



- / Application Note „Establishing a cell culture assay based on TR-FRET for screening G-Protein-coupled receptors“ (F074058)
- / Application Note „Selection of cell culture surfaces for the adipogenic differentiation of hMSCs“ (F010003)

## CELLSTAR®

### CELL CULTURE MICROPLATES

Cell culture treated microplates are available in the following versions: 96, 384, 1536 well format.

Depending on the application, the well profile is a key feature in a 96 well cell culture microplate. The chimney well cell culture microplate has the same well profile as the standard F-bottom plate. The difference to the standard plate is the chimney-like arrangement of the wells i.e. each well stands on its own. Therefore the risk of contamination from sample material being carried over is minimised. Clear-bottom mi-

croplates have pigmented walls and a transparent thin film bottom, the so-called  $\mu$ Clear® bottom. In contrast to our standard microplates with a solid polystyrene bottom, they are ideal for cell culture and microscopic applications using fluorescence or luminescence detection methods.

For many applications, a reduction of the sample volume is an important feature. 96 well half area microplates offer an interesting alternative here. They can be pipetted automatically as well as manually without any problem and allow a reduction of the sample volume up to 50 %.

- / Available with different cell culture surfaces for optimal cell culture conditions
- / Footprint compatible with automated systems
- / Alphanumeric well coding



## Cell Culture Microplates

### 96 Well

- / With U-bottom, V-bottom or F-bottom
- / Clear / black / white
- / Chimney well design, raised wells and yes, condensation rings in lids prevent cross-contamination
- / Improved cell adhesion through physical surface treatment



Well format: 96, Bottom: solid, Raw material: PS, Surface treatment: TC

Item no.	Growth area / unit	Well profile	Product colour	Working volume (well)	Lid	Sterile	Qty. inner / outer
650160	35 mm <sup>2</sup>	U-bottom	○ clear	40 µl - 280 µl	no	+	1 / 100
650180	35 mm <sup>2</sup>	U-bottom	○ clear	40 µl - 280 µl	yes	+	1 / 100
651160	28 mm <sup>2</sup>	V-bottom	○ clear	40 µl - 200 µl	no	+	1 / 100
651180	28 mm <sup>2</sup>	V-bottom	○ clear	40 µl - 200 µl	yes	+	1 / 100
655160	34 mm <sup>2</sup>	F-bottom / Chimney Well	○ clear	25 µl - 340 µl	no	+	1 / 100
655162	34 mm <sup>2</sup>	F-bottom / Chimney Well	○ clear	25 µl - 340 µl	no	+	5 / 100
655180	34 mm <sup>2</sup>	F-bottom / Chimney Well	○ clear	25 µl - 340 µl	yes, yes, condensation rings	+	1 / 100
655182	34 mm <sup>2</sup>	F-bottom / Chimney Well	○ clear	25 µl - 340 µl	yes, yes, condensation rings	+	10 / 160
655073	34 mm <sup>2</sup>	F-bottom / Chimney Well	○ white	25 µl - 340 µl	no	+	10 / 40
655083	34 mm <sup>2</sup>	F-bottom / Chimney Well	○ white	25 µl - 340 µl	yes, yes, condensation rings	+	8 / 32
655079	34 mm <sup>2</sup>	F-bottom / Chimney Well	● black	25 µl - 340 µl	no	+	10 / 40
655086	34 mm <sup>2</sup>	F-bottom / Chimney Well	● black	25 µl - 340 µl	yes, yes, condensation rings	+	8 / 32

- / For selected products Greiner Bio-One also offers user-friendly bulk packaging.
- / Barcode labelling on request



**Cell Culture Microplates**

**96 Well - µClear®**

Clear-bottom microplates have pigmented walls and a transparent thin film bottom, the so-called µClear® bottom. In contrast to our standard microplates with a solid polystyrene bottom, they are ideal for cell culture and microscopic applications using fluorescence or luminescence detection methods.

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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Well format: 96, Growth area / unit: 34 mm<sup>2</sup>, Well profile: F-bottom / Chimney Well, Bottom: µClear®, Raw material: PS, Surface treatment: TC, Working volume (well): 25 µl - 340 µl

Item no.	Product colour	Lid	Sterile	Qty. inner / outer
655088	○ white	no	+	10 / 40
655098	○ white	yes, condensation rings	+	8 / 32
655087	● black	no	+	10 / 40
655090	● black	yes, condensation rings	+	8 / 32



**Cell Culture Microplates**

**96 Well - Half Area**

For many applications, a reduction of the sample volume is an important feature. 96 well half area microplates offer an interesting alternative here. They can be pipetted automatically as well as manually without any problem and allow a reduction of the sample volume up to 50 %.

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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Well format: 96, Growth area / unit: 15 mm<sup>2</sup>, Well profile: F-bottom, Raw material: PS, Surface treatment: TC, Plate design: half area, Working volume (well): 15 µl - 175 µl, Lid: yes

Item no.	Bottom	Product colour	Sterile	Qty. inner / outer
675180	solid	○ clear	+	8 / 32
675083	solid	○ white	+	8 / 32
675086	solid	● black	+	8 / 32
675090	µClear®	● black	+	8 / 32

/ For selected products Greiner Bio-One also offers user-friendly bulk packaging.



### Cell Culture Microplates

#### 96 Well - CELLCOAT®

- / Improved adhesion and cell proliferation
- / Reduced-serum or serum-free cultivation
- / Improved growth of primary cells

Well format: 96, Growth area / unit: 34 mm<sup>2</sup>, Well profile: F-bottom / Chimney Well, Raw material: PS, Surface treatment: CELLCOAT®, Working volume (well): 25 µl - 340 µl

Item no.	Bottom	Protein coating	Product colour	Lid	Qty. inner / outer
655950	solid	Collagen Type I	○ clear	yes, condensation rings	5 / 20
655956	µClear®	Collagen Type I	● black	yes, condensation rings	5 / 20
655940	solid	Poly-D-Lysine	○ clear	yes, condensation rings	5 / 20
655944	µClear®	Poly-D-Lysine	○ white	yes, condensation rings	5 / 20
655946	µClear®	Poly-D-Lysine	● black	yes	5 / 20
655948	µClear®	Poly-D-Lysine	● black	yes, condensation rings	20 / 120
655930	solid	Poly-L-Lysine	○ clear	yes, condensation rings	5 / 20
655936	µClear®	Poly-L-Lysine	● black	yes, condensation rings	5 / 20



### Cell Culture Microplates

#### 96 Well - Advanced TC

The Advanced TC surface provides optimal conditions for the cultivation of sensitive and fastidious cells or the usage of restricted growth conditions.

- / Consistent and even cell attachment



Well format: 96, Growth area / unit: 34 mm<sup>2</sup>, Well profile: F-bottom / Chimney Well, Raw material: PS, Surface treatment: Advanced TC, Working volume (well): 25 µl - 340 µl, Lid: yes, condensation rings

Item no.	Bottom	Product colour	Sterile	Qty. inner / outer
655980	solid	○ clear	+	1 / 100
655983	µClear®	○ white	+	8 / 32
655986	µClear®	● black	+	8 / 32





STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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**Suspension Culture Microplates**

**96 Well**

- / Hydrophobic surface, ideal for suspension cultures, hybridoma and embryonic stem cells
- / Solid bottom

Well format: 96, Bottom: solid, Raw material: PS, Surface treatment: suspension

Item no.	Well profile	Product colour	Working volume (well)	Lid	Sterile	Qty. inner / outer
650185	U-bottom	○ clear	40 µl - 280 µl	yes	+	60 / 240
655185	F-bottom / Chimney Well	○ clear	25 µl - 340 µl	yes, condensation rings	+	60 / 240



**Cell Culture Microplates**

**384 Well**

- / Clear / black / white
- / Solid bottom or µClear® film bottom
- / Barcode labelling on request
- / Alphanumeric well coding

Well format: 384, Growth area / unit: 10 mm<sup>2</sup>, Well profile: F-bottom, Raw material: PS, Working volume (well): 15 µl - 110 µl

Item no.	Bottom	Surface treatment	Protein coating	Product colour	Total volume (well)	Lid	Sterile	Qty. inner / outer
781165	solid	TC		○ clear		no	+	10 / 40
781182	solid	TC		○ clear		yes	+	8 / 32
781073	solid	TC		○ white		no	+	10 / 40
781080	solid	TC		○ white		yes	+	8 / 32
781079	solid	TC		● black		no	+	10 / 40
781086	solid	TC		● black		yes	+	8 / 32
781093	µClear®	TC		○ white		no	+	10 / 40
781098	µClear®	TC		○ white		yes	+	8 / 32
781092	µClear®	TC		● black		no	+	10 / 40
781091	µClear®	TC		● black		yes	+	8 / 32

Item no.	Bottom	Surface treatment	Protein coating	Product colour	Total volume (well)	Lid	Sterile	Qty. inner / outer
781090	µClear®	TC		● black		yes	+	20 / 120
781950	solid	CELLCOAT®	Collagen Type I	○ clear	131 µl	yes		5 / 20
781956	µClear®	CELLCOAT®	Collagen Type I	● black	131 µl	yes		5 / 20
781940	solid	CELLCOAT®	Poly-D-Lysine	○ clear	131 µl	yes		5 / 20
781945	solid	CELLCOAT®	Poly-D-Lysine	○ white	131 µl	yes		5 / 20
781944	µClear®	CELLCOAT®	Poly-D-Lysine	○ white	131 µl	yes		5 / 20
781946	µClear®	CELLCOAT®	Poly-D-Lysine	● black	131 µl	yes		5 / 20
781948	µClear®	CELLCOAT®	Poly-D-Lysine	● black	131 µl	yes		20 / 120
781930	solid	CELLCOAT®	Poly-L-Lysine	○ clear	131 µl	yes		5 / 20
781936	µClear®	CELLCOAT®	Poly-L-Lysine	● black	131 µl	yes		5 / 20
781983	µClear®	Advanced TC		○ white	131 µl	yes	+	8 / 32
781986	µClear®	Advanced TC		● black	131 µl	yes	+	8 / 32



