 10 ⁶	1.9 - 15.3

*Assumes an average yield of 1 x 10⁵ cells/cm² from a 100% confluent culture. Yields from many cell types can be lower than this.
[†]These wells are square.

1536 Well Cell Culture Plates

3893 1536 Well Culture Plates

- ▶ Superior performance compared to competitor plates: lower CVs, higher signal-to-noise ratios, and lower background fluorescence
- ▶ Compatible with bar coding, standard readers and automation
- ▶ Recommended working volume of up to 10 µL
- ▶ Treated for optimal cell attachment
- ▶ Flat bottoms and lids
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Black plates are designed to lower background in fluorescent assays and reduce crosstalk. White plates are designed for luminescent assays. Corning offers other 1536 well plate types for applications other than cell culture; for a complete listing, check the catalog at www.corning.com/lifesciences.

1536 Well Cell Culture Plate Ordering Information

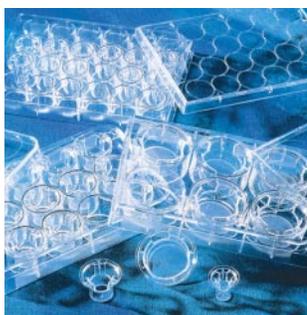
Cat. No.	Description	Qty/Pk	Qty/Cs
<i>White Plates</i>			
3727	Solid white plate	10	50
<i>Black Plates</i>			
3726	Solid black plate	10	50
3893	Black clear bottom plate	10	50

Well dimensions, Expected Cell Yields, and Recommended Medium Volumes

Cell Culture Plates	Well Diameter (Bottom, mm)	Single Well Only				Entire Plate		
		Approx. Growth Area (cm ²)	Average Cell Yield*	Total Well Volume (μL)	Working Volume (μL)	Approx. Growth Area (cm ²)	Average Cell Yield*	Working Volume (mL)
1536 Well Clear Flat Bottom	1.63 x 1.63	0.025	2.5 x 10 ³	12.5	5 - 10	38.3	3.8 x 10 ⁶	7.7 - 15.4
1536 Well Solid Flat Bottom	1.53 x 1.53	0.023	2.3 x 10 ³	12.5	5 - 10	35.3	3.5 x 10 ⁶	7.7 - 15.4

*Assumes an average yield of 1×10^5 cells/cm² from a 100% confluent culture. Yields from many cell types can be lower than this.

Transwell® Permeable Supports



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

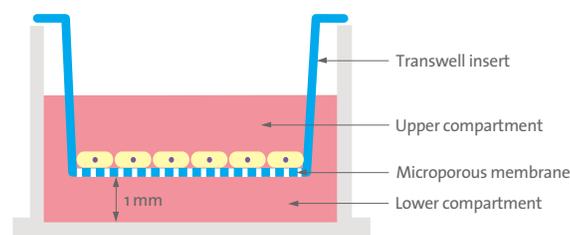
- ▶ Designed to produce a cell culture environment that closely resembles the *in vivo* state
- ▶ Allows polarized cells to feed basolaterally and thereby carry out metabolic activities in a more natural fashion
- ▶ Unique patented self-centered hanging design prevents medium wicking between the insert 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

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, 12.0	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.

**Transwell Permeable Supports Tip**

Check the Corning web site (www.corning.com/lifesciences) for an extensive list of references, listed by application, citing the use of Transwell permeable supports in cell culture research.

Pore Density

Of the three types of Transwell membranes, only the 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 ²)	Transwell-Clear Polyester Membrane (pores/cm ²)
0.4 µm	1 x 10 ⁸	4 x 10 ⁶
1.0 µm	n/a	1.6 x 10 ⁶
3.0 µm	2 x 10 ⁶	2 x 10 ⁶
5.0 µm	4 x 10 ⁵	n/a
8.0 µm	1 x 10 ⁵	1 x 10 ⁵
12.0 µm	1 x 10 ⁵	n/a

Growth Areas and Recommended Medium Volumes for Transwell Permeable Supports

Transwell Insert Diameter (mm)	Insert Membrane Growth Area (cm ²)	Multiple Well Plate or Dish Type	Volume Added per Plate Well	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® Polycarbonate Membrane Insert



3401 12 mm Polycarbonate Transwell Insert

- ▶ 10 µm thick translucent membrane
- ▶ Pore sizes ranging from 0.4 µm to 12 µm diameters
- ▶ Treated for optimal cell attachment
- ▶ Supplied in multiple well plates
- ▶ Membrane must be stained for cell visibility
- ▶ Sterilized by gamma radiation

Transwell Polycarbonate Membrane Permeable Support Ordering Information



3419 75mm Polycarbonate Transwell Insert

Cat. No.	Membrane Diameter (mm)	Growth Surface Area (cm ²)	Membrane Pore Size (µm)	Tissue Culture Treated	Inner Packaging*	Inserts/Cs
3413	6.5	0.33	0.4	Yes	12/plate*	48
3415	6.5	0.33	3.0	Yes	12/plate*	48
3421	6.5	0.33	5.0	Yes	12/plate*	48
3422	6.5	0.33	8.0	Yes	12/plate*	48
3401	12	1.12	0.4	Yes	12/plate	48
3402	12	1.12	3.0	Yes	12/plate	48
3403	12	1.12	12.0	Yes	12/plate	48
3412	24	4.67	0.4	Yes	6/plate	24
3414	24	4.67	3.0	Yes	6/plate	24
3428	24	4.67	8.0	Yes	6/plate	24
3419	75	44	0.4	Yes	1/dish	12
3420	75	44	3.0	Yes	1/dish	12

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



3450 24 mm Transwell-Clear Insert

Transwell-Clear Polyester Membrane Insert

- ▶ 10 µm transparent membrane
- ▶ Treated for optimal cell attachment
- ▶ Excellent visibility under phase contrast microscopy
- ▶ Supplied in multiple well plates
- ▶ Sterilized by gamma radiation

Transwell-Clear Insert Ordering Information

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

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



3491 24 mm Transwell-COL Collagen-Coated Insert

Transwell®-COL Collagen-Coated Membrane Insert

- ▶ Transparent collagen treated PTFE membrane
- ▶ Promotes cell attachment and spreading
- ▶ Equimolar mixture of types I and III collagen
- ▶ Individually packaged
- ▶ Multiple well plates included in each case
- ▶ Supplied sterile

Transwell-COL Insert Ordering Information

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

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

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*
- ▶ Sterilized by gamma radiation
- ▶ 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
3802	3.0	Polycarbonate	6/plate	24
3801	0.4	Clear Polyester	6/plate	24

*Diffusion Chambers are available through Harvard Apparatus (www.harvardapparatus.com)



3407 12 mm Snapwell Inserts



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 supports to be handled as a single unit
- ▶ Cell growth area is 0.33 cm²/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
- ▶ Sterilized by gamma radiation

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	–	–	12	48
3378	HTS Transwell-24, bulk	0.4	PET	12	12
3379	HTS Transwell-24, individual	0.4	PET	1	2

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
- ▶ Choice of either polyester (PET) membrane (1.0 μm, 8.0 μm pore sizes) or polycarbonate (PC) membrane (0.4 μm, 3.0 μm, 5.0 μm pore sizes)
- ▶ 0.143 cm² membrane area per well, providing 20 to 50% more surface area for cell growth than other commercially available systems
- ▶ Large apical and basolateral access ports allow efficient media sampling and facilitate automated or manual access
- ▶ Optimized for automation, with multichannel feeder ports, improved gripping surface, and standard bar codes
- ▶ The 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 receiver plate isolates each well to enable 96 individual assays
- ▶ Sterilized by gamma radiation
- ▶ 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		Qty/ Pk	Qty/ Cs
		Pore Size (µm)	Membrane		
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, 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

Netwell™ Inserts



Netwell Inserts

- ▶ 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
- ▶ Supplied sterile and 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.	Membrane Dia. (mm)	Polyester Membrane Mesh Size (µm)	Sterile	Inner Packaging	Inserts/ Cs
3477	15	74	Yes	12/plate	48
3478	15	500	Yes	12/plate	48
3479	24	74	Yes	6/plate	48
3480	24	500	Yes	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

Culture Tubes



430172 Culture Tube

Culture Tubes

- ▶ Manufactured from optically clear polystyrene
- ▶ Threaded plug seal caps prevent leakage
- ▶ Cell culture treated tubes supplied racked
- ▶ Untreated tubes provided bulk packed
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Culture Tube Ordering Information

Cat. No.	Treated	Size (mm)	Cap Style	Qty/Pk	Qty/Cs
430157	No	16 x 125	Screw Top	25	500
430172	Yes	16 x 125	Screw Top	50	500

Roller Bottles



430849 850 cm² Roller Bottle

Roller Bottles

- ▶ Manufactured from virgin polystyrene
- ▶ Treated for optimal cell attachment
- ▶ One piece seamless construction
- ▶ Most bottles have graduations.
- ▶ All bottles have printed lot numbers to aid in product traceability.
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Roller Bottle Ordering Information

Cat. No.	Surface	Surface Area (cm ²)	Cap Style	Graduations	Qty/Pk	Qty/Cs
430195	TC	490	Plug Seal	No	2	40
430699	TC	1,750	Easy Grip	Yes	10	20
430849	TC	850	Easy Grip	Yes	2	40
431133	TC	850	Easy Grip	Yes	20	20
431198	TC	850	Easy Grip Vent	Yes	2	40
430851	TC	850	Easy Grip	Yes	5	40
431321	TC	850	Easy Grip	Yes	22	44
3907	Corning® CellBIND® Surface	850	Easy Grip	Yes	2	40
431329	Corning CellBIND Surface	850	Easy Grip Vent	Yes	2	40
431344	Corning CellBIND Surface	850	Easy Grip	Yes	22	44
431371	Corning CellBIND Surface	1,750	Easy Grip	Yes	10	20

Expanded Surface Roller Bottles

- ▶ Same features as standard roller bottles
- ▶ Ribbed design provides twice the surface area with the same exterior dimensions



430852 Expanded Surface Roller Bottle

Expanded Surface Roller Bottle Ordering Information

Cat. No.	Surface	Surface Area (cm ²)	Cap Style	Graduations	Qty/Pk	Qty/Cs
430852	TC	1,700	Easy Grip	Yes	2	40
430853	TC	1,700	Easy Grip	Yes	5	40
431134	Corning CellBIND Surface	1,700	Easy Grip	Yes	20	20
431135	TC	1,700	Easy Grip	Yes	20	20
431191	TC	1,700	Easy Grip Vent	Yes	20	20

Expected Cell Yields and Recommended Medium Volumes

Corning® Roller Bottles	Approximate Growth Area (cm ²)	Average Cell Yield*	Recommended Medium Volume (mL)
490 cm ² roller bottle	490	4.9 x 10 ⁷	100 - 150
850 cm ² roller bottle	850	8.5 x 10 ⁷	170 - 255
1700 cm ² roller bottle	1,700	1.7 x 10 ⁸	340 - 510
1750 cm ² roller bottle	1,750	1.75 x 10 ⁸	350 - 525

*Assumes an average yield of 1 x 10⁵ cells/cm² from a 100% confluent culture. Yields from many cell types can be lower than this.

