

Corning® Cell Culture Selection Guide



Life
Sciences





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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 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 with a 24-hour turnaround 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 less than 0.5 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 FDA-registered 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.

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.

Flask Neck Styles



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



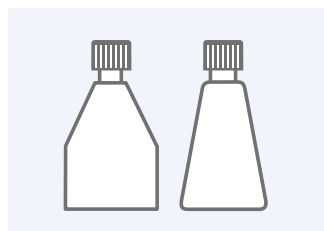
Canted neck flasks allow easier pouring and improved access to the flask for pipetting or scraping. The canted neck design was a Corning innovation that first appeared in 1974.



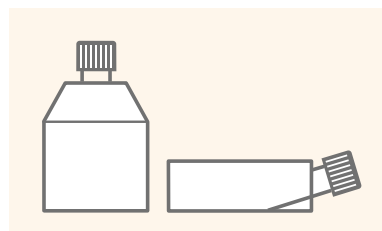
Angled neck improves pipette access and reduces medium sloshing into the neck. This patented design was a Corning innovation that first appeared in 1988.

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 antipipette 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.



3056 25 cm² Triangular Flask with Vent Cap



430639 25 cm² Canted Neck Flask with Vent Cap

Corning® and Costar® Cell Culture Flask Ordering Information

25 cm² Growth Area Flasks

Cat. No.	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
430168	Corning rectangular	Canted	Plug Seal	20	500
430372	Corning rectangular	Canted	Phenolic-Style	20	500
430639	Corning rectangular	Canted	Vent Cap	20	200
3055	Costar® triangular	Angled	Phenolic-Style	20	500
3056	Costar triangular	Angled	Vent Cap	10	200

75 cm² Growth Area Flasks

Cat. No.	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
430198	Corning traditional	Straight	Plug Seal	5	100
430199	Corning traditional	Straight	Phenolic-Style	5	100
430641	Corning rectangular	Canted	Vent Cap	5	100
430720	Corning rectangular	Canted	Plug Seal	5	100
430725	Corning rectangular	Canted	Phenolic-Style	5	100
3275	Costar modified triangular	Straight	Phenolic-Style	5	100
3276	Costar modified triangular	Straight	Vent Cap	5	100
3375	Costar rectangular	Canted	Phenolic-Style	5	100
3376	Costar rectangular	Canted	Vent Cap	5	100



430198 75 cm² Straight Neck Flask with Plug Seal Cap



430641 75 cm² Canted Neck Flask with Vent Cap



3376 75 cm² Canted Neck Flask with Vent Cap



3275 75 cm² Triangular Flask with Phenolic-Style Cap



430823 150 cm² Canted Neck Flask with Plug Seal Cap



3150 162 cm² Straight Neck Flask with Phenolic-Style Cap



431082 225 cm² Angled Neck Flask with Vent Cap



3001 225 cm² Canted Neck Flask with Vent Cap



431306 175 cm² Bar Coded Flasks with Vent Cap

Cell Culture Flask Application Tip

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

150 cm² Growth Area Flasks

Cat. No.	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
430823	Corning® rectangular	Canted	Plug Seal	5	50
430824	Corning rectangular	Canted	Phenolic-Style	5	50
430825	Corning rectangular	Canted	Vent Cap	5	50

162 cm² Growth Area Flasks

Cat. No.	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
3150	Costar® traditional	Straight	Phenolic-Style	5	25
3151	Costar traditional	Straight	Vent Cap	5	25

175 cm² Growth Area Flasks

Cat. No.	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
431079	Corning rectangular	Angled	Plug Seal	5	50
431080	Corning rectangular	Angled	Vent Cap	5	50
431085	Corning rectangular	Angled	Phenolic-Style	5	50
431306*	Corning rectangular	Angled	Vent Cap	7	84

*Flask pre-labeled with bar code, validated for use with SelecT™ Robotic System.