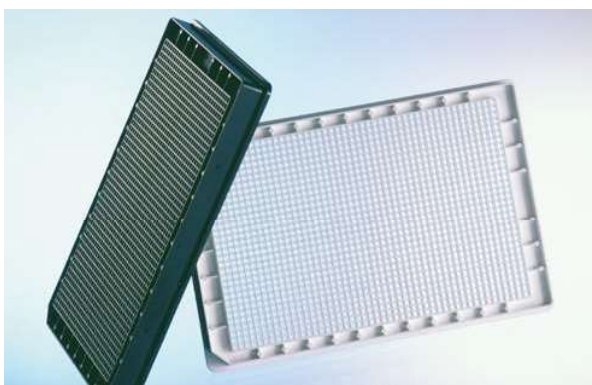
### Cell Culture Microplates 384 Well - Small Volume

HiBase

- / Perfect for top reading even at low working volumes
- / Savings in reagent similar to 1536 well microplates
- / Made of black / white polystyrene for fluorescence or luminescence measurements

Well format: 384, Growth area / unit: 2.7 mm<sup>2</sup>, Well profile: F-bottom, Bottom: solid, Raw material: PS, Plate geometry: HiBase, Plate design: Small Volume, Working volume (well): 4 µl - 25 µl, Lid: yes

Item no.	Surface treatment	Protein coating	Product colour	Sterile	Qty. inner / outer
784080	TC		○ white	+	8 / 32
784086	TC		● black	+	8 / 32
784946	CELLCOAT®	Poly-D-Lysine	● black		5 / 30



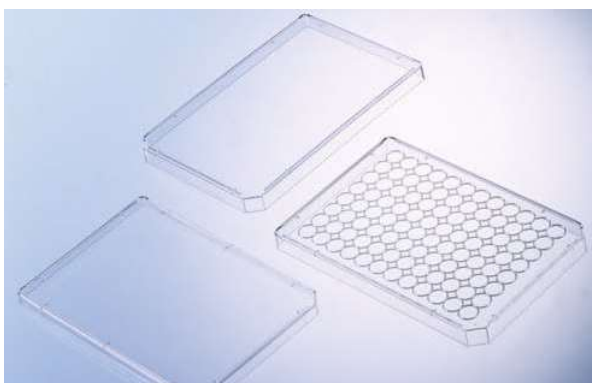
**Cell Culture Microplates**

**1536 Well**

- / Clear / black / white
- / Solid bottom or µClear® film bottom
- / Barcode labelling on request

Well format: 1536, Growth area / unit: 2.3 mm<sup>2</sup>, Well profile: F-bottom, Raw material: PS, Plate geometry: HiBase, Working volume (well): 3 µl - 10 µl

Item no.	Bottom	Surface treatment	Protein coating	Product colour	Lid	Sterile	Qty. inner / outer
782180	solid	TC		○ clear	yes	+	1 / 32
782073	solid	TC		○ white	no	+	15 / 60
782080	solid	TC		○ white	yes	+	10 / 40
782078	solid	TC		● black	no	+	15 / 60
782086	solid	TC		● black	yes	+	10 / 40
782093	µClear®	TC		○ white	no	+	15 / 60
782092	µClear®	TC		● black	no	+	15 / 60
782946	µClear®	CELLCOAT®	Poly-D-Lysine	● black	yes		5 / 20



**Lids**

All sterile lids are non-cytotoxic.

FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	 non-pyrogenic
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Description: Lid, Raw material: PS

Item no.	Height	Yes, condensation rings	Lid type	Sterile	Qty. inner / outer
656101	9 mm	no	high		1 / 100
656161	9 mm	no	high	+	1 / 100
656170	9 mm	yes	high		1 / 100
656171	9 mm	yes	high	+	1 / 100

Item no.	Height	Yes, condensation rings	Lid type	Sterile	Qty. inner / outer
656190	6 mm	no	flat		20 / 200
656191	6 mm	no	flat	+	20 / 200
691101	4.8 mm	no	ultra low		25 / 100
691161	4.8 mm	no	ultra low	+	5 / 100



- / Application Note: Cultivation of Suspension and Hybridoma Cells in CELLSTAR® CELLreactor Tubes (F073918)
- / Application Note: Superior protein yields in suspension CHO cells using FectoPRO™-mediated transient transfection in CELLSTAR® CELLreactor (F073926)

## CELLSTAR® CELL CULTURE TUBES

CELLSTAR® CELLreactor tube can be used as small bioreactor for suspension and spheroid cell culture, facilitating miniaturisation of large-scale setups and maximising the number of parallel experiments. Each CELLreactor tube cap features several holes and a membrane with a pore size of 0.2 µm to guarantee maximal sterility while providing excellent gas exchange. In case the aeration has to be reduced, individual openings can be sealed.

Agitation of internal liquids is achieved with standard shaking lab equipment minimising foam formation and shearing forces

induced by integrated mixing devices. Compared to cell culture and spinner flask as well as other cultivation disposables, no transfer for cell harvest is required. Based on the conical design, the tubes fit in standard 15 ml / 50 ml centrifuge rotors and cells can be spun down in the same tube. In addition to cell culture applications, the CELLSTAR® CELLreactor tube can also be applied for the expansion of aerobic bacteria, yeast or other microorganisms in shaken cultures as well as storage of components and liquids requiring gas exchange.

- / Bioreactor for suspension and spheroid cells
- / Expansion of aerobic bacteria, yeast and microorganisms
- / Storage of components and liquids requiring gas exchange



### CELLreactor

15 ml and 50 ml polypropylene tube with filter screw cap

- / For cultivation of suspension cells and expansion of aerobic microorganisms
- / Facilitates a high number of parallel experiments
- / Maximal sterility and excellent gas exchange
- / Conical tube design and in-tube harvest

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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Graduation: yes, Writing field: yes, Raw material: PP, Bottom shape: conical, Cap design: filter screw cap

Item no.	Height	Ø	Cap colour	Working volume	Nominal volume	Sterile	Qty. inner / outer
188241	120 mm	17 mm	● blue	1 ml - 5 ml	15 ml	+	20 / 500
227245	115 mm	30 mm	● blue	1 ml - 35 ml	50 ml	+	20 / 500

- / Application Note: Cultivation of Suspension and Hybridoma Cells in CELLSTAR® CELLreactor Tubes (F073918)
- / Application Note: Superior protein yields in suspension CHO cells using FectoPRO™-mediated transient transfection in CELLSTAR® CELLreactor (F073926)



### CELLSTAR® Cell Culture Tubes

- / Manufactured from crystal clear polystyrene
- / Improved cell adhesion through physical surface treatment
- / Available with screw cap, bayonet cap or two-position cap

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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Raw material: PS, Surface treatment: TC

Item no.	Height	Ø	Support skirt	Cap colour	Working volume	Nominal volume	Cap design	Sterile	Qty. inner / outer
120160	75 mm	12.4 mm	no		≤4 ml	4.5 ml		+	1 / 1,000
120190	75 mm	12.4 mm	no		≤4 ml	4.5 ml		+	25 / 2,000
163160	100 mm	17 mm	no	● red	≤12 ml	12 ml	screw cap	+	5 / 1,000
164160	100 mm	16.8 mm	yes	● red	≤12 ml	12 ml	bayonet cap	+	5 / 1,000
191160	95 mm	18 mm	no		≤12.5 ml	14 ml		+	1 / 750

- / The dimensions and volumes of our tubes are only nominal values. For exact dimensions and volumes, please refer to the product data sheets on our website: [www.gbo.com](http://www.gbo.com).





/ Watch our video:



## EASYSTRAINER CELL STRAINERS

With EASYstrainer cell strainers, Greiner Bio-One offers an innovative and user-friendly solution for the filtration of cell suspensions.

EASYstrainer can be used, for example, after enzymatic tissue digestion for primary cell isolation or for cell preparation prior to flow cytometry. The large cell strainers fit on all conical 50 ml tubes and are available with mesh sizes of 40, 70 and 100  $\mu\text{m}$ . EASYstrainer Small fits 15 ml tubes as well as smaller tubes and reaction vessels. It is available with mesh sizes of 20, 40, 70 and 100  $\mu\text{m}$ .

The stackability of EASYstrainers with different mesh sizes allows for the separation of cells with different sizes in one step. In addition, the upper part of EASYstrainer Small can be inverted. This allows retained cells to be rinsed out for further use. EASYstrainer makes working aseptically much easier: It can be held via a surrounding rim or a handle in order to avoid accidental contact with the sterile filter material. Additional safety is provided by the transparent blister packaging from which the strainers can be conveniently and aseptically removed.

- / Flexible fit, suitable for tubes from 1.5 ml to 50 ml
- / Available Mesh Sizes: 20, 40, 70 und 100  $\mu\text{m}$
- / No liquid overspill



### EASYstrainer

- / Flexible fit, suitable for tubes from 1.5 ml to 50 ml
- / Handle and ridged skirt for improved aseptic handling
- / Venting slot for fast filtration
- / No liquid overspill
- / Single packaging reduces risk of contamination

STERILE

FREE OF  
detectable  
DNase

FREE OF  
detectable  
human DNA

FREE OF  
detectable  
RNase

 non-  
cytotoxic

 non-  
pyrogenic



recommended

Item no.	Description	Mesh size	Product colour	Sterile	Qty. inner / outer
542040	EASYstrainer for 50 ml tubes	40 µm	● green	+	1 / 50
542070	EASYstrainer for 50 ml tubes	70 µm	● blue	+	1 / 50
542000	EASYstrainer for 50 ml tubes	100 µm	● yellow	+	1 / 50
542120	EASYstrainer Small for tubes: 1.5 / 5 / 15 ml and 12x75 mm	20 µm	● red	+	1 / 50
542140	EASYstrainer Small for tubes: 1.5 / 5 / 15 ml and 12x75 mm	40 µm	● green	+	1 / 50
542170	EASYstrainer Small for tubes: 1.5 / 5 / 15 ml and 12x75 mm	70 µm	● blue	+	1 / 50
542100	EASYstrainer Small for tubes: 1.5 / 5 / 15 ml and 12x75 mm	100 µm	● yellow	+	1 / 50



The cultivation of cells as mass cultures has become increasingly important over the past few decades. Mass cell cultures are mainly used for the production of vaccines or recombinant proteins for therapeutic approaches.