Roller Bottle Application Tips

- ▶ Corning recommends 0.2 to 0.3 mL of medium per cm² of growth area.
- ▶ Corning recommends setting roller rack speeds to provide 0.5 to 1.0 RPM.



Easy Grip Cap features large knurls designed for ergonomic handling.



Easy Grip Vent Cap is designed for applications requiring consistent gas exchange.



Plug Seal Cap, designed for use in closed systems, provides a liquid- and gas-tight seal. When loosened, this cap can be used in open systems.

Polyethylene Roller Bottle Caps

Caps are sold separately and are available individually wrapped in either Easy Grip or Easy Grip Vent Cap designs

Cat. No.	Cap Style	Qty/Pk	Qty/Cs
430698	Easy Grip	1	100
431132	Easy Grip Vent	1	300

Corning is committed to partnering with you, our customer, to provide solutions that increase your efficiency and productivity. We offer the ability to customize packaging and cap design to meet your specific requirements. Minimum order quantities apply. Please call us or contact your local Corning Office for more details. See back cover for contact information.

Corning® CellSTACK® Culture Chambers



Corning CellSTACK Culture Chambers

- ▶ Available in Five Sizes
 - 1-Stack with 636 cm² cell growth area
 - 2-Stack with 1,272 cm² cell growth area
 - 5-Stack with 3,180 cm² cell growth area
 - 10-Stack with 6,360 cm² cell growth area
 - 40-Stack with 25,440 cm² cell growth area
- ▶ Choice of traditional surface treatment, new Corning CellBIND® Surface for enhanced cell attachment, or Ultra-Low Attachment Surface
 - Great for reducing serum levels
 - Better attachment increases cell yields
 - May eliminate need for expensive coatings
- ▶ Greater Chamber Durability
 - Superior mechanical strength and structural integrity
 - Self-venting caps prevent pressure build-up during transport
 - 100% leak tested prior to shipping
- ▶ Greater Cleanliness
 - Improved assembly procedures reduce particulates
 - Certified nonpyrogenic and sterilized by gamma irradiation
- ▶ Continuous Supply Reliability
 - Manufactured in USA under GMP conditions
- ▶ Easier to Use
 - Larger openings with threaded closures and vented caps
 - Footprint identical to competitor's product

Corning CellSTACK Culture Chambers Ordering Information

Cat. No.	Surface	Growth Area (cm ²)	Description	Qty/ Pk	Pk/ Cs
3330	Corning CellBIND Surface	636	CellSTACK-1 Chamber	1	8
3268	TC	636	CellSTACK-1 Chamber	1	8
3310	Corning CellBIND Surface	1,272	CellSTACK-2 Chamber	1	5
3269	TC	1,272	CellSTACK-2 Chamber	1	5
3311	Corning CellBIND Surface	3,180	CellSTACK-5 Chamber	1	2
3319	TC	3,180	CellSTACK-5 Chamber	1	2
3313	TC	3,180	CellSTACK-5 Chamber	1	8
3320	Corning CellBIND Surface	6,360	CellSTACK-10 Chamber	1	6
3271	TC	6,360	CellSTACK-10 Chamber	1	6
3321	Corning CellBIND Surface	25,440	CellSTACK-40 Chamber	1	2
3272	TC	25,440	CellSTACK-40 Chamber	1	2
3303	Ultra-Low Attachment	636	CellSTACK-1 Chamber	1	8



CellSTACK Chamber, 40-Stack

Corning® CellSTACK® Accessories are Simply Better!

Corning offers a variety of accessories to simplify handling and reduce contamination risks when processing CellSTACK Chambers.

For Better Filling

A variety of optional filling caps are available to allow direct aseptic transfer of media and cells via pumping or gravity feed. Several coupling devices are available on these filling caps with or without integrally sealed USP Class VI certified C-Flex® tubing. Optional filling caps with attached filters with hydrophobic membranes provide for gas exchange and faster aseptic venting during liquid transfers. Extra sterile vented or unvented 33 mm replacement caps are also available.

For Better Stacking

Reusable stacking devices fit between CellSTACK Chambers to keep them level and optimize incubator space while providing clearance for gas exchange.

For Better Options

Sometimes, currently available accessories just don't fit a customer's needs. This is why Corning will work with you to design a CellSTACK Chamber accessory that will make your work flow process more efficient and reliable.

For large scale production using CellSTACK-40 Chambers there are automated systems that can save on labor while increasing reliability and efficiency.

Call us to discuss your specific requirements.



CellSTACK Accessories



3328 Fill Cap, Female MPC Coupling

Corning CellSTACK Accessories Ordering Information

Cat. No.	Description	Qty/Pk	Qty/Cs
3331	Stacking device, ABS, nonsterile	1	5
3332	Universal cap*, with vented overcap, sterile	1	4
3279	Solid cap, sterile	1	5
3280	Vent cap, 0.2 mm membrane, sterile	1	5
3281	Vent cap, 3/8" (9.5 mm) ID tubing, 7 cm length, Pall® Acro 50, PVDF filter, sterile	1	5
3282	Fill cap, 1/8" (3.2 mm) ID tubing, female luer lock with male luer plug, sterile	1	5
3283	Fill cap, 3/8" (9.5 mm) ID tubing and 5/16" (7.94 mm) barbed fitting, sterile	1	5
3284	Vent cap, 3/8" (9.5 mm) ID tubing, 7 cm length, Pall Bacterial Air Vent, sterile	1	4
3324	Two vented over caps and one solid over cap for the Universal Cap, sterile	1	5
3333	Fill cap*, 1/4" (6.4 mm) ID tubing, 70 cm length, male MPC coupling with female end cap, sterile	1	4
3328	Fill cap, female MPC coupling, 1/4" (6.4 mm) ID barbed fitting with male end cap, sterile	1	4
3329	Fill cap, female MPC coupling, 3/8" (9.5 mm) ID barbed fitting with male end cap, sterile	1	4
3334	Fill cap, male MPC coupling, 1/4" (6.4 mm) ID barbed fitting with female end cap, sterile	1	4
3339	Fill cap, male MPC coupling with male end cap, 3/8" (9.5 mm) ID barbed fitting with female end cap, sterile	1	4

*All caps are 33 mm thread caps.

CellCube® Systems



The CellCube System provides a fast, simple, and compact method for the mass culture of attachment-dependent cells. It uses a tissue culture treated growth surface for cell attachment, and continually perfuses the cells with fresh medium for increased cell productivity. The CellCube System is comprised of four pieces of capital equipment: the system controller, oxygenator, circulation, and media pumps and is designed to use disposable CellCube Modules. Performance data from the CellCube System can be easily scaled to the production system. Please inquire about CellCube System pricing. Corning provides on-site technical support for the CellCube System.

The CellCube Modules provide a traditional tissue culture treated surface or new Corning® CellBIND® Surface for the growth of attachment dependent cells. The CellCube System provides an environment which more closely simulates *in vivo* conditions and reliably distributes nutrients and oxygen with low differential gradients across all cells within the modules.

CellCube System Ordering Information

Cat. No.	Description	Qty/Cs
3143	CellCube System; for use with CellCube Modules 3200, 3201, 3202, or 3203; consists of the following components:	
3220	CellCube System Controller	1
3101	CellCube Single Module System 6 Liter Oxygenator, Complete	1
3222	CellCube Digital Single Module System Circulation Pump	1
3221	CellCube Digital System Media Pump	1
3139	CellCube Single Module System Secondary Oxygen Probe (25 x 70 mm)	1
3138	CellCube Single Module System Secondary Oxygen Probe Holder	1
3144	CellCube Single Module System Oxygen Probe Cable	1
3165	CellCube Single Module System 12 mm Dissolved Oxygen Probe Membrane Kit	1
3166	CellCube System 25 mm Dissolved Oxygen Probe Membrane Kit	1
3136	CellCube Single Module System Stainless Steel Stand	1
3135	CellCube Single Module System Setup Kit	1
3200	CellCube 10-Stack Module (8,500 cm ²), Tissue Culture Treated	2
3201	CellCube 25-Stack Module (21,250 cm ²), Tissue Culture Treated	1
3304	CellCube 25-Stack Module (21,250 cm ²), Corning CellBIND Surface	1
3264	CellCube 100-Stack Module (85,000 cm ²), Tissue Culture Treated	1
3302	CellCube 100-Stack Module (85,000 cm ²) Corning CellBIND Surface	1

Corning® E-Cube™ Culture System



Corning E-Cube Culture System

The E-Cube system provides a simple method to determine if your cells will grow in the CellCube® module prior to investing in the resources and funding that would be necessary for the larger, automated CellCube system.

Corning E-Cube Culture System Ordering Information

Cat. No.	Description	Qty/Pk	Qty/Cs
3286	E-Cube System Kit (without CellCube module)	1	1
3200	CellCube Module 10-Stack	1	2

Corning E-Cube Culture System Accessories Ordering Information

Cat. No.	Description	Qty/Pk	Qty/Cs
430518	1 L Storage Bottle with cap	2	24
401654	45 mm Cap with 2 stainless steel ports	1	1
3287	E-Cube Fittings	1	1

Spinner Flasks



Disposable Spinner Flasks

Corning® Disposable Spinner Flasks

- ▶ The Corning disposable spinner flask system comes ready-to-use with paddle and integrated magnet, eliminating the need for time-consuming assembly or cleaning and reassembly
- ▶ Molded from virgin polystyrene and gamma-irradiated, each spinner flask system assures a clean sterile unit. No more concerns with detergent residues or contamination
- ▶ Made of USP XXXIII Class VI polystyrene, the vessel is comparable to conventional glass spinner flasks for growth of suspension cell lines and any attachment-dependent cultures using microcarrier beads
- ▶ The paddle size and height is optimized for each vessel size. A unique integrated magnet provides smooth, even rotation at required speeds on slow-speed stirrers. Heat build-up in the vessel is reduced by means of a specially designed flange that raises the vessel off the stir-plate surface.

Corning Disposable Spinner Flasks Ordering Information

Cat. No.	Description	Capacity (mL)	Center Neck (mm)	Sidearm Neck (mm)	Qty/Cs
3152	Disposable Spinner Flask	125	70	25	12
3153	Disposable Spinner Flask	500	100	45	12

ProCulture® Glass Spinner Flask with Angled Sidearms

- ▶ Baffles enhance aeration and agitation of contents of the flask.
- ▶ Unique impeller design ensures optimal stirring.
- ▶ Sidearm designs permit easy access of 25 and 50 mL pipettes
- ▶ Visit www.corning.com/lifesciences to view additional Corning spinner flask accessories



4500-1L and 4500-250 Spinner Flasks

ProCulture Spinner Flasks with Angled Sidearms Ordering Information

Cat. No.	Description	Capacity	Center Neck (mm)	Sidearm Neck (mm)	Qty/Cs
4500-125	Spinner	125 mL	70	32	1
4500-250	Spinner	250 mL	70	32	1
4500-500	Spinner	500 mL	100	45	1
4500-1L	Spinner	1L	100	45	1
4500-3L	Spinner	3L	100	45	1
4500-6L	Spinner	6L	100	45	1
4500-8L	Spinner	8L	100	45	1
4500-15L	Spinner	15L	100	45	1
4500-36L	Spinner	36L	100	45	1
4502-3L	Spinner	3L	120	45	1
4502-6L	Spinner	6L	120	45	1
4502-8L	Spinner	8L	120	45	1
4502-15L	Spinner	15L	120	45	1
4502-36L	Spinner	36L	120	45	1
4504-3L	Spinner	3L	140	45	1
4504-6L	Spinner	6L	140	45	1
4504-8L	Spinner	8L	140	45	1
4504-15L	Spinner	15L	140	45	1
4504-36L	Spinner	36L	140	45	1



ProCulture Spinner Flasks

Retrofit Kits are available for converting older Corning® ProCulture Spinner Flasks to fit newer dual-bearing impellers.