225 cm² Growth Area Flasks

Cat. No.	Flask Style	Neck Style	Cap Style	Qty/Pk	Qty/Cs
431081	Corning rectangular	Angled	Plug Seal	5	25
431082	Corning rectangular	Angled	Vent Cap	5	25
3000	Costar rectangular	Canted	Phenolic-Style	4	24
3001	Costar rectangular	Canted	Vent Cap	4	24

Cell Yields and Recommended Medium Volume

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
150 cm ²	150	1.5 x 10 ⁷	30 - 45	210
162 cm ²	162	1.6 x 10 ⁷	32 - 48	175
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

*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



430196 Gridded 60 mm Dish



430167 100 mm Dish



431110 500 cm² Cell Culture Dish

Corning® Cell Culture Treated Dishes

- ▶ Manufactured from optically-clear virgin polystyrene
- ▶ Treated for optimal cell attachment
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic
- ▶ Have stacking beads to aid in handling
- ▶ Supplied with vents to provide consistent gas exchange

Corning Cell Culture Dish Ordering Information

Cat. No.	Dish Style* (mm)	Height (mm)	Approx. Growth Area (cm ²)	Qty/Pk	Qty/Cs
430165	35	10	8	20	500
430166	60	15	21	20	500
430196	60 with 2 mm grid	15	21	20	500
430167	100	20	55	20	500
430293 [†]	100	20	55	10	480
430599	150	25	148	5	60
431110 [§]	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.

[†]Cat. No. 430293 consists of 6-pack carriers, each containing 6 packages of 10 dishes each.

[§]Cat. No. 431110 is a square dish with interior bottom plate 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

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 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.

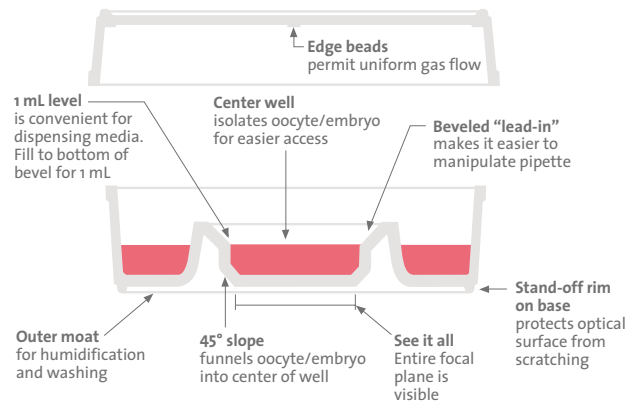
[†]Yields from many cell types can be lower than this.

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



3260 IVF Culture Dish



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

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

- ▶ 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

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

Cat. No.	Description	Qty/Pk	Qty/Cs
6 Well Plates			
3506	Standard clear plate	5	100
3516	Standard clear plate	1	50
3471	Ultra Low Attachment plate with hydrogel layer to inhibit cell attachment*	1	24
12 Well Plates			
3512	Standard clear plate	5	100
3513	Standard clear plate	1	50
24 Well Plates			
3524	Standard clear plate	1	100
3526	Standard clear plate	1	50
3527	Standard clear plate	5	100
3473	Ultra Low Attachment plate with hydrogel layer to inhibit cell attachment*	1	24
48 Well Plates			
3548	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. These plates are not tested for endotoxin.

Well Dimensions, Expected Cell Yields, and Recommended Medium Volumes

Costar 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.

Corning® and Costar® 96 Well Cell Culture Plates

- ▶ 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

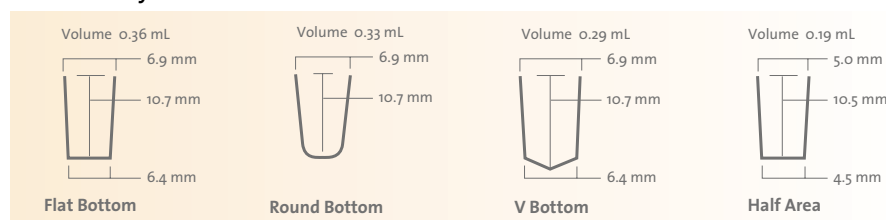
Black plates are designed to lower backgrounds in fluorescent assays and reduce crosstalk. White plates are designed for luminescent assays. Some plates have a Poly-D-Lysine coating to enhance cell attachment. Corning offers many other 96 well plate types for applications other than cell culture; for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