## MASS CELL CULTURE

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/ For further information, please refer to our website: [www.gbo.com](http://www.gbo.com)



## **CELLMASTER** CELL CULTURE ROLLER BOTTLES

Roller bottles made of polystyrene or PET range in size from 850 cm<sup>2</sup> to 4250 cm<sup>2</sup> growth area and are available either with standard or filter screw caps. The filter membrane with a pore size of 0.2 µm guarantees optimal protection against contamination. It provides a high gas exchange rate which enables a mass cultivation of cells using e.g. bicarbonate buffer and CO<sub>2</sub>. The safety screw cap enables a tight closing and contamination-free cultivation. All roller

bottles are sterilised by irradiation according to validated procedures (ISO 11137). Endotoxin testing is conducted in accordance with USP 85 with a tolerance level of 0.03 EU/ml.

The product range includes a short and a long form, that are labelled as **X** and **XL** accordingly. Both sizes are available with a smooth or radially ribbed surface. The ribbed design increases the growth area of the roller bottle without changing space requirements.

- / PS or PET roller bottles
- / Different sizes with or without radially ribbed surface
- / Graduations from 200 to 2000 ml
- / Seamless production technique rules out leaking seams



**Roller Bottles**  
**Polystyrene**

- / For adherent cell culture
- / Manufactured from crystal clear polystyrene
- / Certified USP Class VI end product testing
- / Lot number and expiry date on each bottle
- / Filter screw cap with 0.2 µm pore size

STERILE

FREE OF  
detectable  
DNase

FREE OF  
detectable  
human DNA

FREE OF  
detectable  
RNase

 non-  
cytotoxic

 non-  
pyrogenic



Ø: 122 mm, Graduation: yes, Raw material: PS, Surface treatment: TC

Item no.	Flask design	Height	Growth area	Cap colour	Surface	Total volume	Cap design	Sterile	Qty. inner / outer
680660	1X	271 mm	850 cm <sup>2</sup>	● blue	smooth	2,520 ml	screw cap	+	2 / 24
680665	1X	271 mm	850 cm <sup>2</sup>	● blue	smooth	2,520 ml	screw cap	+	24 / 24
680648	1X	271 mm	850 cm <sup>2</sup>	● blue	smooth	2,520 ml	screw cap	+	24 / 48
680658	1X	271 mm	850 cm <sup>2</sup>	● blue	smooth	2,520 ml	filter screw cap	+	2 / 24
680668	1X	271 mm	850 cm <sup>2</sup>	● blue	smooth	2,520 ml	filter screw cap	+	24 / 24
680645	1X	271 mm	850 cm <sup>2</sup>	● blue	smooth	2,520 ml	filter screw cap	+	24 / 48
681670	2.5X	271 mm	2,125 cm <sup>2</sup>	● blue	ribbed	2,300 ml	screw cap	+	2 / 24
681675	2.5X	271 mm	2,125 cm <sup>2</sup>	● blue	ribbed	2,300 ml	screw cap	+	24 / 24
681672	2.5X	271 mm	2,125 cm <sup>2</sup>	● blue	ribbed	2,300 ml	filter screw cap	+	2 / 24
682660	1XL	500 mm	1,700 cm <sup>2</sup>	● blue	smooth	4,970 ml	screw cap	+	1 / 12
682612	1XL	500 mm	1,700 cm <sup>2</sup>	● blue	smooth	4,970 ml	screw cap	+	12 / 12
682624	1XL	500 mm	1,700 cm <sup>2</sup>	● blue	smooth	4,970 ml	screw cap	+	12 / 24
682625	1XL	500 mm	1,700 cm <sup>2</sup>	● blue	smooth	4,970 ml	filter screw cap	+	12 / 24
682615	1XL	500 mm	1,700 cm <sup>2</sup>	● blue	smooth	4,970 ml	filter screw cap	+	12 / 12
682670	5XL	500 mm	4,250 cm <sup>2</sup>	● blue	ribbed	4,640 ml	screw cap	+	1 / 12
682672	5XL	500 mm	4,250 cm <sup>2</sup>	● blue	ribbed	4,640 ml	screw cap	+	12 / 24
682678	5XL	500 mm	4,250 cm <sup>2</sup>	● blue	ribbed	4,640 ml	filter screw cap	+	1 / 12

- / Thread enables quick opening with a 2/3 turn. Screw caps with larger knurls for improved grip and ease of opening / closing.
- / Sterile, individually packed screw caps: standard (item no. 383361) and filter (item no. 383382).





**Roller Bottles**

**Polyethylene Terephthalate (PET)**

- / For adherent cell culture
- / Certified USP Class VI end product testing
- / With standard screw cap

STERILE

FREE OF  
detectable  
DNase

FREE OF  
detectable  
human DNA

FREE OF  
detectable  
RNase

 non-  
cytotoxic

 non-  
pyrogenic



Flask design: 1 X, Height: 271 mm, Ø: 116 mm, Growth area: 850 cm<sup>2</sup>, Graduation: yes, Raw material: PET, Surface: smooth, Total volume: 2,300 ml, Cap design: screw cap

Item no.	Cap colour	Sterile	Qty. inner / outer
680190	● blue	+	- /18
680195	● blue	+	- /30



/ Watch our video:



## **CELLDISC** CELL CULTURE DEVICE

CELLdisc is a multilayer cell culture device covering a range of 250 cm<sup>2</sup> to 10,000 cm<sup>2</sup> growth area. The innovative ergonomic design provides a versatile system from research scale to industrial batches with a 40 % higher surface/volume ratio than conventional multilayer systems.

A centrally located ventilation channel assures uniform distribution of gas throughout the device whereas the wide opening port simplifies manual filling. The compact and robust cylindrical device is ideally suited for automation and upscaling of cell

cultures. For the connection of the individual layers a proprietary, particle, and adhesive free assembly technique is used and the complete end product is USP Class VI certified.

To guarantee an ideal cell culture environment CELLdisc is provided with two surface treatments: Beside the **TC surface** for standard cells and applications CELLdisc is also available with the **Advanced TC surface**, improving cultivation of sensitive cells, even under restricted growth conditions and increasing cellular adhesion, proliferation and transfection rates.

- / Mass Cell Culture
- / Antibody, virus and vaccine production
- / Production of recombinant or therapeutic proteins



**CELLdisc**

**1 / 4 / 8 / 12 / 16 / 24 / 40 Layers**

- / 40 % higher surface/volume ratio than comparable systems
- / Easy operation and minimal space occupation
- / Media exchange without contact to cell layers

STERILE

FREE OF  
detectable  
DNase

FREE OF  
detectable  
human DNA

FREE OF  
detectable  
RNase

non-  
cytotoxic

non-  
pyrogenic

Ø: 200 mm, Raw material: PS, Cap design: screw cap

Item no.	Layers	Height	Growth area	Surface treatment	Cap colour	Working volume	Sterile	Qty. inner / outer
678101	1	61 mm	250 cm <sup>2</sup>	TC	● red	15 ml - 50 ml	+	1 / 8
678104	4	93 mm	1,000 cm <sup>2</sup>	TC	● red	60 ml - 200 ml	+	1 / 4
678108	8	135 mm	2,000 cm <sup>2</sup>	TC	● red	120 ml - 400 ml	+	1 / 3
678112	12	177 mm	3,000 cm <sup>2</sup>	TC	● red	180 ml - 600 ml	+	1 / 2
678116	16	220 mm	4,000 cm <sup>2</sup>	TC	● red	240 ml - 800 ml	+	1 / 2
678124	24	304 mm	6,000 cm <sup>2</sup>	TC	● red	360 ml - 1,200 ml	+	1 / 2
678140	40	474 mm	10,000 cm <sup>2</sup>	TC	● red	600 ml - 2,000 ml	+	1 / 1
678904	4	93 mm	1,000 cm <sup>2</sup>	Advanced TC	● blue	60 ml - 200 ml	+	1 / 4
678908	8	135 mm	2,000 cm <sup>2</sup>	Advanced TC	● blue	120 ml - 400 ml	+	1 / 3
678912	12	177 mm	3,000 cm <sup>2</sup>	Advanced TC	● blue	180 ml - 600 ml	+	1 / 2
678916	16	220 mm	4,000 cm <sup>2</sup>	Advanced TC	● blue	240 ml - 800 ml	+	1 / 2
678924	24	304 mm	6,000 cm <sup>2</sup>	Advanced TC	● blue	360 ml - 1,200 ml	+	1 / 2
678940	40	474 mm	10,000 cm <sup>2</sup>	Advanced TC	● blue	600 ml - 2,000 ml	+	1 / 1



**CELLdisc**  
**External Filter**

- / Triple-packed CELLdiscs, pre-assembled with external filters
- / USP VI certified venting filters, manufactured with reinforced hydrophobic PTFE membranes
- / A defined pore size of 0.2 µm prevents contamination and ensures sufficient airflow to the cells

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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Feature: External Filter, Ø: 200 mm, Raw material: PS, Surface treatment: TC, Cap design: screw cap

Item no.	Layers	Height	Growth area	Cap colour	Working volume	Sterile	Qty. inner / outer
678101-EXF	1	61 mm	250 cm <sup>2</sup>	● red	15 ml - 50 ml	+	1 / 4
678104-EXF	4	93 mm	1,000 cm <sup>2</sup>	● red	60 ml - 200 ml	+	1 / 3
678108-EXF	8	135 mm	2,000 cm <sup>2</sup>	● red	120 ml - 400 ml	+	1 / 2
678112-EXF	12	177 mm	3,000 cm <sup>2</sup>	● red	180 ml - 600 ml	+	1 / 2
678116-EXF	16	220 mm	4,000 cm <sup>2</sup>	● red	240 ml - 800 ml	+	1 / 2
678124-EXF	24	304 mm	6,000 cm <sup>2</sup>	● red	360 ml - 1,200 ml	+	1 / 2
678140-EXF	40	474 mm	10,000 cm <sup>2</sup>	● red	600 ml - 2,000 ml	+	1 / 1