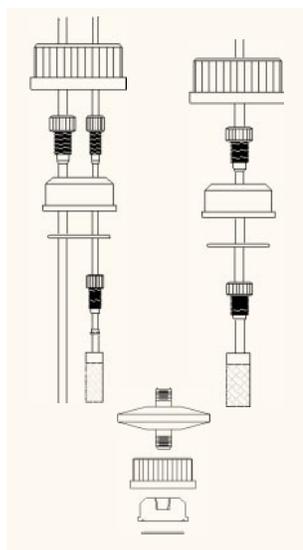
ProCulture Spinner Flasks with Vertical Sidearms Ordering Information

Cat. No.	Capacity	Center Neck (mm)	Number of Vertical Sidearms	Sidearm Neck (mm)	Qty/Cs
4510-8L	8L	100	4	45	1
4510-15L	15L	100	4	45	1
4510-36L	36L	100	6	45	1
4512-8L	8L	120	4	45	1
4512-15L	15L	120	4	45	1
4512-36L	36L	120	6	45	1
4514-15L	15L	140	4	45	1
4514-36L	36L	140	6	45	1

Gas Handling Fittings, Vertical Sidearm Flasks

- ▶ Used to provide gases into larger spinner flasks with vertical sidearms
- ▶ Fittings are comprised of a PET insert with a Viton® O-Ring and a polypropylene sealing cap
- ▶ Gas filters are PTFE, 0.2 µm porosity
- ▶ The 316 stainless steel tubes are held in place by Noryl® nuts with integrated ferrules
- ▶ The fittings are completely autoclavable

Cat. No.	Description	Dimension	Qty/Cs
4519-100	Sidearm fitting, gas delivery	1/8" Inlet	1
4519-102	Sidearm fitting, gas delivery	1/4" Inlet	1
4519-104	Sidearm fitting, delivery and vent	1/8" and 1/4"	1
4519-106	Sidearm fitting, vent cap, 0.2 µm	50 mm filter	1
4519-177	Sidearm fitting, vent cap, 0.2 µm, Sanitary	50 mm filter	1

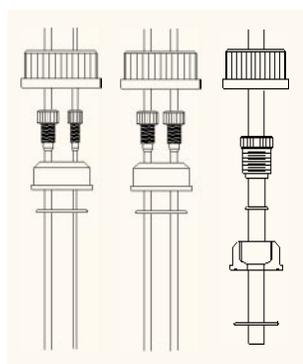


Vertical Sidearm Fittings, Gas Delivery and Venting

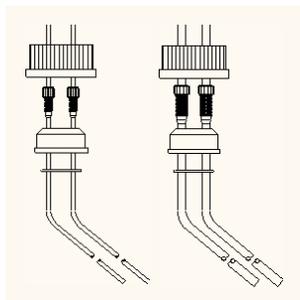
Media Handling Fittings, Vertical Sidearm Flasks

- ▶ Used to introduce medium aseptically into large spinner flasks with vertical sidearms
- ▶ Fittings are comprised of a PET insert with a Viton O-Ring and a polypropylene sealing cap
- ▶ Gas filters are PTFE, 0.2 µm porosity
- ▶ The 316 stainless steel tubes are held in place by Noryl nuts with integrated ferrules
- ▶ The fittings are completely autoclavable

Cat. No.	Description	Fits Flask Size	Tubing O.D. (inches)	Qty/Cs
4519-112	Sidearm fitting, dual, media handling	8L, 15L	1/8"	1
4519-114	Sidearm fitting, dual, media handling	36L	1/8"	1
4519-116	Sidearm fitting, dual, media handling	8L, 15L	1/4"	1
4519-118	Sidearm fitting, dual, media handling	36L	1/4"	1
4519-120	Sidearm fitting, combo, media handling	8L, 15L	1/8", 1/4"	1
4519-122	Sidearm fitting, combo, media handling	36L	1/8", 1/4"	1
4519-124	Sidearm fitting, single, media handling	8L, 15L	1/2"	1
4519-126	Sidearm fitting, single, media handling	36L	1/2"	1
4519-176	Sidearm fitting, dual, media handling, EPDM	8L, 15L	1/4"	1



Vertical Sidearm Fittings, Media Handling



Dual Angled Sidearm Fittings

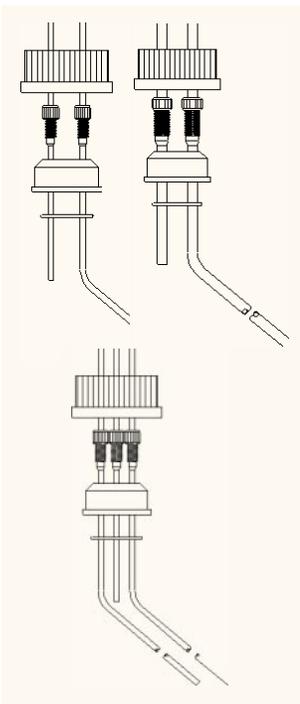
Gas or Media Handling Fittings, Angled Sidearm Flasks, Dual Style

- ▶ Dual angled sidearm fittings can be used for aseptically transferring medium into or out of angled sidearm spinner flasks or for sparging the medium with gases
- ▶ Fittings are comprised of a PET insert with a Viton® O-ring and a polypropylene sealing cap
- ▶ Two 316 stainless steel tubes which extend to the bottom of the flask, are held in place by Noryl® nuts with integrated ferrules
- ▶ The fittings are completely autoclavable

Cat. No.	Description	Flask Size	Tubing O.D. (inches)	Qty/Cs
4519-150	SA fitting, Dual	1L	1/8"	1
4519-151	SA fitting, Dual	3L	1/8"	1
4519-152	SA fitting, Dual	6L	1/8"	1
4519-153	SA fitting, Dual	8L	1/8"	1
4519-173	SA fitting, Dual	1L	1/8", 1/4"	1
4519-121	SA fitting, Dual	8L	1/8", 1/4"	1
4519-174	Sidearm fitting, Dual	500 mL	1/8" angled to 125 mL level, 1/4"	1
4519-154	Sidearm fitting, Dual	1L	1/4"	1
4519-155	Sidearm fitting, Dual	3L	1/4"	1
4519-156	Sidearm fitting, Dual	6L	1/4"	1
4519-157	Sidearm fitting, Dual	8L	1/4"	1
4519-170	Sidearm fitting, Dual	15L	1/4"	1

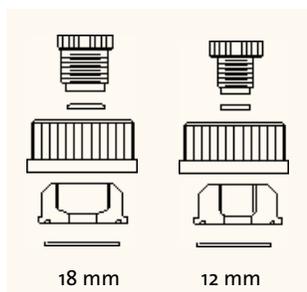
Gas or Media Handling Fittings, Angled Sidearm Flasks, Combination Style

- ▶ Used to aseptically transfer medium, sparge the cell culture medium directly or add gases to the head space above the cell culture medium
- ▶ Fittings are comprised of a PET insert with a Viton O-ring and a polypropylene sealing cap
- ▶ One or two 316 stainless steel tubes extend to the bottom of the flask; the other is a shorter 6" length
- ▶ Both tubes are held in place by Noryl nuts with integrated ferrules
- ▶ The fittings are completely autoclavable



Combination and Triple Angled Sidearm Fittings

Cat. No.	Description	Flask Size	Tubing O.D. (inches)	Qty/Cs
4519-158	Sidearm fitting, combination	1L	1/8"	1
4519-159	Sidearm fitting, combination	3L	1/8"	1
4519-160	Sidearm fitting, combination	6L	1/8"	1
4519-161	Sidearm fitting, combination	8L	1/8"	1
4519-162	Sidearm fitting, combination	1L	1/4"	1
4519-163	Sidearm fitting, combination	3L	1/4"	1
4519-164	Sidearm fitting, combination	6L	1/4"	1
4519-165	Sidearm fitting, combination	8L	1/4"	1
4519-171	Sidearm fitting, combination	15L	1/4"	1
4519-166	Sidearm fitting, combination, triple	1L	1/8"	1
4519-167	Sidearm fitting, combination, triple	3L	1/8"	1
4519-168	Sidearm fitting, combination, triple	6L	1/8"	1
4519-169	Sidearm fitting, combination, triple	8L	1/8"	1



Sidearm Fittings for Sensors

Fittings for Insertion Probes, Vertical Sidearm Flasks

- ▶ Used to secure pH, O₂, or temperature sensors in large spinner flasks with vertical sidearms
- ▶ Fittings are comprised of a PET insert with a Viton® O-ring and a polypropylene sealing cap
- ▶ The 316 sensors are held in place by Noryl® nuts with integrated ferrules
- ▶ The fittings are completely autoclavable

Cat. No.	Description	Sensor O.D. (mm)	Qty/Cs
4519-108	Sidearm fitting, sensor, O ₂ probes	12	1
4519-128	Sidearm fitting, sensor, temperature probes	12	1
4519-110	Sidearm fitting, sensor, pH probes	12	1
4519-172	Sidearm fitting, sensor, pH or O ₂	18	1



Impeller Assembly

Impeller Assembly for Magnetically-Driven Bioreactor

Stainless steel impeller shaft with modified impeller blade for use with probes to create a small bioreactor.

Cat. No.	Description	Qty/Cs
402648	Impeller assembly, stainless steel, dual bearing, modified for probes, 3L	1
402649	Impeller assembly, stainless steel, dual bearing, modified for probes, 6L	1
401392	Impeller assembly, stainless steel, dual bearing, modified for probes, 8L	1
401661	Impeller assembly, stainless steel, dual bearing, modified for probes, 15L	1
402650	Impeller assembly, stainless steel, dual bearing, modified for probes, 36L	1

Cap Assembly for Magnetically-Driven Bioreactor

Cap assembly for small bioreactor with various fitting arrangements.