Corning and Costar 96 Well Plate Ordering Information

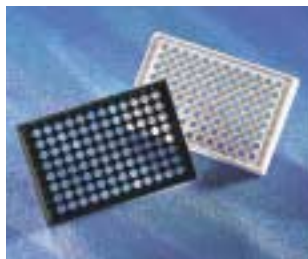
Cat. No.	Description	Qty/Pk	Qty/Cs
Clear Plates			
3596	Standard clear plate	1	50
3997	Standard clear plate	10	50
3598	Standard clear plate	5	100
3599	Standard clear plate	1	100
3585	Standard clear plate with special low evaporation lid	5	50
3595	Standard clear plate with special low evaporation lid	1	50
3594	Standard clear plate without lid	1	100
3697	96 well half area clear plate	20	100
3799	96 well round bottom clear plate	1	50
3894	96 well V-bottom clear plate	1	50
3665	Standard clear plate, Poly-D-Lysine coated	25	100
9102	8-well strip plate, assembled 12 strips per plate	1	50
3474	Ultra Low Attachment plate with hydrogel layer to inhibit cell attachment*	1	24
White Plates			
3917	Solid white plate	20	100
3362	Solid white plate without lid	25	100
3688	96 well half area solid white plate	20	100
3610	White plate with clear bottom	1	48
3903	White plate with clear bottom	20	100
3666	White plate with clear bottom, Poly-D-Lysine coated	25	100
Black Plates			
3916	Solid black plate	20	100
3603	Black plate with clear bottom	1	48
3904	Black plate with clear bottom	20	100
3667	Black plate with clear bottom, Poly-D-Lysine coated	25	100
3614	Black plate with special optics, ultrathin, clear bottom, without lid	25	100
Lids			
3099	Universal lid	25	50
3930	Rigid styrene lid with condensation rings	1	100
3931	Rigid styrene lid with condensation rings	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. These plates are not tested for endotoxins.

Well Geometry



3596 96 Well Culture Plate

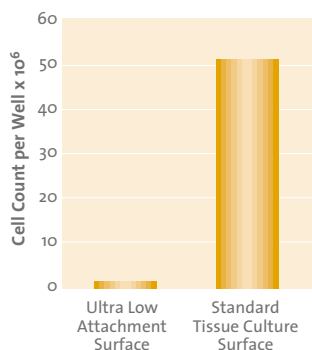


3610 and 3603 96 Well Clear Bottom Plates



3917 and 3916 96 Well Solid Plates

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



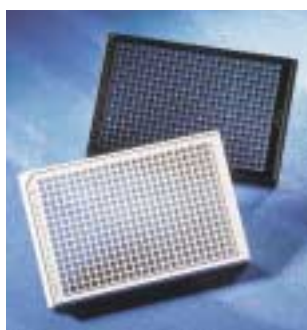
Vero cells plated at 2.6×10^6 cells per well grown for 4 days at 37°C in a 5% CO₂ environment show a 99% reduction in cellular attachment vs. standard culture treated product.

Well Dimensions, Expected Cell Yields, and Recommended Medium Volume

Costar® 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.

Corning® and Costar 384 Well Cell Culture Plates

3707 and 3712
384 Well Clear Bottom Plates

- ▶ Flat bottoms
- ▶ Nonreversible lids
- ▶ Treated for optimal cell attachment
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Black plates are designed to lower backgrounds in fluorescent assays and reduce crosstalk. White plates are designed for luminescent assays. Some plates have 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.

Corning 384 Well Cell Culture Plate Ordering Information

Cat. No.	Description	Qty/Pk	Qty/Cs
Clear Plates			
3701	Standard clear plate	20	100
3662	Standard clear plate, Poly-D-Lysine coated	25	100
White Plates			
3704	Solid white plate	20	100
3707	White plate with clear bottom	20	100
3663	White plate with clear bottom, Poly-D-Lysine coated	25	100
Black Plates			
3709	Solid black plate	20	100
3712	Black plate with clear bottom	20	100
3664	Black plate with clear bottom, Poly-D-Lysine coated	25	100

Well Dimensions, Expected Cell Yields, and Recommended Medium Volumes

Corning 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)
384 well	2.7 x 2.7 [†]	0.056	5.6 x 10 ³	0.125	.025 - .050	21.5	2.15 x 10 ⁶	9.6 - 19.2

*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.



3955 and 3954
1536 Well Culture Plates

Corning® 1536 Well Cell Culture Plates

- ▶ Flat bottoms with no lids (Top plate serves as lid for plate underneath.)
- ▶ Eight extra wells on left and right sides that can be used for running controls
- ▶ Treated for optimal cell attachment
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Black plates are designed to lower backgrounds 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.