/ Assembled product is sterilized (SAL 10<sup>-6</sup>) to reduce risk of contamination



**CELLdisc**  
**Closed Filling Caps**

- / Triple-packed CELLdiscs, pre-assembled with external filters and closed filling cap
- / Choice of single tubing (CF1) or double tubing (CF2) depending on desired emptying process
- / Tubing with MPC type connector for quick and safe connection /disconnection

<b>STERILE</b>	<b>FREE OF</b> detectable DNase	<b>FREE OF</b> detectable human DNA	<b>FREE OF</b> detectable RNase	 <b>non-</b> cytotoxic	 <b>non-</b> pyrogenic
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Ø: 200 mm, Raw material: PS, Surface treatment: TC, Cap design: screw cap

Item no.	Feature	Layers	Height	Growth area	Cap colour	Working volume	Sterile	Qty. inner / outer
678101-CF1	hose connector without Dip-In	1	61 mm	250 cm <sup>2</sup>	● red	15 ml - 50 ml	+	1 / 4
678104-CF1	hose connector without Dip-In	4	93 mm	1,000 cm <sup>2</sup>	● red	60 ml - 200 ml	+	1 / 3
678104-CF2	hose connector with Dip-In	4	93 mm	1,000 cm <sup>2</sup>	● red	60 ml - 200 ml	+	1 / 3
678108-CF1	hose connector without Dip-In	8	135 mm	2,000 cm <sup>2</sup>	● red	120 ml - 400 ml	+	1 / 2
678108-CF2	hose connector with Dip-In	8	135 mm	2,000 cm <sup>2</sup>	● red	120 ml - 400 ml	+	1 / 2
678112-CF1	hose connector without Dip-In	12	177 mm	3,000 cm <sup>2</sup>	● red	180 ml - 600 ml	+	1 / 2
678112-CF2	hose connector with Dip-In	12	177 mm	3,000 cm <sup>2</sup>	● red	180 ml - 600 ml	+	1 / 2
678116-CF1	hose connector without Dip-In	16	220 mm	4,000 cm <sup>2</sup>	● red	240 ml - 800 ml	+	1 / 2
678116-CF2	hose connector with Dip-In	16	220 mm	4,000 cm <sup>2</sup>	● red	240 ml - 800 ml	+	1 / 2
678124-CF1	hose connector without Dip-In	24	304 mm	6,000 cm <sup>2</sup>	● red	360 ml - 1,200 ml	+	1 / 2
678124-CF2	hose connector with Dip-In	24	304 mm	6,000 cm <sup>2</sup>	● red	360 ml - 1,200 ml	+	1 / 2
678140-CF1	hose connector without Dip-In	40	474 mm	10,000 cm <sup>2</sup>	● red	600 ml - 2,000 ml	+	1 / 1
678140-CF2	hose connector with Dip-In	40	474 mm	10,000 cm <sup>2</sup>	● red	600 ml - 2,000 ml	+	1 / 1

/ Assembled product is sterilized (SAL 10<sup>-6</sup>) to reduce risk of contamination



### CELLhandle

- / Gripping device for easy lifting and emptying of large-sized CELLdisc
- / Enables single-hand usage

Item no.	Qty. inner / outer
878074	1 / 1



### CELLstage

#### Filling Accessory

- / Available for CELLdisc 4-24 layers and CELLdisc 40 layers
- / Creates the optimum angle and position for CELLdisc filling
- / Stainless steel allows multiple sterilization methods
- / Suitable for left- and right handed users

Item no.	Description	Qty. inner / outer
878072	for CD4 - CD24	1 / 1
878073	for CD40	1 / 1





### CELLlevator

Easy and secured CELLdisc stacking

- / Maximum loading capacity 8 kg
- / Space saving storage
- / Autoclavable (120 °C, 2 bar)

Item no.	Qty. inner / outer
878071	1 / 9

/ For more information please see instruction for use No. F073253 on [www.gbo.com](http://www.gbo.com)



### CELLring

Levelling ring

- / Ensures exact planar positioning of CELLdisc

Item no.	Qty. inner / outer
878075	- / 3

# TECHNICAL NOTE

## CELLdisc

### COMPARISON OF INCUBATOR SPACE USAGE BETWEEN GREINER BIO-ONE CELLdisc AND RECTANGULAR MULTILAYER DEVICES

The aim of mass cell culture is to produce large quantities of cells mostly used for industrial or clinical applications. Users can choose from a variety of different disposables and concepts. To reduce the cost of the scale up process to a minimum, different factors need to be considered and evaluated.

If multilayer devices such as the Greiner Bio-One CELLdisc are to be used, not only growth area and the number of cells per device should be taken into account but also how effectively incubator space is utilised by them.

The innovative CELLdisc with its round and ergonomic design stands out from existing rectangular devices. The cuboid nature of these alternatives would, at first glance, imply an optimal use of space within an incubator that is itself cuboid in design. However, in reality, the length and width of such systems do not correspond ideally to the dimensions of standard incubators and leave a lot of space unused. Additionally such devices cannot be positioned next to each other as this could compromise consistent thermal distribution, because when units touch each other so access to the temperature environment of the incubator is compromised.

CELLdisc however, thanks to the cylindrical nature of the design, can be placed directly next to one another and still receive uniform exposure to the optimum temperature of the incubator. Due to this fact and the 40% higher surface volume/ratio CELLdisc offers over standard competitive systems, utilisation of incubator space is far more efficient when using CELLdisc than rectangular devices. (See Table 1)

**TABLE 1**

Utilisation of incubator space - exemplary calculation of multilayer devices with comparable dimensions

	CELLdisc 16 layers	Competitor A 10 layers, rectangular form	Competitor B 10 layers, rectangular form (high density version)
<b>Dimensions (L x W x H incl. cap)</b>	∅ 20 cm, H 22 cm	33 cm x 20 cm x 20.5 cm	33 cm x 23 cm x 21 cm
<b>Growth surface (device)</b>	4.000 cm <sup>2</sup>	6.360 cm <sup>2</sup>	8.216 cm <sup>2</sup>
<b>Max. devices / shelf</b>	6	2	2
<b>Max. devices / incubator</b>	12	4	4
<b>Growth surface (incubator load)</b>	12 x 4.000 = 48.000 cm <sup>2</sup>	4 x 6.360 = 25.440 cm <sup>2</sup>	4 x 8.216 = 32.864 cm <sup>2</sup>
<b>Utilisation</b>	100 %	53 %	68.47 %

**FIG. 1.**

Standard incubator, eg:  
HeraCell 240 (Thermo Fisher Scientific)  
Incubator size internal dimensions:  
W 56 cm, H: 67 cm



Fig. 1a: Front view of the incubator:  
1) Top shelf: Cuboid multilayer devices  
2) Lower shelf: CELLdisc

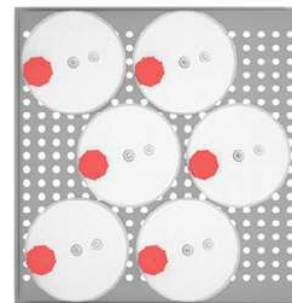


Fig. 1b: Cross section of the incubator.  
Optimal positioning of CELLdisc and utilisation of incubator space.

Note: Printed copies will not systematically be updated. Valid at the date of issue. Information is subject to change.



In 3D cell culture, cells form in a spatial orientation - similar to the body. This enables, for example, the replacement of animal experiments and - usually as high-throughput screening - research on drugs, stem cells and tumor development.



## 3D CELL CULTURE

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- / Forum No. 17: CELLSTAR® Cell Culture Vessels with Cell-Repellent Surface (F073777)
- / Application Report „Advantage of CELLSTAR® Cell Culture Vessels with Cell-Repellent Surface for 3-D Cell Culture in Hydrogels“ (F073792)

## CELLSTAR® CELL CULTURE VESSELS CELL-REPELLENT SURFACE

Cell culture is an essential tool in drug discovery, tissue engineering, toxicology testing, stem cell research, as well as in basic research.

Beside conventional two-dimensional (2D) monolayer cell culture, 3D cell culture models are becoming a routine tool which enables the expression of extracellular matrix (ECM) components as well as the formation of cell-cell and cell-matrix interactions. These characteristics are important for replicating

*in-vivo* cell differentiation, proliferation, and function *in vitro*. Greiner Bio-One developed CELLSTAR® cell culture vessels with cell-repellent surface specifically for culturing in 3D. The cell-repellent surface effectively prevents cell adherence and therefore can promote the spontaneous formation of three-dimensional spheroids. Cell culture vessels with cell-repellent surface are also ideal platforms for long-term cultivation in hydrogels.

- / Spheroid and organoid culture
- / Aggregation of stem cells
- / Suspension culture of semi-adherent/ adherent cell lines
- / 3D culture in hydrogels



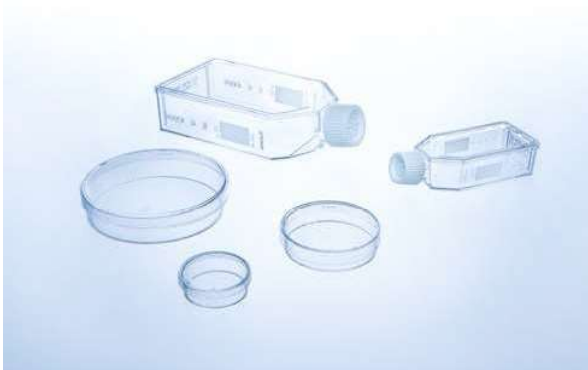
**Cell Culture Dishes**  
**Cell-Repellent Surface**

Cell culture vessels with cell-repellent surface reliably prevent cell attachment in suspension cultures of semi adherent / adherent cell lines where standard hydrophobic surfaces generally used for suspension culture are insufficient.

