

## Microplate Selection Guide

Explore our world  
of microplates



## 1. Introduction

Continued progress in research and related technologies, such as microscopy, imaging, detection and liquid handling systems, has given rise to a wide variety of platforms used in basic science, biotechnology and pharmaceutical drug development. Today, researchers need to select application-specific microplates among

a broad range of products that differ in format, design, base material, colour and surface properties. The intent of this brochure is to provide an overview of microplates available from Greiner Bio-One, with a focus on applications.

## 2. General Microplate Features

### 2.1 Base Material

**Polystyrene** is the most extensively used material for plastic laboratory ware. The highly transparent resin is ideally suited for both microscopic imaging and optical measurements. Due to its chemical nature, polystyrene is a hydrophobic compound; however, its properties can be adjusted with a variety of physical surface treatments or coatings to accommodate requirements for multiple diverse applications. This capability renders polystyrene as the perfect base material to manufacture vessels for cell culture, immuno assays as well as for screening and spectroscopy applications.

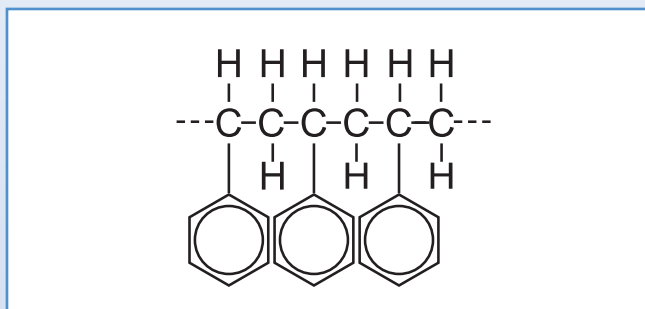


Figure 1: Chemical structure of polystyrene (PS)

**Polypropylene** is characterised by a high resistance to common chemicals (e.g. DMSO) and thermal stability (-196 °C to +121 °C). Polar molecules like DNA or proteins are binding less to polypropylene than to polystyrene. One drawback of polypropylene is its limited transparency; however, this feature is not typically required for the primary application served, in the manufacture of storage plates and vessels. Commonly, vessels made of polypropylene are not surface treated or coated.

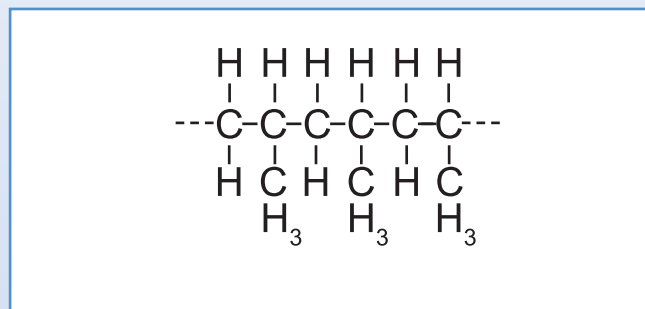


Figure 2: Chemical structure of polypropylene (PP)





**Cycloolefin** is frequently the material of choice for microplates with special requirement profiles. A low level of autofluorescence, along with exceptional transparency in lower UV wavelengths, enables cycloolefin microplates to be utilised for spectroscopic measurements in the UV range (UV-Star® microplates). The chemical stability of cycloolefin to polar solvents like DMSO, together with an extraordinarily low vapour diffusion rate, render the base material very suitable for the production of compound storage microplates, and the dimensional stability is additionally beneficial for microplate use within fully automated systems. Moreover, cycloolefin's glass-like optical properties, when combined with a respective surface treatment, facilitate use of cycloolefin microplate for cell culture applications with sophisticated optical requirements such as high resolution confocal microscopy and high content screening.