Cat. No.	Description	Qty/Cs
402579	Cap Assembly, 120 mm, Glass Filled PBT, 3 (3/8"), 1 (1/4") fittings	1
402576	Cap Assembly, 120 mm, Glass Filled PBT, 2 (12 mm), 2 (1/4") fittings	1
402577	Cap Assembly, 120 mm, Glass Filled PBT, 2 (12 mm), 2 (1/4"), 1 (3/8") fittings	1

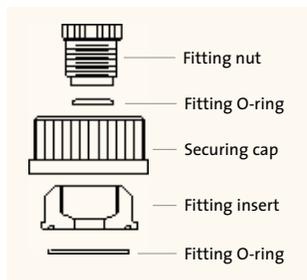
Corning Life Sciences is currently transitioning ProCulture® Spinner Flask spare parts to Wilmad-Lab Glass. For ordering and technical service of all products that have BP-xxxx-xxx part numbers, please call 1.800.220.5171 ext. 686 in the U.S. Outside the U.S., please call 001.856.697.3000 ext. 686.

For all other part numbers that are not associated with a BP-xxxx-xxx part number, please call Corning Incorporated at 1.800.492.1110 in the U.S. Outside the U.S., please call your local Corning Representative.

For your convenience during this transition, the current Corning part numbers are also listed.

Spare Parts for Sidearm Fittings

Securing Caps



Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402681	BP-3802-003	Cap, securing, 45 mm, bored, orange	1
402720	BP-3872-002	Cap, securing, 45 mm, bored, for injection septum, white	1
1395-32LTC		Cap, solid, 32 mm, orange	1
1395-45LTC		Cap, solid, 45 mm, orange	1
1395-45LTR		Drip ring, 45 mm, clear	1
1395-45LTMC		Cap, vented, securing, 45 mm, .22 PTFE, grey	10

Spare Parts for Sidearm Fittings (continued)*Fitting inserts*

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402678	BP-3802-001	Insert, 45 mm, PET, for single 1/8" inlet	1
402685	BP-3803-001	Insert, 45 mm, PET, for single 1/4" inlet	1
402063	BP-3807-001	Insert, 45 mm, PET, for 50 mm filter	1
402068	BP-3812-001	Insert, 45 mm, PET, for 12 mm insert probe	1
402688	BP-3812-011	Insert, 45 mm, PET, for 18.9 mm insert probe	1
402690	BP-3812-021	Insert, 45 mm, PET, for 10 mm insert probe	1
402072	BP-3822-001	Insert, 45 mm, PET, for dual 1/8" inlet	1
402074	BP-3832-001	Insert, 45 mm, PET, for dual 1/4" inlet	1
402076	BP-3832-002	Insert, 45 mm, PET, for fitting 1/8" and 1/4"	1

Fitting Nuts

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402682	BP-3802-004	Nut, 1/8", Noryl®	1
402686	BP-3803-004	Nut, 1/4", Noryl	1
402069	BP-3812-004	Nut, 12.4 mm, Noryl	1
402689	BP-3812-014	Nut, 18.9 mm, Noryl	1
402691	BP-3812-024	Nut, 10 mm, Noryl	1

Fitting O-rings

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402679	BP-3802-002	O-ring, insert, Viton® #026	1
402071	BP-3812-005	O-ring, for 12.4 mm nut	1
402692	BP-3812-015	O-ring, for 10 mm nut	1

Fitting Filters and Sparging Stones

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402064	BP-3807-004	Filter, 50 mm, PTFE, 0.2 µm, double NPT	1

Sidearm Septum Fittings

Cat. No.	Description	Qty/Cs	
402711	BP-3872-001	Septum, GL-45, black butyl rubber	1

Straight Stainless Steel Tubing

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402684	BP-3802-006	Tubing, 316 stainless steel, 1/8" OD, 18", straight	1
402073	BP-3822-007	Tubing, 316 stainless steel, 1/8" OD, 21", straight	1
402698	BP-3825-026	Tubing, 316 stainless steel, 1/8" OD, 6", straight	1
402687	BP-3803-007	Tubing, 316 stainless steel, 1/4" OD, 18", threaded straight	1
402075	BP-3827-007	Tubing, 316 stainless steel, 1/4" OD, 21", straight	1
402077	BP-3836-006	Tubing, 316 stainless steel, 1/2" OD, 18", straight	1
402078	BP-3836-007	Tubing, 316 stainless steel, 1/2" OD, 21", straight	1

Spare Parts for Sidearm Fittings (continued)

Angled Stainless Steel Tubing

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
401637	BP-3825-004	Tubing, 316 stainless steel, 1/8", 500 mL, angled, to 250 mL level	1
401640	BP-3825-005	Tubing, 316 stainless steel, 1/8", 1L, angled, to 250 mL level	1
402694	BP-3825-006	Tubing, 316 stainless steel, 1/8", 1L, angled	1
402695	BP-3825-007	Tubing, 316 stainless steel, 1/8", 3L, angled	1
402696	BP-3825-008	Tubing, 316 stainless steel, 1/8", 6L, angled	1
402697	BP-3825-009	Tubing, 316 stainless steel, 1/8", 8L, angled	1
401651	BP-3515-010	Tubing, 316 stainless steel, 1/4", 500 mL, angled	1
401638	BP-3829-006	Tubing, 316 stainless steel, 1/4", 1L, angled	1
401643	BP-3829-007	Tubing, 316 stainless steel, 1/4", 3L, angled	1
402699	BP-3829-008	Tubing, 316 stainless steel, 1/4", 6L, angled	1
402700	BP-3829-009	Tubing, 316 stainless steel, 1/4", 8L, angled	1

Spare Parts for Center Neck Cap Fittings

Center Neck Compression Fitting Parts

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402103	BP-3860-100	Fitting, 1/4", bulkhead type, modified	1

Fitting Plugs

Corning Cat. No.	Lab Glass Cat. No.	Description	Qty/Cs
402079	BP-3847-008	Plug, 1/8", Delrin	1
402099	BP-3852-008	Plug, 1/4", Delrin	1



Direct Drive Motor

Direct Drive Motors

- ▶ High torque, low rpm stirrer designed to maintain constant low speed
- ▶ Gearhead stirrer delivers 14.5 in-lbs of torque
- ▶ Maximum speed is 350 rpm
- ▶ Weight of motor is 9 lbs (4.1kg)
- ▶ Available with 120VAC 60Hz or 230VAC 50Hz

Cat. No.	Description	Qty/Cs
400640	120VAC, 60 Hz Motor	1
402645	230VAC, 50 Hz Motor	1



Direct Drive Shaft/Cap Assembly

Direct Drive Shaft/Cap Assemblies

- ▶ For 8L, 15L, or 36L paddle assemblies
- ▶ Used on all series 4510 and 4512 Spinner flasks

Cat. No.	Description	Qty/Cs
402614	For 100 mm Neck Flasks	1
402649	For 120 mm Neck Flasks	1



Direct Drive Paddle Assembly

Direct Drive Paddle Assemblies

- ▶ For series 4510, 4512, and 4514 Spinner flasks when coupled to a direct drive motor
- ▶ Paddle assemblies will couple to 100 mm and 120 mm cap assemblies

Cat. No.	Description	Qty/Cs
4515-8L	Paddle assembly only for 8L flask	1
4515-15L	Paddle assembly only for 15L flask	1
4515-36L	Paddle assembly only for 36L flask	1

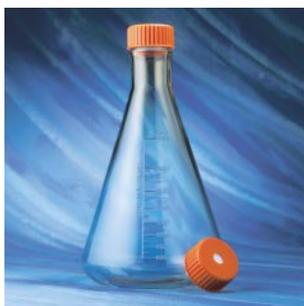
Erlenmeyer Flasks



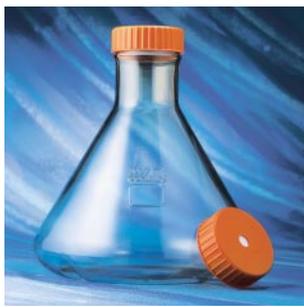
431146 1L Erlenmeyer Flask

Shaker Flask Application Tip

Corning recommends starting with a shaking rate of 75-125 RPM (orbital shaker) and a medium volume of 30-40% of the nominal flask capacity.



431256 2L Erlenmeyer Flask



431253 3L Fernbach Culture Flask

Erlenmeyer Flasks

- ▶ Made from optically clear polycarbonate
- ▶ Ideal for shaker culture applications
- ▶ Two-position polypropylene plug seal cap can be opened for gas exchange or closed for a liquid-tight seal
- ▶ Vent caps available for applications requiring sterile gas exchange
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Erlenmeyer Flask Ordering Information

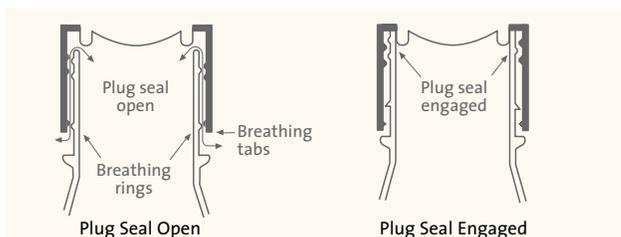
Cat. No.	Capacity (mL)	Graduation (mL)	Neck Diameter (mm)	Cap Style	Qty/Pk	Qty/Cs
430421	125	25	26	Plug seal	1	50
431143	125	25	26	Vent cap	1	50
430183	250	25	31	Plug seal	1	50
431144	250	25	31	Vent cap	1	50
430422	500	50	43	Plug seal	1	25
431145	500	50	43	Vent cap	1	25
431146	1000	50	43	Plug seal	1	25
431147	1000	50	43	Vent cap	1	25

2L and 3L Polycarbonate Flasks

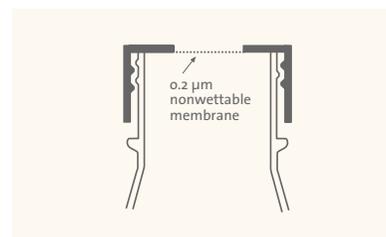
- ▶ Made from optically clear polycarbonate
- ▶ Ideal for shaker culture applications
- ▶ Available in baffled and nonbaffled bottoms
- ▶ Vent caps supplied in every case of product for applications requiring sterile gas exchange
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic
- ▶ Solid cap available

Polycarbonate Flask Ordering Information

Cat. No.	Description	Sterile	Qty/Cs
431255	Erlenmeyer Flask, 2L, polycarbonate	Yes	6
431256	Erlenmeyer Flask, 2L, polycarbonate, baffled bottom	Yes	6
431252	Fernbach Culture Flask, 3L, polycarbonate	Yes	4
431253	Fernbach Culture Flask, 3L, polycarbonate, baffled bottom	Yes	4
431339	Cap, Vented, 48 mm for 2L flask	Yes	24
431340	Cap, Vented, 70 mm for 3L flask	Yes	24
431364	Cap, Solid, 48 mm for 2L	Yes	24
431363	Cap, Solid, 70 mm for 3L	Yes	24



Breathable two-position plug seal caps feature one-piece linerless construction with a flexible plug for a gas- and liquid-tight seal. In addition, the unique breathable cap design allows use in either an open or closed mode.



Vent caps contain a 0.2 µm nonwetttable membrane sealed to the cap, providing consistent, sterile gas exchange while minimizing the risk of contamination.