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
---------	--------------------------	------------------------------	--------------------------	---------------	---------------

Raw material: PS, Surface treatment: cell-repellent, Vent neck: yes

Item no.	Height	Ø nominal size	Working volume	Total volume	Sterile	Qty. inner / outer
627979	10 mm	35 mm	≤3 ml	10 ml	+	10 / 40
628979	15 mm	60 mm	6 ml - 7 ml	28 ml	+	10 / 20
664970	20 mm	100 mm	16 ml - 17 ml	100 ml	+	1 / 5



**Cell Culture Flasks**  
**Cell-Repellent Surface**

A cell-repellent surface reliably prevent cell attachment in suspension cultures of semi-adherent and adherent cell lines where standard hydrophobic surfaces generally used for suspension culture are insufficient.

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
---------	--------------------------	------------------------------	--------------------------	---------------	---------------

Raw material: PS, Surface treatment: cell-repellent

Item no.	Flask design	Cap colour	Total volume	Cap design	Sterile	Qty. inner / outer
690980	flat	○ white	50 ml	screw cap	+	10 / 20
690985	flat	○ white	50 ml	filter screw cap	+	10 / 20
658980	flat	○ white	250 ml	screw cap	+	5 / 15
658985	flat	○ white	250 ml	filter screw cap	+	5 / 15
660980	flat	○ white	550 ml	screw cap	+	5 / 5
660985	flat	○ white	550 ml	filter screw cap	+	5 / 5
661980	high	○ white	650 ml	screw cap	+	4 / 4
661985	high	○ white	650 ml	filter screw cap	+	4 / 4





## Multiwell Plates / Microplates

### Cell-Repellent Surface

- / 6 / 12 / 24 / 48 well multiwell plates available
- / 96 / 384 well plates with various well geometries and optional  $\mu$ Clear® film bottom

STERILE

FREE OF detectable DNase

FREE OF detectable human DNA

FREE OF detectable RNase

non-cytotoxic

non-pyrogenic

Raw material: PS, Surface treatment: cell-repellent

Item no.	Well format	Well profile	Bottom	Product colour	Total volume (well)	Working volume (well)	Lid	Sterile	Qty. inner / outer
657970	6	F-bottom	solid	○ clear	16.1 ml	2 ml - 5 ml	yes, condensation rings	+	1 / 5
665970	12	F-bottom	solid	○ clear	6.5 ml	2 ml - 4 ml	yes, condensation rings	+	1 / 5
662970	24	F-bottom	solid	○ clear	3.3 ml	0.5 ml - 1.5 ml	yes, condensation rings	+	1 / 5
677970	48	F-bottom	solid	○ clear	1.7 ml	0.5 ml - 1 ml	yes, condensation rings	+	1 / 5
650970	96	U-bottom	solid	○ clear	323 $\mu$ l	40 $\mu$ l - 280 $\mu$ l	yes, condensation rings	+	1 / 6
650979	96	U-bottom	solid	○ clear	323 $\mu$ l	40 $\mu$ l - 280 $\mu$ l	yes, condensation rings	+	8 / 32
651970	96	V-bottom	solid	○ clear	234 $\mu$ l	40 $\mu$ l - 200 $\mu$ l	yes, condensation rings	+	1 / 6
655970	96	F-bottom / Chimney Well	solid	○ clear	392 $\mu$ l	25 $\mu$ l - 340 $\mu$ l	yes, condensation rings	+	1 / 6
655976	96	F-bottom / Chimney Well	$\mu$ Clear®	● black	392 $\mu$ l	25 $\mu$ l - 340 $\mu$ l	yes, condensation rings	+	8 / 32
655976-SIN	96	F-bottom / Chimney Well	$\mu$ Clear®	● black	392 $\mu$ l	25 $\mu$ l - 340 $\mu$ l	yes, condensation rings	+	1 / 32
781970	384	F-bottom	solid	○ clear	131 $\mu$ l	15 $\mu$ l - 110 $\mu$ l	yes	+	1 / 60
781974	384	F-bottom	$\mu$ Clear®	○ white	131 $\mu$ l	15 $\mu$ l - 110 $\mu$ l	yes	+	8 / 32
781976	384	F-bottom	$\mu$ Clear®	● black	131 $\mu$ l	15 $\mu$ l - 110 $\mu$ l	yes	+	8 / 32
781976-SIN	384	F-bottom	$\mu$ Clear®	● black	131 $\mu$ l	15 $\mu$ l - 110 $\mu$ l	yes	+	1 / 32
787979	384	U-bottom	solid	○ clear	122 $\mu$ l	10 $\mu$ l - 90 $\mu$ l	yes	+	8 / 32



- / Brochure "3D Cell Culture" (F071076)
- / For further information please refer to our microsite:



## MAGNETIC 3D CELL CULTURE

- / 3D in a 2D workflow
- / Easy handling
- / Fast 3D tissue assembly
- / No sample loss
- / Scalable
- / Ready for automation

The core technology of Greiner Bio-One's magnetic 3D cell culture is the magnetisation of cells with NanoShuttle-PL. The cells can be aggregated with magnetic forces, either by levitation or Bioprinting, to form structurally and biologically representative 3D models in vitro. NanoShuttle-PL consists of gold, iron oxide, and Poly-L-Lysine. These nanoparticles ( $\varnothing < 50$  nm) magnetise cells by electrostatically attaching to cell membranes during an overnight static incubation. Magnetised cells will ap-

pear peppered with dark nanoparticles after incubation. NanoShuttle-PL is biocompatible, having no effect on metabolism, proliferation and inflammatory stress. Additionally, it does not interfere with experimental techniques, such as fluorescence or Western blotting. With magnetised spheroids, solution addition and removal are made easy by using magnetic force to hold them in a stationary position during aspiration, thereby limiting spheroid loss.



### Spheroid Bioprinting

#### 96 Well

Magnetized cells are brought together to form spheroids at the well bottom using weak magnetic forces.

Item no.	Description	Content kit	Qty. inner / outer
655840	96 Well Bioprinting Kit, clear	NanoShuttle-PL (3 vials), Spheroid Drive, Holding Drive, 96 well cell culture microplates (clear) with cell-repellent surface (2 x 655970)	1 / 1
655841	96 Well Bioprinting Kit, black, $\mu$ Clear <sup>®</sup>	NanoShuttle-PL (3 vials), Spheroid Drive, Holding Drive, 96 well cell culture microplates (black, $\mu$ clear <sup>®</sup> ) with cell-repellent surface (2 x 655976-SIN)	1 / 1
655850	96 Well Ring Drive	96 Well Ring Drive for the formation of 3D ring structures	1 / 1
655830	96 Well Spheroid and Holding Drive	Spheroid Drive, Holding Drive	- / 1



### Spheroid Bioprinting

#### 384 Well

Magnetized cells are brought together to form spheroids at the well bottom using weak magnetic forces.

Item no.	Description	Content kit	Qty. inner / outer
781840	384 Well Bioprinting Kit, clear	NanoShuttle-PL (2 vials), Spheroid Drive, Holding Drive, 384 well cell culture microplates (clear) with cell-repellent surface (2 x 781970)	1 / 1
781841	384 Well Bioprinting Kit, black, $\mu$ Clear <sup>®</sup>	NanoShuttle-PL (2 vials), Spheroid Drive, Holding Drive, 384 well cell culture microplates (black, $\mu$ Clear <sup>®</sup> ) with cell-repellent surface (2 x 781976-SIN)	1 / 1
781850	384 Well Ring Drive	384 Well Ring Drive for the formation of 3D ring structures	1 / 1

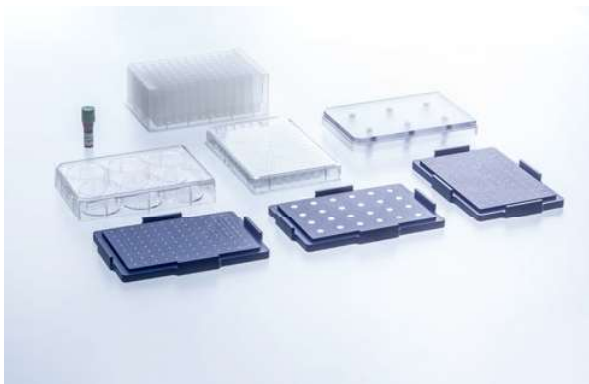
Item no.	Description	Content kit	Qty. inner / outer
781830	384 well spheroid and holding drive	Spheroid Drive, Holding Drive	- /1



**Magnetic Levitation**  
**6 / 24 Well**

Magnetised cells are levitated off the plate bottom by a magnet and rapidly form aggregates.

Item no.	Description	Content kit	Sterile	Qty. inner / outer
657840	6 Well Bio-Assembler Kit	Levitation Drive, Holding Drive, NanoShuttle-PL (2 Vials), 6 well cell culture multiwell plates (2 x 657970) and 6 Well Intermediate lid (2 x 657825) with cell-repellent surface		1 / 1
657825	6 Well Intermediate lid	Intermediate lid with cell-repellent surface	+	2 / 10
657830	6 Well Levitation and Holding Drive	Levitation Drive (1), Holding Drive (1)		- /1
662840	24 Well Bio-Assembler Kit	Levitation Drive, Holding Drive, NanoShuttle-PL (2 Vials), 24 well cell culture multiwell plates (2 x 662970) and 24 Well Intermediate lid (2 x 662825) with cell-repellent surface		1 / 1
662825	24 Well Intermediate lid	Intermediate lid with cell-repellent surface	+	1 / 10
662830	24 well Levitation and Holding Drive	Levitation Drive (1), Holding Drive (1)		- /1

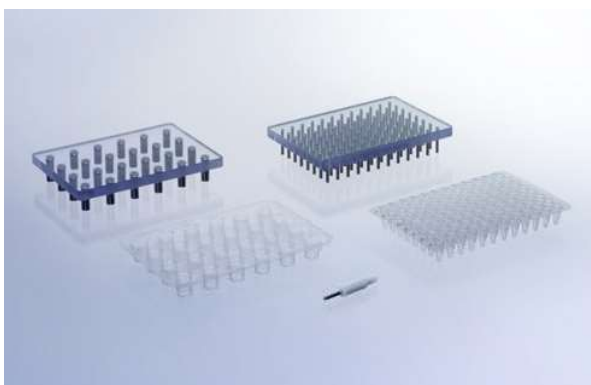


## Screening & Imaging

### 96 / 384 Well

Ideal kits for combining applications and examination methods.