Corning 1536 Well Cell Culture Plate Ordering Information

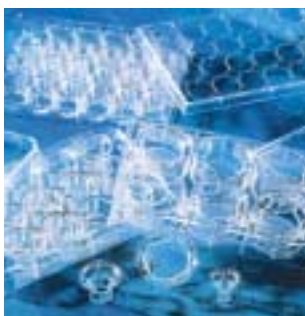
Cat. No.	Description	Qty/Pk	Qty/Cs
Clear Plates			
3853	Standard clear plate	20	100
White Plates			
3855	Solid white plate	20	100
Black Plates			
3854	Solid black plate	20	100

Well dimensions, Expected Cell Yields, and Recommended Medium Volumes

Corning 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	1.2	0.011	1.2 x 10 ³	2.3	1.0 - 1.5	16.9	1.69 x 10 ⁶	1.5 - 2.3

*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.

Transwell® Permeable Supports



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

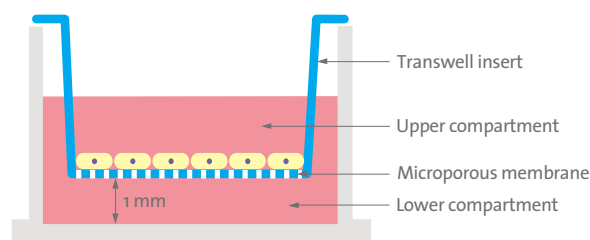
- ▶ Designed to produce a cell culture environment that closely resembles the *in vivo* state
- ▶ Allows polarized cells to feed basolaterally and thereby carry out metabolic activities in a more natural fashion
- ▶ Unique patented self-centered hanging design prevents medium wicking between the insert 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, 3.0	0.1, 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 Support

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)
0.1 µm	3 x 10 ⁸	n/a
0.4 µm	1 x 10 ⁸	4 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	n/a
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)
6.5	0.33	24 well	0.6	0.1
12	1	12 well	1.5	0.5
24	4.7	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 translucent membrane
- ▶ Pore sizes ranging from 0.1 µm to 12 µm
- ▶ 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

Cat. No.	Membrane Diameter (mm)	Growth Surface Area (cm ²)	Membrane Pore Size (µm)	Tissue Culture Treated	Inner Packaging*	Inserts/Cs
3413	6.5	0.3	0.4	Yes	12/plate*	48
3415	6.5	0.3	3.0	Yes	12/plate*	48
3421	6.5	0.3	5.0	Yes	12/plate*	48
3422	6.5	0.3	8.0	Yes	12/plate*	48
3423	6.5	0.3	0.1	No	12/plate*	48
3401	12	1.1	0.4	Yes	12/plate	48
3402	12	1.1	3.0	Yes	12/plate	48
3403	12	1.1	12.0	Yes	12/plate	48
3412	24	4.5	0.4	Yes	6/plate	24
3414	24	4.5	3.0	Yes	6/plate	24
3428	24	4.5	8.0	Yes	6/plate	24
3419	75	44	0.4	Yes	1/dish	12
3420	75	44	3.0	Yes	1/dish	12

Note: Nontreated cell culture polycarbonate Transwells are also available, by special order only, with a minimum 25 case order quantity. Please allow 6-10 weeks for delivery. Contact your local Corning distributor for ordering information.

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

Transwell-Clear Polyester Membrane Insert

3450 24 mm Transwell-Clear 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	4.5	0.4	6/plate	24
3452	24	4.5	3.0	6/plate	24
3460	12	1.1	0.4	12/plate	48
3462	12	1.1	3.0	12/plate	48
3470	6.5	0.3	0.4	12/plate*	48
3472	6.5	0.3	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	Cluster	Inserts/Cs
3491	24	4.7	0.4	Individual	6 well	24
3492	24	4.7	3.0	Individual	6 well	24
3493	12	1.1	0.4	Individual	12 well	24
3494	12	1.1	3.0	Individual	12 well	24
3495*	6.5	0.3	0.4	Individual	24 well	24
3496*	6.5	0.3	3.0	Individual	24 well	24

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

HTS Transwell-24 Polycarbonate Membrane Insert

- ▶ Treated for optimal cell attachment
- ▶ Available in two pore sizes: 0.4 and 3.0 µm
- ▶ Individual or bulk pack
- ▶ 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