Cell Scrapers and Lifters



3008 Cell Lifter



3010 Small Cell Scraper

Cell Scrapers and Cell Lifters

- ▶ Useful for the manual harvesting of cells
- ▶ Blade design minimizes cell damage and ensures even contact with the growth surface
- ▶ Cell lifter is useful for harvesting cells (especially stem cells) in dishes
- ▶ Scrapers designed for use in flasks
- ▶ Individually wrapped
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Cell Scraper and Lifter Ordering Information

Cat. No.	Description	Blade Length (cm)	Handle Length (cm)	Qty/Pk	Qty/Cs
3008	Cell lifter	1.9	18	1	100
3010	Small scraper	1.8	25	1	100
3011	Large scraper	3.0	39	1	100

Spatulas and Microspatulas



Spatulas



Microspatulas

Corning® spatulas are designed to save time and provide contamination free samples.

- ▶ Individually packaged, certified RNase-/DNase-free, nonpyrogenic, antistatic, and sterile
- ▶ Eliminates the recycling and resterilizing necessary with reusable spatulas
- ▶ Available in five different configurations
- ▶ Microspatulas are available in two configurations

Spatulas Ordering Information

Cat. No.	Description	Qty/Cs
3003	Spatula, Tapered Blade/Spoon	100
3004	Spatula, Small Spoon/Spoon	100
3005	Spatula, Round End/Spoon	100
3006	Spatula, V-Scoop/Spoon	100
3007	Spatula, Flat End/Spoon	100
3012	Microspatula, tapered end/scoop	50
3013	Microspatula, rounded end/scoop	50

Pipets



Stripette Serological Pipets



Packaging options



Exclusive Antidrip Tip

Stripette® Serological Pipets

- ▶ Stripette pipets are sterile, nonpyrogenic, and DNase-/RNase-free
- ▶ Exclusive antidrip tip assures accurate delivery
- ▶ Available in 25, 50, and 100 mL sizes
- ▶ Color-coded magnifier stripes make volume reading easier
- ▶ Bidirectional graduations provide choice of ascending and descending scales
- ▶ Negative graduations allow additional working volume
- ▶ Four packaging options:
 - Individually wrapped, clear plastic
 - Individually wrapped, paper/plastic
 - Bulk packed for large-scale sterile and nonsterile liquid handling applications
 - Clean room packed; individually wrapped, paper/plastic, triple bagged, SAL 10⁻⁶

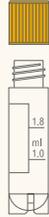
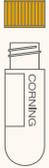
Stripette Pipets Ordering Information

Cat. No.	Capacity (mL)	Graduations (mL)	Negative Grads. (mL)	Color Coded Stripe	Qty/Pk	Qty/Cs
<i>Individually Wrapped, Clear Plastic Wrap</i>						
4011	1	1/100	0.2	Yellow	100/bag	1,000
4012	1	1/100	0.2	Yellow	100/bag	200
4021	2	1/100	0.2	Green	100/bag	1,000
4051	5	1/10	2.5	Blue	50/bag	200
4101	10	1/10	3.0	Orange	50/bag	200
4492*	10	1/10	3.0	Orange	50/bag	200
4251	25	2/10	10.0	Red	50/bag	200
4501	50	1/2	10.0	Purple	25/bag	100
4484	100	1	N/A	Aqua	10/bag	100
<i>Individually Wrapped, Paper/Plastic Wrap</i>						
4485	1	1/100	0.2	Yellow	50/bag	1,000
4486	2	1/100	0.2	Green	50/bag	1,000
4487	5	1/10	2.5	Blue	50/bag	200
4488	10	1/10	3.0	Orange	50/bag	200
4489	25	2/10	10.0	Red	25/bag	200
4490	50	1/2	10.0	Purple	25/bag	100
4491	100	1/1	N/A	Aqua	10/bag	100
<i>Bulk Packed in Bags</i>						
4010	1	1/100	0.2	Yellow	50/bag	1,000
4020	2	1/100	0.2	Green	50/bag	1,000
4050	5	1/10	2.5	Blue	50/bag	500
4100	10	1/10	3.0	Orange	50/bag	500
4250	25	2/10	10.0	Red	25/bag	200
4500	50	1/2	10.0	Purple	25/bag	100
<i>Clean Room Pack, Individually Wrapped, Paper/Plastic, Triple Bagged</i>						
7041	1	1/100	0.2	Yellow	50/bag	1,000
7042	2	1/100	0.2	Green	50/bag	1,000
7045	5	1/100	2.5	Blue	50/bag	200
7015	10	1/10	3.0	Orange	50/bag	200
7016	25	2/10	10.0	Red	25/bag	200
7017	50	1/2	10.0	Purple	25/bag	100
7000	100	1/1	N/A	Aqua	10/bag	100

*Cat. No. 4492 features a wide tip for handling viscous fluids.

Cryogenic Vials and Accessories

Corning offers three styles of cryogenic vials as well as storage racks and boxes.

 <p>External Thread Cryogenic Vial</p> <ul style="list-style-type: none"> ▶ Color-coded polypropylene cap inserts simplify vial identification ▶ Silicone washer provides a secure seal ▶ Easy-to-read black graduations for partial volumes ▶ Self-standing base, self-locking skirt 	 <p>Internal Thread Cryogenic Vial</p> <ul style="list-style-type: none"> ▶ Color-coded polypropylene cap inserts simplify vial identification ▶ Silicone washers provide a secure seal ▶ Easy-to-read black graduations for partial volumes ▶ Self-standing base, self-locking skirt 	 <p>External Thread Plug Seal Cap</p> <ul style="list-style-type: none"> ▶ Sure-grip plug seal screw cap ▶ Inner cap ring assures a tight seal
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Warning! Do not use cryogenic vials for storage in the liquid phase of liquid nitrogen. Only store vials in the vapor phase above the liquified gas. Always use appropriate safety equipment when removing vials from cryogenic storage.

External Thread Cryogenic Vials

- ▶ Manufactured from polypropylene to withstand temperatures down to -196°C
- ▶ Large marking spot
- ▶ Black graduations
- ▶ Certified RNase-/DNase-free
- ▶ Silicone washer for a secure seal
- ▶ Color code samples with inserts (Cat. Nos. 2015, 2016, 2017, 2018, 2019, 430499)
- ▶ Self-standing vials have a special base design allowing them to be locked into cryogenic racks (Cat. Nos. 430525, 430526, 431131) for single-handed manipulation
- ▶ Packaged in resealable bags
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic
- ▶ Foam rack included with each case

External Thread Cryogenic Vials Ordering Information

Cat. No.	Capacity (mL)	Style	Self-Standing	Qty/Pk	Qty/Cs
430658	1.2	Conical Bottom	Yes	50	500
430659	2.0	Round Bottom	Yes	50	500
430661	2.0	Round Bottom	No	50	500
430662	4.0	Round Bottom	Yes	50	500
430663	5.0	Round Bottom	Yes	50	500

Warning! Do not use cryogenic vials for storage in the liquid phase of liquid nitrogen. Only store vials in the vapor phase above the liquified gas. Always use appropriate safety equipment when removing vials from cryogenic storage.



External Thread Cryogenic Vials

Cryogenic Vial Safety Tip

Appropriate safety equipment (gloves, face shields, biological safety cabinets, hoods, etc.) should always be used to protect personnel when removing vials or ampules from cryogenic storage systems.



Internal Thread Cryogenic Vials

Internal Thread Cryogenic Vials

- ▶ Manufactured from polypropylene to withstand temperatures down to -196°C
- ▶ Large marking spot
- ▶ Black graduations
- ▶ Certified RNase-/DNase-free
- ▶ Silicone washer for a secure seal
- ▶ Color code samples with inserts (Cat. Nos. 2015, 2016, 2017, 2018, 2019, 430499)
- ▶ Self-standing vials have a special base design allowing them to be locked into cryogenic racks (Cat. No. 430525, 430526, 431131) for single-handed manipulation
- ▶ Packaged in resealable bags
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic
- ▶ Foam rack included with each case

Internal Thread Cryogenic Vials Ordering Information

Cat. No.	Capacity (mL)	Style	Self-Standing	Qty/Pk	Qty/Cs
430487	1.2	Conical Bottom	Yes	50	500
430488	2.0	Round Bottom	Yes	50	500
430489	2.0	Round Bottom	No	50	500
431386	2.0	Round Bottom	Yes	50	250
430490	4.0	Round Bottom	No	50	500
430491	4.0	Round Bottom	Yes	50	500
430492	5.0	Round Bottom	No	50	500
430656	5.0	Round Bottom	Yes	50	500

Warning! Do not use cryogenic vials for storage in the liquid phase of liquid nitrogen. Only store vials in the vapor phase above the liquified gas. Always use appropriate safety equipment when removing vials from cryogenic storage.

External Thread Cryogenic Vials with Plug Seal Cap

- ▶ Manufactured from polypropylene to withstand temperatures down to -196°C
- ▶ External thread with a traditional plug seal cap design for a secure seal
- ▶ Cap does not accept color-coded inserts
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

External Thread Cryogenic Vials with Plug Seal Cap Ordering Information

Cat. No.	Capacity (mL)	Style	Self-Standing	Qty/Pk	Qty/Cs
430289	2.0	Round Bottom	No	50	500

Warning! Do not use cryogenic vials for storage in the liquid phase of liquid nitrogen. Only store vials in the vapor phase above the liquified gas. Always use appropriate safety equipment when removing vials from cryogenic storage.



430289 External Thread Cryogenic Vials with Plug Seal Cap



Color-Coded Cap Inserts

Cap Inserts for Cryogenic Vials

- ▶ Manufactured from polypropylene
- ▶ Provide color coding for easy sample identification
- ▶ Packaged in resealable bags
- ▶ Nonsterile
- ▶ Fit all Corning® cryogenic vials except catalog number 430289

Cryogenic Vials Cap Inserts Ordering Information

Cat. No.	Description	Qty/Pk	Qty/Cs
2015	White polypropylene cap inserts	50	500
2016	Blue polypropylene cap inserts	50	500
2017	Red polypropylene cap inserts	50	500
2018	Green polypropylene cap inserts	50	500
2019	Yellow polypropylene cap inserts	50	500
430499	Rainbow, 100 each of white, blue, red, green, and yellow	50	500

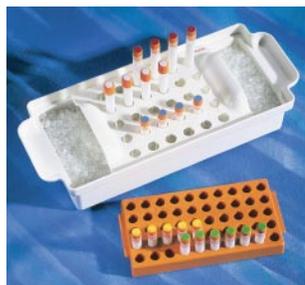
Cryogenic Vial Racks and Storage Boxes

- ▶ Reusable racks are designed for use with most cryogenic vials
- ▶ Catalog numbers 430525, 430526, and 431131 have a locking feature for use with all Corning self-standing vials
- ▶ Nonsterile, catalog numbers 430526 and 431131

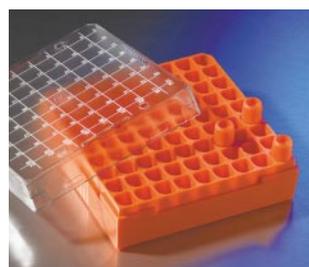
Cryogenic Vial Racks and Storage Boxes Ordering Information

Cat. No.	Capacity	Description	Qty/Pk	Qty/Cs
430525	30 vials	Polycarbonate rack and tray, self-locking design	1	1
430526	30 vials	Polycarbonate rack, self-locking design	1	1
431131	50 vials	Polypropylene rack, self-locking design	2	2
431119	81 vials (1.0-2.0 mL)	Polycarbonate Box	5	10
431120	81 vials (4.0-5.0 mL)	Polycarbonate Box	5	10
431121*	100 vials (1.0-2.0 mL)	Polycarbonate Box	5	10

*431121 accepts internally threaded cryogenic vials only.