Item no.	Description	Content kit	Qty. inner / outer
655846	96 Well BiO Assay Kit	NanoShuttle-PL (3 vials), 6 Well Levitation Drive, 96 Well Spheroid, Holding and Ring Drive, 96 Well Deep Well Plate, 6 Well cell culture multiwell plates with cell-repellent surface (2 x 657970), 96 Well cell culture microplates (clear) with cell-repellent surface (2 x 655970)	1 / 1
655849	96 Well BiO Assay Kit & Imaging System	NanoShuttle-PL (3 vials), 6 Well Levitation Drive, 96 Well Spheroid, Holding and Ring Drive, 96 Well Deep Well Plate, 6 Well cell culture multiwell plates with cell-repellent surface (2 x 657970), 96 Well cell culture microplates (transparent) with cell-repellent surface (2 x 655970), Imaging Kit (657860)	1 / 1
781846	384 Well BiO Assay Kit	NanoShuttle-PL (2 vials), 6 Well Levitation Drive, 384 Well Spheroid, Holding and Ring Drive, 96 Well Deep Well plate, 6 Well cell culture multiwell plates with cell-repellent surface (2 x 657970), 384 Well cell culture microplates (clear) with cell-repellent surface (2 x 781970)	1 / 1
781849	384 Well BiO Assay Kit & Imaging System	NanoShuttle-PL (2 vials), 6 Well Levitation Drive, 384 Well Spheroid, Holding and Ring Drive, 96 Well Deep Well plate, 6 Well cell culture multiwell plates with cell-repellent surface (2 x 657970), 384 Well cell culture microplates (clear) with cell-repellent surface (2 x 781970), Imaging Kit (657860)	1 / 1
657860	Imaging Kit	Imaging System, Light Pad, Cooling Fan	- / 1



**MagPen**  
**Single / 24 Well / 96 Well**

MagPen is a smart assistant for easy and fast transfer and collection of magnetized cell cultures by a simple “pick up-and-drop”-step.

Item no.	Description	Content kit	Sterile	Qty. inner / outer
657850	MagPen 3-pack	Teflon caps (3), magnets (3)		- /3
657824	24 Well Multi-MagPen Kit	24 Well Multi-MagPen Drive and 24 Well Multi-MagPen Sleeve (2 x 651524) with cell-repellent surface		- /1
651524	24 Well Multi-MagPen Sleeve	Multi-MagPen Sleeve with cell-repellent surface	+	1 / 10
657896	96 Well Multi-MagPen Kit	96 Well Multi-MagPen Drive und 96 Well Multi-MagPen Sleeve (2 x 61596) with cell-repellent surface		- /1
651596	96 Well Multi-MagPen Sleeve	Multi-MagPen Sleeve with cell-repellent surface	+	1 / 10



**Consumables / Accessories**  
**Magnetic 3D Cell Culture**

- / NanoShuttle-PL consists of gold, iron oxide and Poly-L-Lysine
- / MagPen is a magnetic tool to pick up the spheroids

Item no.	Description	Content kit	Qty. inner / outer
657841	NanoShuttle-PL	600 µl vials of NanoShuttle-PL (1)	- /1
657843	NanoShuttle-PL 3-pack	600 µl vials of NanoShuttle-PL (3)	- /3
657846	NanoShuttle-PL 6-pack	600 µl vials of NanoShuttle-PL (6)	- /6
657852	NanoShuttle-PL 12-pack	600 µl vials of NanoShuttle-PL (12)	- /12
657847	NanoShuttle-PL 6-pack with free iPod	NanoShuttle-PL (6), free iPod (with purchase of either 655849 or 781849)	- /1



- / Forum No. 8: ThinCert® cell culture products – Overview (F073017)
- / Application Note „Immuno cytochemistry“(F073100)
- / For further information and application notes please refer to our website: [www.gbo.com](http://www.gbo.com)

## THINCERT® CELL CULTURE INSERTS FOR 6, 12 AND 24 WELL MULTIWELL PLATES

**For advanced cell and tissue culture applications, Greiner Bio-One offers a broad range of membrane supports - ThinCert®.**

Combining 6 different membrane specifications (pore size and density) in geometries to fit 6, 12 and 24 well plates, the ThinCert® cell culture inserts are suitable for a wide range of applications including transport, secretion and diffusion studies, migrational experiments, cytotoxicity testing, co-cultures, trans epithelial electric resist-

ance (TEER) measurements, as well as primary cell culture.

ThinCert® cell culture inserts are compatible with standard CELLSTAR® multiwell plates from Greiner Bio-One, and are pre-packed together with the requisite number of plates. The automated production process includes double optical control of each insert produced, ensuring that any biological contamination is avoided. The sterility of the single blisterpacked inserts and multiwell plates is ensured by irradiation.

- / Stable clear polystyrene housing
- / Sealed PET capillary pore membrane
- / Pre-configured multiwell plates with ThinCert® cell culture inserts available on request



## ThinCert® Cell Culture Inserts

## 6 Well

- / Hanging geometry
- / Improved cell adhesion through physical surface treatment
- / Simplified pipetting due to self-lift geometry
- / Enhanced pipetting access and gas exchange

STERILE

FREE OF  
detectable  
DNaseFREE OF  
detectable  
human DNAFREE OF  
detectable  
RNasenon-  
cytotoxicnon-  
pyrogenic

Feature: 4 multiwell plates / box, Height: 16.25 mm, Ø internal: 24.85 mm, Ø external: 27.85 mm, Cultural surface: 452.4 mm<sup>2</sup>, Surface treatment: TC, Working volume (ThinCert®): 1 ml - 3.6 ml, Working volume (well): 2 ml - 4.15 ml

Item no.	Pore density	Ø pore	Optical membrane properties	Sterile	Qty. inner / outer
657640	1 x 10 <sup>8</sup> cm <sup>2</sup>	0.4 µm	translucent	+	1 / 24
657641	2 x 10 <sup>6</sup> cm <sup>2</sup>	0.4 µm	clear	+	1 / 24
657610	2 x 10 <sup>6</sup> cm <sup>2</sup>	1 µm	clear	+	1 / 24
657630	0,6 x 10 <sup>6</sup> cm <sup>2</sup>	3 µm	clear	+	1 / 24
657631	2 x 10 <sup>6</sup> cm <sup>2</sup>	3 µm	translucent	+	1 / 24
657638	0,15 x 10 <sup>6</sup> cm <sup>2</sup>	8 µm	translucent	+	1 / 24



## ThinCert® Cell Culture Inserts

## 12 Well

- / Hanging geometry
- / Improved cell adhesion through physical surface treatment
- / Simplified pipetting due to self-lift geometry
- / Enhanced pipetting access and gas exchange

STERILE

FREE OF  
detectable  
DNaseFREE OF  
detectable  
human DNAFREE OF  
detectable  
RNasenon-  
cytotoxicnon-  
pyrogenic

Feature: 4 multiwell plates / box, Height: 16.25 mm, Ø internal: 13.85 mm, Ø external: 15.85 mm, Cultural surface: 113.1 mm<sup>2</sup>, Surface treatment: TC, Working volume (ThinCert®): 0.3 ml - 1 ml, Working volume (well): 1 ml - 2 ml

Item no.	Pore density	Ø pore	Optical membrane properties	Sterile	Qty. inner / outer
665640	1 x 10 <sup>8</sup> cm <sup>2</sup>	0.4 µm	translucent	+	1 / 48
665641	2 x 10 <sup>6</sup> cm <sup>2</sup>	0.4 µm	clear	+	1 / 48
665610	2 x 10 <sup>6</sup> cm <sup>2</sup>	1 µm	clear	+	1 / 48



## 3D Cell Culture

ThinCert® Cell Culture Inserts for 6, 12 and 24 Well Multiwell Plates

Item no.	Pore density	Ø pore	Optical membrane properties	Sterile	Qty. inner / outer
665630	$0,6 \times 10^6 \text{ cm}^2$	3 µm	clear	+	1 / 48
665631	$2 \times 10^6 \text{ cm}^2$	3 µm	translucent	+	1 / 48
665638	$0,15 \times 10^6 \text{ cm}^2$	8 µm	translucent	+	1 / 48



### ThinCert® Cell Culture Inserts

#### 24 Well

- / Hanging geometry
- / Improved cell adhesion through physical surface treatment
- / Simplified pipetting due to self-lift geometry
- / Enhanced pipetting access and gas exchange

STERILE

FREE OF  
detectable  
DNase

FREE OF  
detectable  
human DNA

FREE OF  
detectable  
RNase

 non-  
cytotoxic

 non-  
pyrogenic

Feature: 2 multiwell plates / box, Height: 16.25 mm, Ø internal: 8.4 mm, Ø external: 10.4 mm, Cultural surface: 33.6 mm<sup>2</sup>, Surface treatment: TC, Working volume (ThinCert®): 0.1 ml - 0.35 ml, Working volume (well): 0.4 ml - 1.2 ml

Item no.	Pore density	Ø pore	Optical membrane properties	Sterile	Qty. inner / outer
662640	$1 \times 10^8 \text{ cm}^2$	0.4 µm	translucent	+	1 / 48
662641	$2 \times 10^6 \text{ cm}^2$	0.4 µm	clear	+	1 / 48
662610	$2 \times 10^6 \text{ cm}^2$	1 µm	clear	+	1 / 48
662630	$0,6 \times 10^6 \text{ cm}^2$	3 µm	clear	+	1 / 48
662631	$2 \times 10^6 \text{ cm}^2$	3 µm	translucent	+	1 / 48
662638	$0,15 \times 10^6 \text{ cm}^2$	8 µm	translucent	+	1 / 48