3396 6.5 mm HTS Transwell Polycarbonate Insert

HTS Transwell Insert Ordering Information

Cat. No.	Description	Pore Size (µm)	Packaging	Plates/Cs
3396	HTS Transwell-24, individual	0.4	1	2
3397	HTS Transwell-24, bulk	0.4	12	12
3398	HTS Transwell-24, individual	3.0	1	2
3399	HTS Transwell-24, bulk	3.0	12	12
3395	HTS Transwell nontreated reservoir	n/a	12	48

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, the ring can be placed in a vertical or horizontal diffusion chamber.*
- ▶ Sterilized by gamma radiation
- ▶ Packaged in 6 well plates



3407 12 mm Snapwell Inserts

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)

Culture Tubes



430172 Culture Tube

Corning® 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

Corning 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

Corning Roller Bottles

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

Corning Roller Bottle Ordering Information

Cat. No.	Surface Area (cm ²)	Cap Style	Graduations	Qty/Pk	Qty/Cs
430195	490	Plug Seal	No	2	40
430699	1750	Easy Grip	Yes	5	20
430849	850	Easy Grip	Yes	2	36
431133	850	Easy Grip	Yes	20	20
431198	850	Easy Grip Vent	Yes	2	36
430851	850	Easy Grip	Yes	6	36

Corning Expanded Surface Roller Bottles

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

Corning Expanded Surface Roller Bottle Ordering Information

Cat. No.	Surface Area (cm ²)	Cap Style	Graduations	Qty/Pk	Qty/Cs
430852	1700	Easy Grip	Yes	2	36
430853	1700	Easy Grip	Yes	6	36
431135	1700	Easy Grip	Yes	20	20
431200	1700	Easy Grip Vent	Yes	2	36
431191	1700	Easy Grip Vent	Yes	20	20



430852 Expanded Surface Roller Bottle

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.

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



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.

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.

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.

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 pricing. Corning provides on-site technical support for the CellCube System.

The CellCube Modules provide a traditional tissue culture treated 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.

Spinner Flasks



4500-3L Spinner Flask

Corning® 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.

Corning ProCulture Spinner Flask 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

Erlenmeyer Flasks



431146 1L Erlenmeyer Flask

Corning 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

Corning 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

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.

Corning® 2L and 3L Erlenmeyer Flasks



431256 2L Erlenmeyer Flask

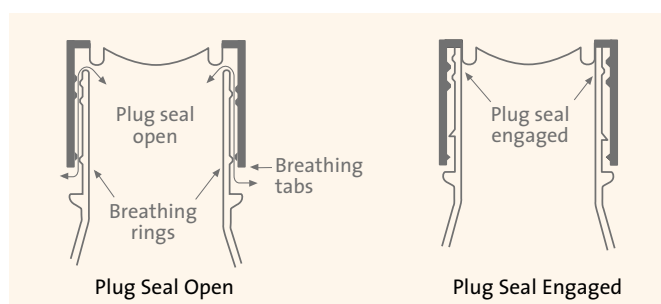


431253 3L Fernbach Culture Flask

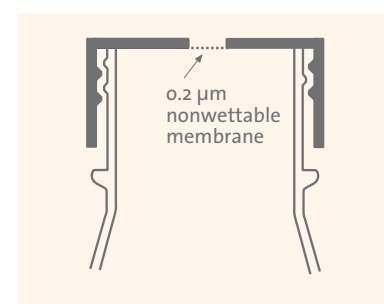
- ▶ Made from optically-clear polycarbonate
- ▶ Ideal for shaker culture applications
- ▶ Available in baffled and nonbaffled bottoms
- ▶ Vent caps supplied in every case of product for applications requiring sterile gas exchange
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Corning Erlenmeyer 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



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

Costar® Cell Scrapers and Cell Lifters

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

Costar 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

Cryogenic Vials and Accessories

Corning® Cryogenic Vial Racks and Storage Boxes

- ▶ Reusable racks are designed for use with cryogenic vials.
- ▶ Cat. No. 430525 has a locking feature for use with all Corning self-standing vials.