430525 and 431131
Cryogenic Vial Racks



431119 Cryogenic Storage Box



431120 Cryogenic Storage Box



431121 Cryogenic Storage Box

Centrifuge Tubes



15 mL Centrifuge Tube with CentriStar Cap

15 mL Centrifuge Tubes

- ▶ Corning® 15 mL centrifuge tubes feature black printed graduations and a large white marking spot
- ▶ Tubes are available with your choice of cap styles; advanced CentriStar™ cap or the original plug seal cap
- ▶ Tubes are available in racks or bulk packed in ziplock, resealable sleeves
- ▶ Sterile, certified nonpyrogenic, and RNase-/DNase-free
- ▶ 95 K Pa (14 psi) pressure tested
- ▶ Foam racks also available separately

15 mL Centrifuge Tubes Ordering Information

Cat. No.	Material	Cap Style	Max. RCF	Qty/Pk	Qty/Cs
430053	PET	Plug Seal Cap	3,600	25/Ziplock Bag	500
430055	PET	Plug Seal Cap	3,600	50/Rack	500
430052	PP	Plug Seal Cap	12,000	50/Rack	500
430766	PP	Plug Seal Cap	12,000	25/Ziplock Bag	500
430790	PP	CentriStar Cap	12,000	50/Rack	500
430791	PP	CentriStar Cap	12,000	25/Ziplock Bag	500
431355	Standard Foam Centrifuge Tube Rack, 15 mL			–	20

PP = Polypropylene, PET = Polyethylene Terephthalate, RCF = Relative Centrifugal Force (x g).

50 mL Centrifuge Tubes

- ▶ Corning 50 mL centrifuge tubes feature black printed graduations and a large white marking spot
- ▶ Available with your choice of cap styles; the advanced CentriStar cap or the original plug seal cap
- ▶ Tubes are available in racks or bulk packed in ziplock, resealable sleeves
- ▶ Sterile, certified nonpyrogenic, and RNase-/DNase-free
- ▶ Foam racks also available separately

50 mL Centrifuge Tubes Ordering Information

Cat. No.	Material	Cap Style	Max. RCF	Qty/Pk	Qty/Cs
430290	PP	Plug Seal Cap	15,500	25/Rack	500
430291	PP	Plug Seal Cap	15,500	25/Ziplock Bag	500
430304	PET	Plug Seal Cap	3,600	25/Rack	500
430828	PP	CentriStar Cap	15,500	25/Rack	500
430829	PP	CentriStar Cap	15,500	25/Ziplock Bag	500
4558	PP	CentriStar Cap	15,500	25/Universal Rack*	300
4365	Standard Foam Centrifuge Tube Rack, 50 mL			–	20
4366	Universal Foam Centrifuge Tube Rack, 15 mL and 50 mL			–	20

PP = Polypropylene, PET = Polyethylene Terephthalate, RCF = Relative Centrifugal Force (x g).

*New innovative universal rack can hold 50 mL and 15 mL tubes securely, allowing researchers to work with and store both size tubes in the same rack, saving bench and storage space.



50 mL Centrifuge Tube with CentriStar Cap



Bulk Pack – Ziplock Bag



Universal Rack



Foam Centrifuge Tube Racks



Self Standing 50 mL Centrifuge Tube with Flat Cap

Self-Standing 50 mL Centrifuge Tubes

- ▶ Corning® 50 mL centrifuge tubes feature black printed graduations and a large white marking spot
- ▶ Available with your choice of flat or the original plug seal cap
- ▶ Tubes are bulk packed in ziplock, resealable sleeves
- ▶ 95 K Pa (14 psi) pressure tested
- ▶ Sterile, certified nonpyrogenic, and RNase-/DNase-free

Self-Standing 50 mL Centrifuge Tubes Ordering Information

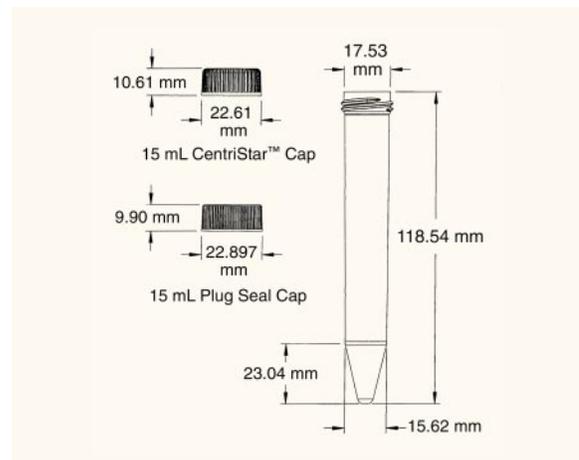
Cat. No.	Material	Cap Style	Max. RCF	Qty/Sleeve	Qty/Cs
430897	PP	Plug Seal Cap	3,000	25	500
430921	PP	Flat Cap	3,000	25	500

PP = Polypropylene, RCF = Relative Centrifugal Force (x g).

CentriStar™ Cap

Corning 15 mL centrifuge tubes are now available with the advanced CentriStar cap. The CentriStar cap has an easy-on/easy-off flat top and offers advanced ergonomics with its wider knurls and roll-over edge design for easier gripping. This design includes a revolutionary plug feature that virtually eliminates the risk of seepage when used under recommended conditions.

Dimensions of Corning 15 mL Centrifuge Tubes



15 mL Centrifuge Tube and Caps

250 mL and 500 mL Centrifuge Tubes and Support Cushions

- ▶ Corning 250 mL and 500 mL polypropylene tubes are ideal for applications requiring large-volume centrifugation
- ▶ Each case of tubes contains a rack to facilitate handling
- ▶ Support cushions must be used with this product unless the rotor has appropriately shaped V-bottom holders
- ▶ Tubes are sterile and certified nonpyrogenic

250 mL and 500 mL Centrifuge Tubes Ordering Information

Cat. No.	Description	Material	Cap Style	Max RCF	Qty/Pk	Qty/Cs
430776	250 mL Tube	PP	Plug	6000	6	102
430236	250 mL Support Cushion	PEI	n/a	n/a	n/a	6
431123	500 mL Tube	PP	Plug	6000	6	36
431124	500 mL Support Cushion	PEI	n/a	n/a	n/a	6

PP = Polypropylene, PEI = Polyetherimide, RCF = Relative Centrifugal Force (x g).



500 and 250 mL Centrifuge Tubes with Support Cushions

Technical Appendix

CORNING® CELL CULTURE SURFACES

Introduction

For over eighty years Corning has been developing products and surfaces for cell culture. Corning currently offers five polystyrene-based surfaces (Table 1) for growing cells including the most recent technology revolution, the patented Corning CellBIND® surface (U.S. Patent 6,617,152):

Most of these early plastic vessels were made from polystyrene, a long carbon chain polymer with benzene rings attached to every other carbon. Polystyrene was chosen because it has excellent optical clarity, is easy to mold and is relatively inexpensive. However, it also has one significant drawback: it is a very hydrophobic (nonwetable) polymer to which cells have difficulty attaching. Fortunately, the surface of polystyrene can be easily modified by a variety of chemical (sulfuric acid) and physical (corona discharge, gas-plasma or irradiation) methods. Using these methods, hydroxyl, ketone, aldehyde, carboxyl and amine groups can readily be grafted onto the polymer (Figure 1). These groups modify the surface characteristics changing the uncharged hydrophobic surface into a more ionic hydrophilic surface. Polystyrene can also be modified through chemical reactions to allow the covalent attachment of a variety of reactive groups that can be used for the subsequent covalent immobilization of biomolecules. For additional information, please check the References.

Corning CellBIND® Surface

The Corning CellBIND culture surface, the first novel cell culture surface treatment in over 20 years, is designed to improve cell attachment under difficult conditions, such as reduced-serum or serum-free medium, resulting in higher cell yields. It is also useful for growing “difficult” cells such as primary cultures or transfected cells over expressing proteins (Figure 3). Developed by Corning scientists, this patented technology (U.S. Patent 6,617,152) uses a novel microwave plasma process for treating the culture surface. This process improves cell attachment by incorporating significantly more oxygen into the cell culture surface than traditional plasma or corona discharge treatments, rendering it more hydrophilic (wetable) and increasing the stability of the surface.

Unlike biological coatings, the Corning CellBIND surface is a nonbiological surface that requires no special handling or

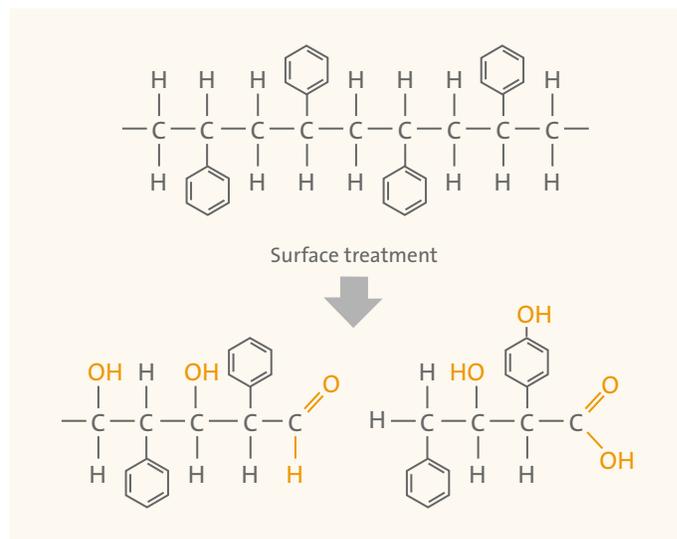


Figure 1. Polystyrene can be surface modified by the addition of a variety of different chemical groups, by breaking the carbon chain backbone, or by opening the benzene ring (not shown).

storage. Because the polymer is treated, rather than coated, the surface is more consistent and stable. This enhanced cell performance has already led to a major biotechnology company choosing Corning roller bottles with the Corning CellBIND surface for producing a new FDA approved protein therapeutic.

Corning CellBIND surface benefits:

- ▶ Quickly adapts cells to reduced serum or serum-free conditions
- ▶ May eliminate the need for tedious, time-consuming, expensive and low stability biological coatings
- ▶ Stable at room temperature, requires no refrigeration or special handling
- ▶ Gives more consistent and even cell attachment for difficult to attach cell lines, especially transfected cells
- ▶ Reduces premature cell detachment from confluent cultures especially in roller bottles and during cell-based assays

The Corning CellBIND surface is available on flasks, multiple well plates, CellSTACK Culture Chambers, roller bottles, 96 well plates, 384 well plates, and dishes.