**ThinCert® Plate****6 / 12 Well**

- / Optimised for use with ThinCert® cell culture inserts
- / Deep wells for an increased volume of medium in air-lift culture
- / Notches for fixed insert position
- / Available in 6 and 12 well format

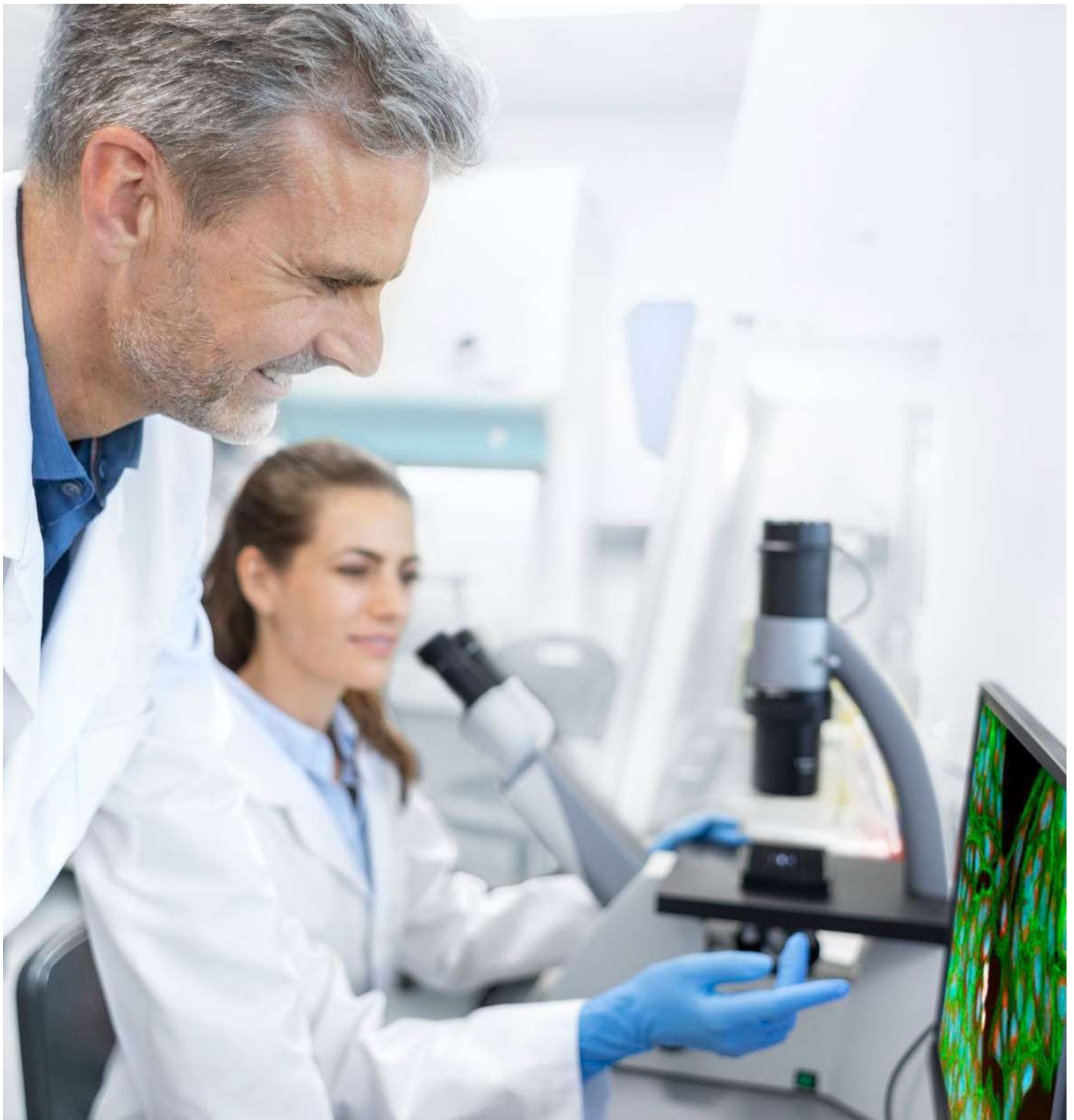
STERILE

FREE OF  
detectable  
DNaseFREE OF  
detectable  
human DNAFREE OF  
detectable  
RNase
 non-  
cytotoxic

 non-  
pyrogenic

Height: 39.5 mm, Length: 129.5 mm, Width: 86.6 mm, Lid: yes, condensation rings

Item no.	Well format	Working volume (well)	Sterile	Qty. inner / outer
657110	6	≤20 ml	+	1 / 50
665110	12	≤4 ml	+	1 / 60



Microscopy is a basic and important method, which is often used in research as well as in medical diagnostics. For this purpose, Greiner Bio-One offers a variety of tailor-made solutions, which guarantee optimal basic conditions for microscopic experiments.



## PRODUCTS FOR MICROSCOPY

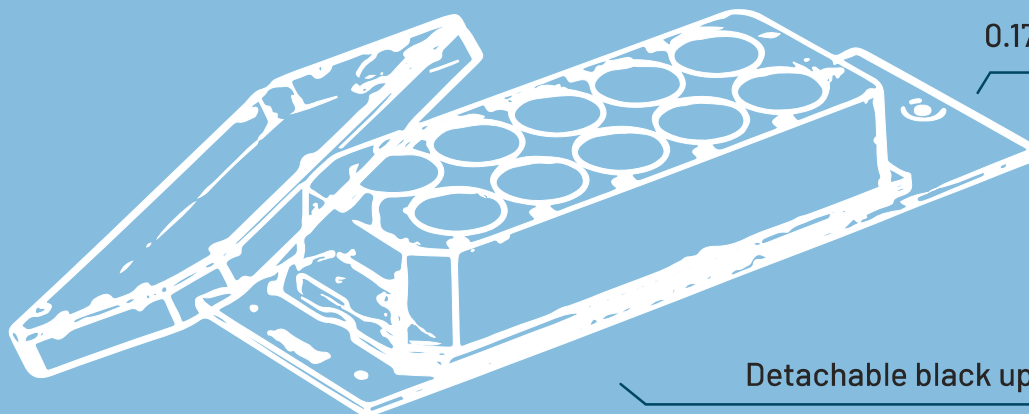
- / CELLview Dish Cell Culture Dish with  
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SensoPlate Glass Bottom Plates 24 / 96 / 384 /  
1536 Well..... 113

**PRODUCTS  
FOR  
MICROSCOPY**

Well distance equal to a  
96 well microplate

Positioning notch  
for automated  
microscopy in well A1

0.17 mm borosilicate glass



Detachable black upper housing

10 wells with  
alphanumeric coding



## PRODUCTS FOR MICROSCOPY

Technological progression in confocal microscopy, optical systems and emerging technologies continues to elevate microscopy as one of the most powerful tools in cell biology. With its advantages for molecular selectivity and capability of live observation, fluorescence microscopy currently is among the most widely used approaches for high-resolution, non-in-

vasive imaging of living cells. Depending on the complexity of live cell imaging experiments and the requirements of the corresponding microscope, the requirements for the utilised disposables can be as comprehensive. Greiner Bio One's imaging consumables are tailored solutions to provide optimal basic settings for your microscopic experiment.

### FEATURES:

- / **Maximal light transmission**
- / **Innovative design for maximal planarity**
- / **Reduced meniscus effect**
- / **Optimal cell attachment and viability**



**CELLview Products**  
Tailored solutions  
to provide optimal  
basic settings for  
your microscopic  
experiment



For live cell imaging experiments and high-resolution microscopic applications high numerical aperture (N.A.) objectives are required. Microplates with a standard bottom thickness of 1mm are much too thick to image when using N.A. objectives. Using such microplates or thicker coverslips will lead to spherical aberration resulting in a loss of contrast and image sharpness.

**CELLview products** combine the convenience of a plastic disposable with the high optical quality of a 0.17mm thin cover glass bottom, providing superior high-resolution microscopic images of in-vitro cultures. The specific design with the embedded cover glass bottom guarantees a single-plane, flat bottom with a consistent working distance, maximal planarity and optimal thermal conductivity in heated platforms.





## **μCLEAR® MICROPLATES**

The 190 μm polystyrene film bottom is ideal for standard imaging applications with low to medium magnification

**SCREENSTAR microplates** with a 0.19 mm cycloolefin film bottom are suitable for sophisticated microscopic applications, in high-content screening (HCS) or high-resolution microscopy with water and oil immersion objectives. Cycloolefins possess

excellent optical features and display a low background in the lower UV, with a refractive index and focus background comparable to glass.



### **CELLview Products**

Dishes, slides and plates with 0.17 mm thin cover glass bottom for superior high-resolution microscopic images of in-vitro cultures.



### **SCREENSTAR Microplates**

96 / 384 / 1536 well plates with a 0.19 mm thin cycloolefin film bottom for sophisticated microscopic applications, in high content screening or high-resolution microscopy.



### **SensoPlate Glass Bottom Plates**

Glass bottom plates without surface treatment for fluorescence correlation spectroscopy and microscopic applications.





- / Application Note  
„Protein localisation using confocal laser scanning microscopy“  
(F073101)
- / Application Note  
„Live cell imaging on Golgi morphology using the CELLview dish“  
(F074048)

## CELLVIEW DISH

### CELL CULTURE DISH WITH GLASS BOTTOM

**CELLview Dish combines the convenience of a standard size 35 mm disposable plastic cell culture dish with the optical quality of glass, providing superior high-resolution microscopic images of in-vitro cultivated cultures.**

It is made from high-grade polystyrene combined with an integrated glass bottom. The innovative design of the dish provides a single-plane, flat bottom with a consistent working distance and maximal planarity. Moreover, the dish bottom configuration facilitates optimal thermal conductivity and avoids thermal variations in heated platforms

used for live cell imaging.