Corning Cryogenic Vial Rack and Box Ordering Information

Cat. No.	Description	Qty/Pk	Qty/Cs
430525	Polycarbonate rack and tray, holds 30 vials; self-locking design in ice/water bath		1
430526	Polycarbonate rack only, holds 30 vials; self-locking design		1
431131	Reusable orange polypropylene vial rack, holds 50 vials; self-locking design	2	
431119	81 Count* Cryogenic Box, 1-2 mL	5	10
431120	81 Count* Cryogenic Box, 4-5 mL	5	10
431121†	100 Count§ Cryogenic Box, 1-2 mL	5	10

*9 x 9 array.

†431121 accepts internally threaded cryogenic vials only.

§10 x 10 array.

Corning Internal Thread Cryogenic Vials

- ▶ Manufactured from polypropylene to withstand temperatures to -196°C
- ▶ Vials have a silicone washer or rubber O-ring for a secure seal.
- ▶ Vials may be color coded with inserts (see Cat. No. 430499).
- ▶ Most self-standing vials have a special base design allowing them to be locked into cryogenic rack and tray (Cat. No. 430525 or 431131) for single-handed manipulation.
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Corning Cryogenic Vial Ordering Information

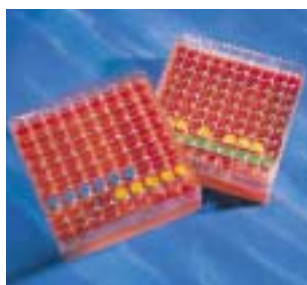
Cat. No.	Capacity (mL)	Style	Self-Standing	Seal Type	Qty/Pk	Qty/Cs
430487	1.2	Conical bottom	Yes	Washer	50	500
2012*	1.2	Conical bottom	Yes	O-Ring	50	250
430488	2.0	Round bottom	Yes	Washer	50	500
430489	2.0	Round bottom	No	Washer	50	500
2027*	2.0	Round bottom	No	O-Ring	50	250
2028*	2.0	Round bottom	Yes	O-Ring	50	250
430490	4.0	Round bottom	No	Washer	50	500
430491	4.0	Round bottom	Yes	Washer	50	500
430492	5.0	Round bottom	No	Washer	50	500
430656	5.0	Round bottom	Yes	Washer	50	500
2051*	5.0	Round bottom	No	O-Ring	50	250

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.

*Now with orange cap. These vials do not lock into rack or tray (Cat. No. 430525 and 431131).



430525 and 431131
Cryogenic Vial Racks

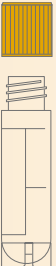




431119 and 431121
Cryogenic Vial Boxes



Internal Thread Cryogenic Vials

Cryogenic Vial Designs

 <p>External Thread Cryogenic Vial</p> <ul style="list-style-type: none"> ▶ Color-coded polypropylene cap inserts simplify vial identification. Available in variety packs of white, blue, green, red, and yellow. ▶ White silicone washer provides a secure seal. ▶ Easy-to-read 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. Available in variety packs of white, blue, green, red, and yellow. ▶ Easy-to-read graduations for partial volumes ▶ Self-standing base, self-locking skirt ▶ Silicone washers or rubber O-rings provide a secure seal. 	 <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.

Corning® External Thread Cryogenic Vials

- ▶ Manufactured from polypropylene to withstand temperatures to -196°C
- ▶ Vials have a silicone washer for a secure seal.
- ▶ Vials may be color coded with inserts (see Cat. No. 430499)
- ▶ All self-standing vials have a special base design allowing them to be locked into cryogenic rack and tray (Cat. No. 430525 or 431131) for single-handed manipulation.
- ▶ Sterilized by gamma radiation
- ▶ Certified nonpyrogenic

Cryogenic Vial 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.

Corning External Thread Cryogenic Vials with Plug Seal Caps

- ▶ Manufactured from polypropylene to withstand temperatures to -196°C
- ▶ Vials feature an 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

Cryogenic Vial 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.

Cap Inserts for Cryogenic Vials

- ▶ Caps inserts provide color-coding for easy sample identification.
- ▶ Inserts are packaged in resealable bags.
- ▶ Nonsterile
- ▶ Cap inserts fit all Corning cryogenic vials except Cat. No. 430289.

Cat. No.	Description	Qty/Pk	Qty/Cs
430499	Assorted	50	500

Colors, Polypropylene Cap Inserts: 100 each of white, blue, red, green, and yellow.

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.



External Thread Cryogenic Vials



430289 External Thread Cryogenic Vials with Plug Seal Cap



430499 Color-Coded Cap Inserts

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