Table 1. Corning Cell Culture Surfaces

Corning Surface	Binding Interaction	Sample Properties
Corning CellBIND modified polystyrene surface	Hydrophilic and ionic (negatively charged)	Improves cell attachment and binding to polystyrene
Standard Tissue culture treated polystyrene	Hydrophilic and ionic (negatively charged)	Allows cell attachment and binding to polystyrene
Untreated polystyrene	Hydrophobic	Significantly reduces the attachment of most cells
Ultra Low Attachment coated polystyrene	Hydrophilic and nonionic	Hydrogel layer prevents the attachment of almost all cells
Poly-D-lysine coated polystyrene	Hydrophilic and ionic (positively charged)	Improves cell attachment and binding to polystyrene

Standard Tissue Culture Treated Polystyrene Surface

Standard Corning® polystyrene cell culture vessels are surface modified using either corona discharge (flasks, dishes and microplates) or gas-plasma (roller bottles and culture tubes). These processes generate highly energetic oxygen ions which graft onto the surface polystyrene chains (Figure 1) so that the surface becomes hydrophilic and negatively charged when placed in medium. Corning offers the standard tissue culture treated surface on flasks, dishes, multiple well plates, CellSTACK® Culture Chambers, roller bottles and culture tubes.

Untreated Polystyrene Surface

Natural, unmodified polystyrene surfaces are hydrophobic and only bind cells and biomolecules through passive hydrophobic interactions. Corning offers untreated polystyrene culture dishes and microplates for growing cells in stationary suspension or other applications where reduced cell attachment is desired. However, these untreated vessels are sterilized by low dose gamma irradiation, which slightly increases the wettability of the surface. Since some transformed cell lines (CHO-k1, for example) and macrophages will attach and grow on these hydrophobic surfaces, Corning also offers an Ultra Low Attachment Surface (see below) for use in situations where cell attachment must be kept to an absolute minimum.

Ultra Low Attachment Coated Polystyrene Surface

The Corning Ultra Low Attachment surface is a covalently bound hydrogel layer that is hydrophilic and neutrally charged. Since proteins and other biomolecules passively adsorb to polystyrene surfaces through either hydrophobic or ionic interactions, this hydrogel surface naturally inhibits nonspecific immobilization via these forces, thus inhibiting subsequent cell attachment. This surface is very stable, noncytotoxic, biologically inert and nondegradable. Corning offers the Ultra Low Attachment surfaces on dishes and microplates.

This Ultra Low Attachment surface has been shown to successfully inhibit attachment of anchorage dependent MDCK, VERO, and C6 cells grown for a period of time equal to that necessary to obtain confluent cell growth on the control surface (standard tissue culture treated polystyrene; Figure 2). This surface has also been shown to inhibit the attachment and activation of macrophages and neutrophils.

Ultra Low Attachment culture vessels are useful for:

- ▶ Studying tissue-specific functions of certain cancer cells (i.e., MCF-7 breast cancer cells)
- ▶ Preventing stem cells from attachment-mediated differentiation
- ▶ Selectively culturing tumor or virally transformed cells as unattached colonies (substitute for soft agar assays)

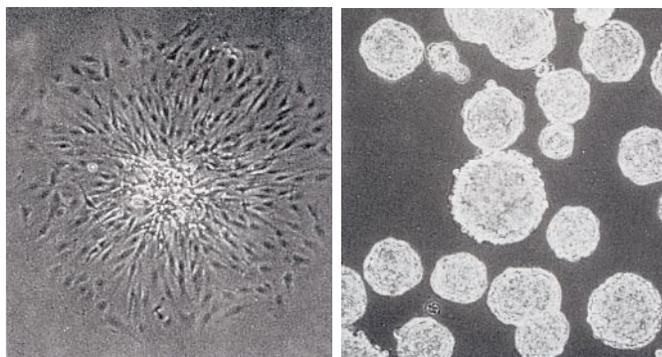


Figure 2. Single cell derived colonies of C6 glioma cells grow as flattened attached colonies in standard tissue culture treated surface (left panel) but form unattached spherical colonies on the ultra low attachment surface (right panel).

Poly-D-lysine Coated Surface

Some assays and procedures require enhanced binding of cells to polystyrene. Corning poly-D-lysine (PDL) microplates are coated with PDL (molecular weight range of 70 to 150 kDa) by a proprietary method. This synthetic polymeric coating creates a uniform net positive charge on the plastic surface which, for some cell types, can enhance cell attachment, growth and differentiation, especially in serum-free and low serum conditions. PDL surfaces often improve attachment and growth of primary neurons, glial cells, neuroblastomas, and a variety of transfected cell lines, including HEK-293. Corning offers poly-D-lysine coated 96 and 384 well microplates.

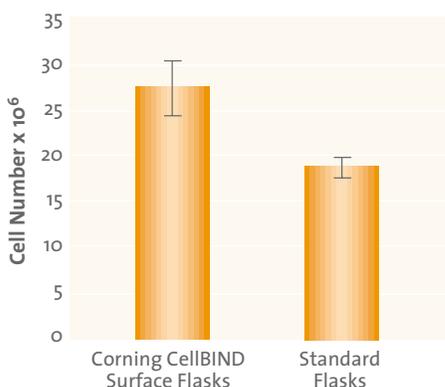


Figure 3. The first new cell culture treatment in over 20 years, the Corning CellBIND surface helps cells (such as the HEK-293 cells shown here) attach under difficult conditions and improves cell yields.

CHARACTERISTICS OF CORNING® PLASTICWARE

		Polystyrene	Polyethylene (High Density)	Polypropylene	Polycarbonate	Nylon	P.T.F.E. (Teflon®)
Physical Characteristics	Basic Properties	Biologically inert, hard, excellent optical qualities	Biologically inert, high chemical resistance	Biologically inert, high chemical resistance, exceptional toughness	Clear, very tough, inert, high temperature resistance	Tough, heat resistant, machinable, high moisture vapor transmission	Biologically and chemically inert, high resistant slippery surface
	Clarity	Clear	Opaque	Translucent	Clear	Opaque	Opaque
	Autoclave Results	Melts	May distort	Withstands several cycles	Withstands one cycle	OK	OK
	Heat Distortion Point	147-175°F 64-80°C	250°F 121°C	275°F 135°C	280-290°F 138-143°C	300-356°F 150-180°C	250°F 121°C
	Burning Rate	Slow	Slow	Slow	Self-extinguishing	Self-extinguishing	None
Effects of Laboratory Reagents	Weak Acids	None	None	None	None	None	None
	Strong Acids	Oxidizing acids attack	Oxidizing acids attack	Oxidizing acids attack	May be attacked	Attacked	None
	Weak Alkalies	None	None	None	None	None	None
	Strong Alkalies	None	None	None	Slowly attacked	None	None
	Organic Solvents	Soluble in aromatic chlorinated hydrocarbons	Resistant below 80°C	Resistant below 80°C	Soluble in chlorinated hydrocarbons; partly soluble in aromatics	Resistant	Resistant
Gas Permeability of Thin Wall Products*	O ₂	Low	High	High	Very low	Very low	–
	N ₂	Very low	Low	Low	Very low	Very low	–
	CO ₂	High	Very high	Very high	Low	–	–

Portions of this table courtesy of Modern Plastics Encyclopedia. Most data are from tests by A.S.T.M. methods. Tables show averages or ranges. Many properties vary with manufacturer, formulation, testing laboratory, and the specific operating conditions.

*Obtained from a table which lists gas permeability in CC/100 sq. inches per 24 hrs./mil.

CHEMICAL COMPATIBILITY OF CORNING® PLASTICWARE

	PS	PP	PVC	CA	PC	CN	NY	MCE	PTFE	PET
<i>Acids</i>										
Hydrochloric acid (25%)	G	G	G	N	R	R	N	O	R	R
Hydrochloric acid (concentrated)	F	G	F	N	R	N	N	N	R	O
Nitric acid (concentrated)	P	P	P	N	R	N	N	N	O	N
Nitric acid (25%)	P	G	F	N	R	L	N	O	R	R
<i>Alcohols</i>										
Butanol	G	G	G	R	R	R	R	R	R	R
Ethanol	G	G	G	R	R	N	R	O	R	R
Methanol	G	G	G	R	R	N	R	O	R	R
<i>Amines</i>										
Aniline	G	G	P	N	N	R	R	N	R	O
Dimethylformamide	P	G	F	N	N	N	R	N	R	N
<i>Bases</i>										
Ammonium hydroxide (25%)	F	G	G	R	N	R	R	O	N	O
Ammonium hydroxide (1N)	F	G	G	N	N	R	R	O	N	N
Sodium hydroxide	G	G	G	N	N	N	R	N	R	N
<i>Hydrocarbons</i>										
Hexane	P	G	F	R	R	R	R	R	R	R
Toluene	P	G	P	R	O	R	R	R	R	N
Xylene	P	F	P	R	R	R	R	R	R	N
Dioxane	P	G	P	N	N	N	R	N	R	R
Dimethylsulfoxide (DMSO)	P	G	P	N	N	N	R	N	R	O*
<i>Halogenated Hydrocarbons</i>										
Chloroform	P	N	P	N	N	R	R	N	R	R
Methylene chloride	P	F	P	N	N	R	R	N	R	N
<i>Ketones</i>										
Acetone	P	G	P	N	O	N	R	N	R	R
Methyl ethyl diketone	P	G	P	N	O	N	R	O	R	R

*Can be used with aqueous solutions containing up to 20% DMSO.

R = Recommended, L = Limited Resistance, N = Not Recommended, O = Testing Advised, F = Fair, G = Good, P = Poor, PP = Polypropylene, PVC = Polyvinyl Chloride, CA = Cellulose Acetate, PC = Polycarbonate, PTFE = Polytetrafluoroethylene PS = Polystyrene, CN = Cellulose Nitrate, NY = Nylon, MCE = Mixed Cellulose Esters, PET = Polyethylene Terephthalate.

CHARACTERISTICS OF CORNING CENTRIFUGE TUBES

The following information is provided to serve as a general guideline for determining suitability of Corning centrifuge tubes for your applications. In addition, Corning recommends following the procedures outlined by the centrifuge manufacturer, as well as conducting a trial run to determine proper conditions before beginning any critical applications.

Corning centrifuge tubes are tested for leakage. They should not break or leak if used in a properly balanced rotor with suitable carriers, holders, and adapters that fully support the tubes when run in accordance with the guidelines in this section. These tubes are intended for one-time use only; reuse is not recommended as breakage or leakage may occur.

The recommended working temperature range for Corning centrifuge tubes is 0 to 40°C. The suitability of these tubes for storage below 0°C depends on both the solution and the

storage conditions. In general, the polypropylene and PET tubes are more resistant to stress at low temperatures than polystyrene. It is strongly recommended that a trial run be performed under actual conditions to test the suitability of the tubes for frozen storage.

Suggestions for Safe Centrifugation

- ▶ **Caution:** When centrifuging pathogenic organisms, clinical specimens known or suspected of being infectious, or any other potentially biohazardous materials, approved safety containment systems should be used. Contact your centrifuge manufacturer for appropriate accessories or recommendations.
- ▶ Read protocols and instruction manuals carefully. Do not confuse speed or revolutions per minute (RPM) with relative centrifugal force (RCF). Instructions for centrifuging a sample at a given RPM and time are incomplete unless the rotor or radius is specified. Protocols should always state the time and RCF value for centrifuging a sample.