The subdivided version of CELLview Dish enables simultaneous multiplex analyses of different cell lines, various stimulations or diverse transfections. Quartering the cell culture dish provides four individual compartments with a growth area of approximately 1.9 cm<sup>2</sup>, allowing minimisation of cells and reagents required per individual assay. In addition to the untreated glass surface, Greiner Bio-One provides a tissue culture surface as well as the Advanced TC surface modification to enhance the attachment of adherent cells, thus eliminating the need for protein coating.

- / TC and Advanced TC surface available
- / Maximal spectral transmission
- / No autofluorescence, no depolarisation of light



**CELLview Dish**

The CELLview cell culture dish combines the convenience of a standard size 35 mm disposable plastic cell culture dish with the optical quality of glass, providing superior high-resolution microscopic images of *in-vitro* cultivated cultures.

/ Embedded glass bottom for maximal planarity

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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Height: 10 mm, Ø: 35 mm, Bottom: glass, Vent neck: yes

Item no.	Compartments	Growth area	Growth area / unit	Surface treatment	Working volume	Total volume	Total volume (well)	Working volume (well)	Sterile	Qty. inner / outer
627861	1	8.7 cm <sup>2</sup>		untreated	2.5 ml - 5 ml	10 ml			+	10 / 40
627860	1	8.7 cm <sup>2</sup>		TC	2.5 ml - 5 ml	10 ml			+	10 / 40
627965	1	8.7 cm <sup>2</sup>		Advanced TC	2.5 ml - 5 ml	10 ml			+	10 / 40
627871	4		1.9 cm <sup>2</sup>	untreated			1.5 ml	0.1 ml - 0.5 ml	+	10 / 40
627870	4		1.9 cm <sup>2</sup>	TC			1.5 ml	0.1 ml - 0.5 ml	+	10 / 40
627975	4		1.9 cm <sup>2</sup>	Advanced TC			1.5 ml	0.1 ml - 0.5 ml	+	10 / 40

/ Application Note „Protein localisation using confocal laser scanning microscopy“(F073101)

/ Application Note „Live cell imaging on Golgi morpholgy using the CELLview dish“(F074048)



/ For further information, please refer to our website: [www.gbo.com](http://www.gbo.com)



### **CELLVIEW SLIDE**

## **CELL CULTURE SLIDE WITH GLASS BOTTOM**

CELLview Slide consists of a transparent slide with a black upper housing that effectively subdivides the slide into 10 compartments, which have been designed to mimic the size and layout of a standard 96 well microplate. Because of this standard layout, the slide is compatible with multichannel pipettes making it simple and efficient to use. Furthermore, the round well design helps to reduce meniscus effects for optimum results in cell culture and microscopic analysis. The slide has a 0.17 mm thin cover glass embedded

in its bottom for improved optical clarity and imaging. Embedding the cover glass guarantees an even focal plane which is a prerequisite for all high-speed and high-resolution microscopy applications. Furthermore, the black upper housing reduces cross talk between adjacent wells during fluorescence microscopy and the optical glass, which exhibits virtually no autofluorescence, allows for maximum spectral transmission without depolarisation of transmitted light.

- / 10 wells with alphanumeric coding
- / Black detachable compartmentalization
- / Well distance is equal to a 96 well microplate
- / Positioning notch for automated microscopy
- / Highly transparent achromatic borosilicate glass bottom



**CELLview Slide**

- / 10 wells with alphanumeric coding
- / Positioning notch for automated microscopy
- / Black detachable compartmentalization
- / Reduced meniscus effect due to round well design
- / Glass thickness: 0.17 mm

STERILE

FREE OF  
detectable  
DNase

FREE OF  
detectable  
human DNA

FREE OF  
detectable  
RNase

 non-  
cytotoxic

 non-  
pyrogenic

Well format: 10, Height: 12.6 mm, Length: 75 mm, Width: 25 mm, Growth area / unit: 34 mm<sup>2</sup>, Bottom: glass,  
Total volume (well): 440 µl

Item no.	Surface treatment	Sterile	Qty. inner / outer
543078	TC	+	1 / 20
543079	TC	+	5 / 45
543978	Advanced TC	+	1 / 20
543979	Advanced TC	+	5 / 45

/ Sample packs are available on request.



- / For plates with an optical cycloolefin film bottom, please refer to our SCREENSTAR plates in this chapter.

## CELLVIEW PLATE

### CELL CULTURE PLATE WITH GLASS BOTTOM

**CELLview glass bottom microplates** are designed for **demanding and high-resolution microscopic applications**.

They consist of a cycloolefin-based black frame with a 0.17 mm thin borosilicate glass bottom providing superior images of in-vitro cultures. The optimised microplate geometry and

the recessed bottom facilitate imaging of all peripheral wells even with immersion objectives. The round conical well design reduces the meniscus effect in order to assure equal cellular distribution and constant imaging results. An appropriate surface treatment improves cellular attachment and growth.

- / Outstanding image quality and resolution
- / Cycloolefin-based frame with 0.17 mm glass bottom
- / Excellent optical transparency
- / Recessed well bottom facilitating the use of lenses with low working distance and high aperture
- / Compatible with advanced confocal microscopic systems



**CELLview Plate**

- / For outstanding image quality and resolution
- / Recessed well bottom facilitating the use of objectives with low working distance
- / Ditch at the perimeter can be filled with liquid to minimise edge effects and evaporation
- / Compatible with advanced automated microscopic systems

STERILE	FREE OF detectable DNase	FREE OF detectable human DNA	FREE OF detectable RNase	non-cytotoxic	non-pyrogenic
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Well format: 96, Growth area / unit: 33 mm<sup>2</sup>, Well profile: F-bottom / Chimney Well, Bottom: glass, Raw material: COP, Working volume (well): 25 µl - 440 µl, Lid: yes

Item no.	Surface treatment	Product colour	Sterile	Qty. inner / outer
655891	TC	● black	+	1 / 16
655981	Advanced TC	● black	+	1 / 16



/ Forum No. 15:  
SCREENSTAR: A 1536  
Well Microplate for  
High-Content and  
High-Throughput  
Screening (F073120)

## SCREENSTAR MICROPLATES

**SCREENSTAR are specialised microplates for sophisticated microscopic applications, in high content screening (HCS) or high-resolution microscopy with water and oil immersion objectives.**

They combine outstanding glass-like optical properties with an excellent surface for adherent cell culture. Moreover, the plates display ex-

cellent optical properties with reduced autofluorescence in the lower UV range, low birefringence and a refractive index of 1.53 comparable to glass. SCREENSTAR microplates enable complete periphery access for high magnification objectives. They are entirely manufactured out of cycloolefin with a black pigmented cycloolefin frame and a 190 µm ultraclear cycloolefin film bottom.

- / 96 / 384 / 1536 well format
- / For sophisticated microscopic applications and high content screening
- / Highly transparent cycloolefin film bottom
- / Adherent TC surface treatment





**SCREENSTAR Microplates**

**96 / 384 / 1536 Well**

- / For sophisticated microscopic applications and high content screening
- / Highly transparent cycloolefin film bottom
- / Adherent TC surface treatment

STERILE

FREE OF  
detectable  
DNase

FREE OF  
detectable  
human DNA

FREE OF  
detectable  
RNase



Bottom: Cycloolefin film, Raw material: COP, Surface treatment: TC

Item no.	Well format	Growth area / unit	Well profile	Product colour	Working volume (well)	Lid	Sterile	Qty. inner / outer
655866	96	33 mm <sup>2</sup>	F-bottom / Chimney Well	● black	25 µl - 440 µl	yes	+	1 / 16
781866	384	8.1 mm <sup>2</sup>	F-bottom	● black	10 µl - 110 µl	yes	+	8 / 32
789866	1536	2.1 mm <sup>2</sup>	F-bottom	● black	3 µl - 15 µl	no	+	17 / 68

/ Forum No. 15: SCREENSTAR: A 1536 Well Microplate for High-Content and High-Throughput Screening (F073120)



/ For further information, please refer to our website: [www.gbo.com](http://www.gbo.com)



## **SENSOPLATE** GLASS BOTTOM MICROPLATES

The research of biomolecular processes on the level of single molecules and in volume ranges equivalent to the size of a single bacterium is of immense importance, both in basic research and in industrial high-throughput screening. The combination of modern confocal optics, new fluorescent dyes, sensitive photomultipliers and improved data processing has revolutionised the technique of fluorescence correlation spectroscopy (FCS). Over the past few years this has led to its widespread application, and alongside the tech-

nological advances in hardware development, Greiner Bio-One worked hand-in-hand with customers and instrument suppliers to develop the glass bottom microplates. These better satisfy the requirements of fluorescence correlation spectroscopy with regards to optical clarity and deformation when compared to standard polystyrene plates.

The SensoPlate family was developed in a complete product line consisting of 24, 96, 384 and 1536 well glass bottom formats.

- / For fluorescence correlation spectroscopy and microscopic applications
- / 24 / 96 / 384 / 1536 well format
- / Black frame with highly transparent glass bottom
- / Glass bottom thickness of 175 µm is equivalent to the light path of standard coverslips
- / Sterile, with lid and single-packed

**SensoPlate Glass Bottom Plates**

**24 / 96 / 384 / 1536 Well**



- / For fluorescence correlation spectroscopy and microscopic applications
- / 24 / 96 / 384 / 1536 well format
- / Black frame with highly transparent glass bottom
- / Glass bottom thickness of 175 µm is equivalent to the light path of standard coverslips
- / Sterile, with lid and single-packed

STERILE



Well profile: F-bottom, Bottom: glass, Raw material: PS, Surface treatment: untreated, Lid: yes

Item no.	Well format	Product colour	Plate geometry	Working volume (well)	Sterile	Qty. inner / outer
662892	24	● black		0.5 ml - 1.5 ml	+	1 / 12
655892	96	● black		25 µl - 340 µl	+	1 / 16
781892	384	● black		10 µl - 130 µl	+	1 / 16
783892	1536	● black	LoBase	3 µl - 10 µl	+	1 / 16



Greiner Bio-One offers a comprehensive range of tubes and multipurpose beakers for various applications. The vessels are available in different materials, with and without caps and with labelling options.