- Proper balancing and distribution of the load in a centrifuge is critical for optimum performance and to prevent damage to the tubes or centrifuge. Opposing buckets or loads should always be balanced within the range specified by the manufacturer. Tubes should always be distributed in the buckets with respect to the center of rotation as well as the pivotal axis of the bucket. Failure to do this may prevent the bucket from achieving a horizontal position during the centrifugation run. Uneven separations or tube failure may result.

These centrifuge tubes are intended for use by persons knowledgeable in safe laboratory practices. Failure can result from surface damage, exceeding the specified RCF values, using unsuitable support systems, improper temperatures, or incompatible chemicals.

The RCF ratings for Corning® disposable centrifuge tubes have been established at room temperature using tubes filled to nominal capacity with water and spun in a horizontal rotor

centrifuge for 5 minutes. The centrifuge must be equipped with the recommended carriers, adapters, and cushions that fully support the tubes. If an angle head rotor is used or proper support is not provided, RCF values will be lower. Use of liquid other than water may also lower RCF values. Please consult your centrifuge specifications and the nomogram table (page 46) to determine speeds at which maximum RCF is achieved.

Chemical Compatibility of Disposable Plastic Centrifuge Tubes

The mechanical strength, flexibility, color, weight and dimensional stability of all plastic centrifuge tubes are affected to varying degrees by the chemicals with which they come in contact. Specific operating conditions, especially temperature, RCF, rotor type, carrier design, and run length will also affect tube performance.

Physical Properties of Disposable Plastic Centrifuge Tubes

	Clear Polypropylene	Opaque Polypropylene	New Polyethylene Terephthalate
Recommended Working Temp*	0-40°	0-40°	0-40°
Heat Distortion Point	121°	121°	70°
Flexibility	Moderate	Moderate	Rigid
Transparency	Clear	Opaque	Clear
Maximum RCF:			
15 mL Tube	12,000 x g	–	3,600 x g
50 mL Tube	15,500 x g	–	3,600 x g
250 mL Tube	–	6,000 x g	–
500 mL Tube	–	6,000 x g	–

*At room temperature for 24 hours.

Chemical Resistance of Disposable Plastic Centrifuge Tubes*

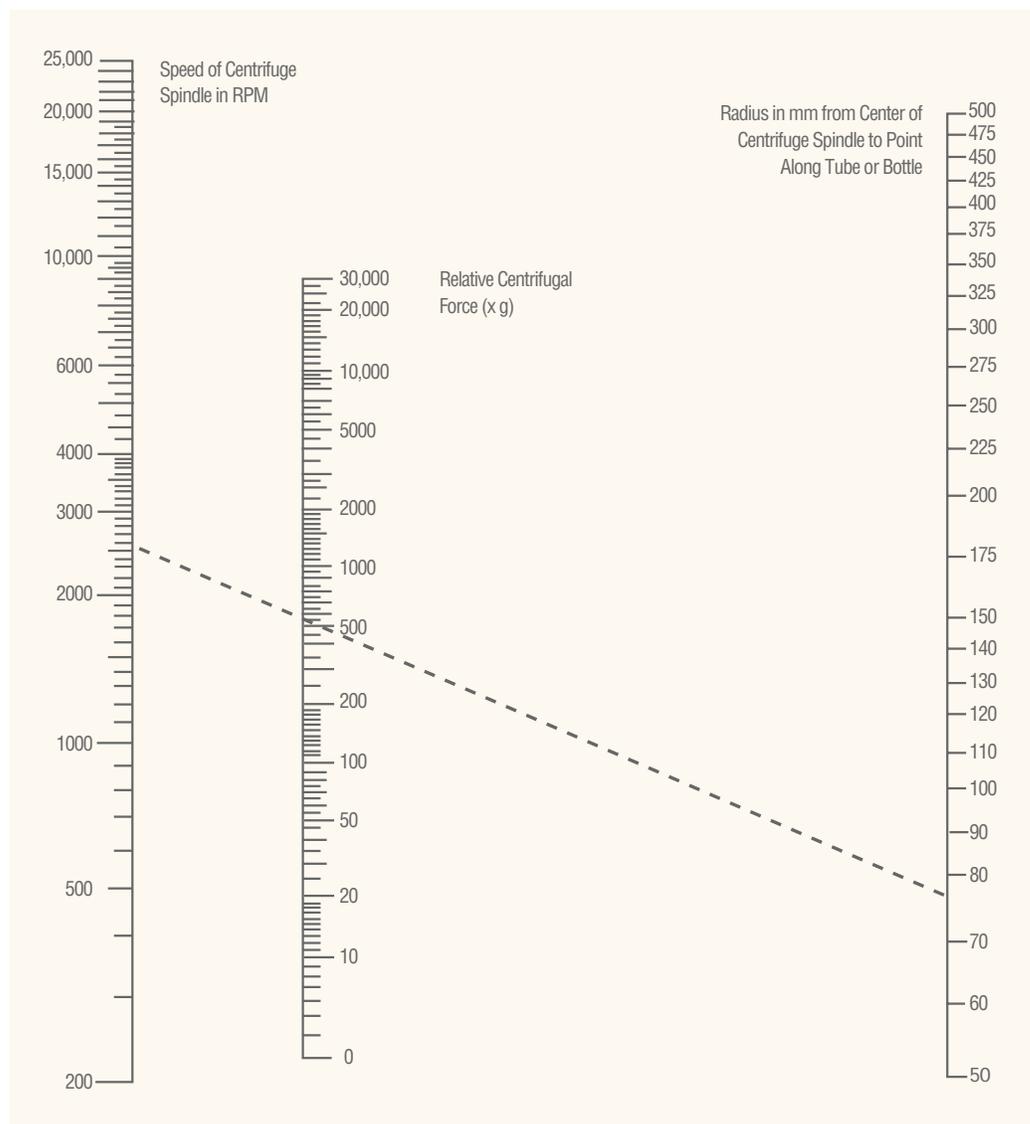
Chemical Class	Polyethylene Terephthalate	Polypropylene	Polyethylene Caps
Acids (weak)	1	1	1
Acids	3	1	1
Alcohols	1	1	1
Aldehydes	3 ^a	2 ^a	1
Bases	3	1	1
Esters	2	2	2
Hydrocarbons:			
Aliphatic	1	2	3
Aromatic	3	3 ^b	3
Halogenated	2	3	3
Ketones	2	2 ^c	2

*At room temperature for 24 hours.

1 = Recommended; 2 = Suitable for most applications. However, a trial run under specific operating conditions is recommended; 3 = Not recommended.

Note: a = Formaldehyde, rated 1; b = Phenol, rated 1; c = Acetone, rated 1.

Nomogram for Computing Relative Centrifugal Force



To calculate the RCF value at any point along the tube or bottle, measure the radius, in mm, from the center of the centrifuge spindle to the particular point. Draw a line from the radius value on the right hand column to the appropriate centrifuge speed on the left-hand column. The RCF value is the point where the line crosses the center column. The nomogram is based on the formula:

$$\text{RCF} = (11.17 \times 10^{-7}) \text{RN}^2$$

where:

R = Radius in mm from centrifuge spindle to point in tube bottom

N = Speed of spindle in RPM

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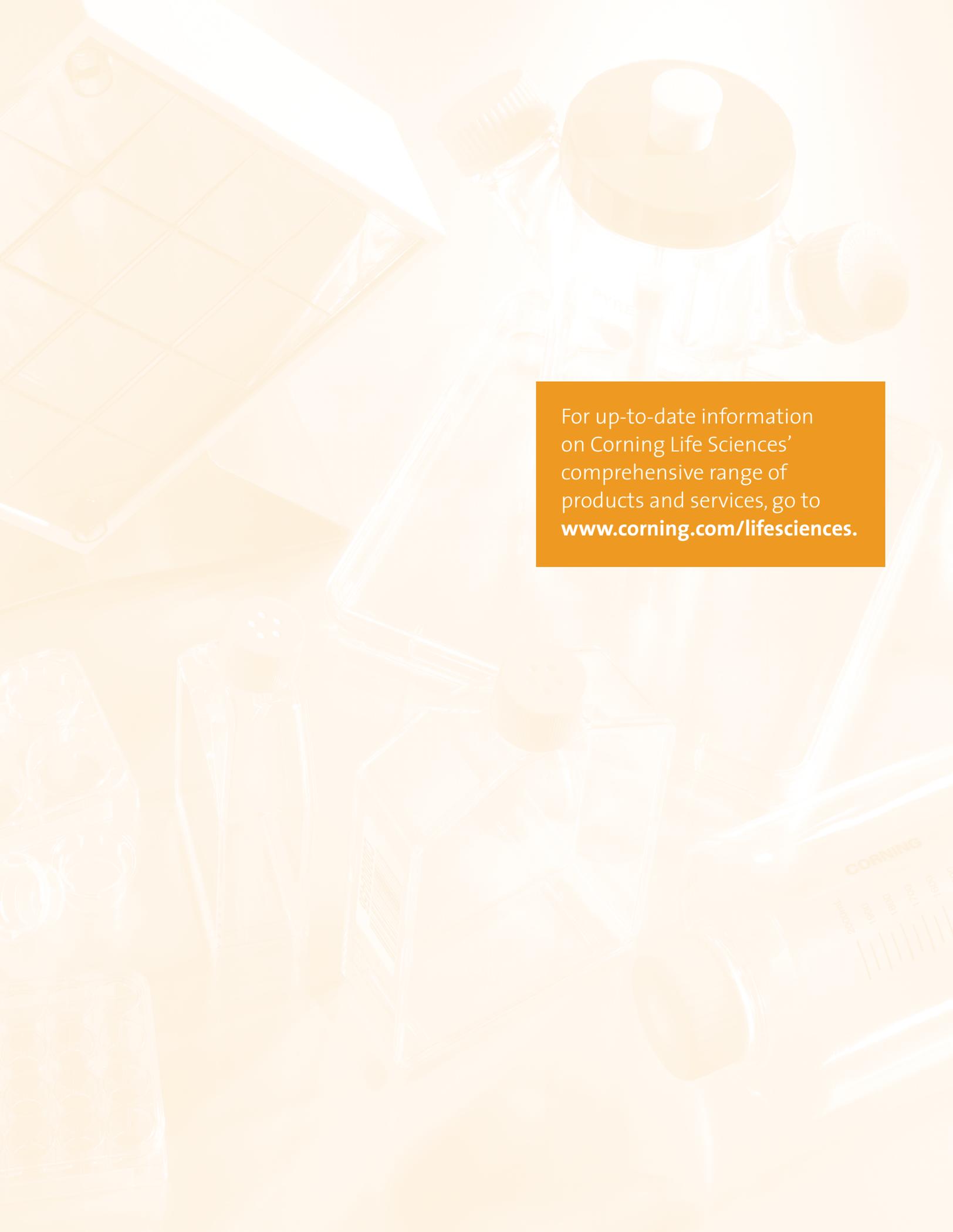
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