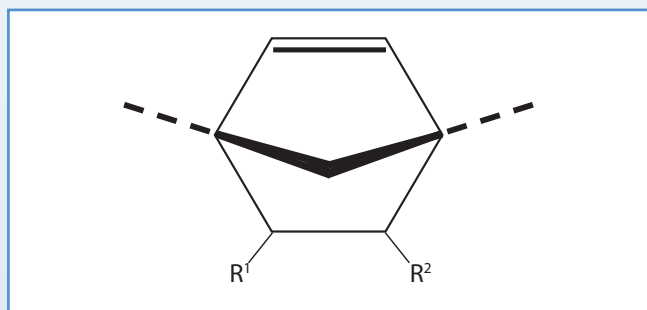


Figure 3: Chemical structure of norbornene (monomer of cycloolefin)

## 2.2 Pigmentation

**Black** pigmented microplates are commonly used for fluorescence applications, whereas **white** pigmented microplates typically support luminescence measurements, and are sometimes used to enhance fluorescence signal intensity.

Both pigmentations help overcome critical issues for these techniques, such as background, autofluorescence, and well-to-well crosstalk. Pigmentation does not impact the material or surface chemistry, and black or white polystyrene microplates are available with different surface properties. Polypropylene microplates are as well available with black and white pigmentation and offer lower biomolecule binding and higher thermal and chemical resistance than polystyrene.

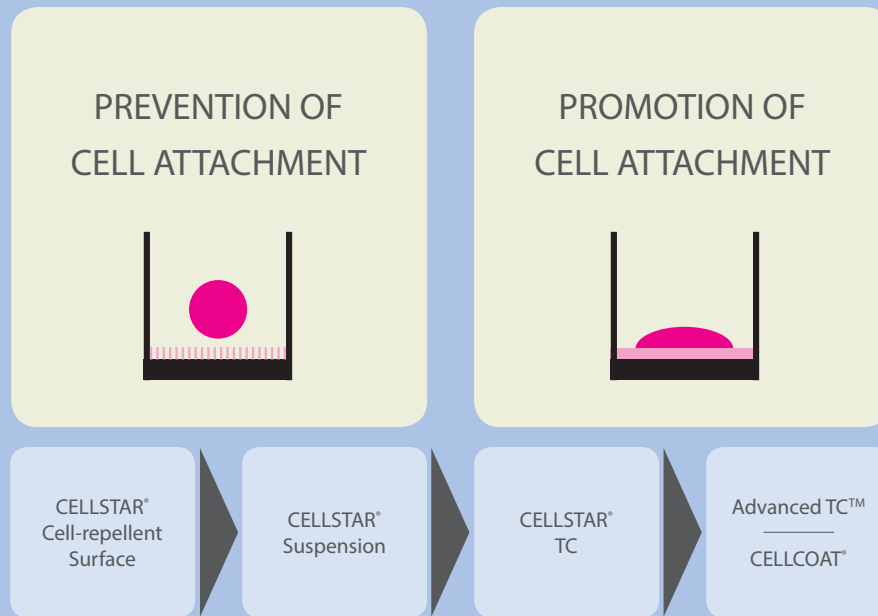
Table 1: Microplate colour & corresponding applications

Application	Product Description
<b>Colorimetric Measurement</b>	
	Transparent polystyrene microplates
<b>Fluorescence Measurement</b>	
• Top reading	Black microplates with solid bottom White microplates to enhance signal intensity
• Bottom reading • Microscopy	Black microplates with transparent film bottom or glass bottom
<b>Luminescence Measurement</b>	
• Top reading	Solid white microplates
• Bottom reading • Microscopy	White microplates with transparent film bottom

## 2.3 Surface Properties

At the well surface, interaction between the sample and the microplate takes place. Therefore surface properties play an important role for the functionality of a vessel. Surface properties can be modified in many ways, whether by physical, chemical or coating methods, to fulfill various demands.

## Surface Properties of Cell Culture Microplates

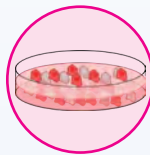


### 3. Microplates by Application

#### 3.1 Cell Culture

##### 3.1.1 Adherent Cell Culture

**CELLSTAR® TC** (TC = Tissue Culture) is the standard surface for classical cultivation of adherent cells. CELLSTAR® TC products undergo a special physical surface treatment, leading to the incorporation of polar groups such as carboxyl and hydroxyl residues, which functionalises the hydrophobic polystyrene surface to result in improved, consistent cell attachment. CELLSTAR® TC products are sterile, and can be stored at room temperature.



For fastidious, primary or sensitive cells, cells cultivated under restricted growth conditions (serum-free or serum-reduced), or cells stressed by transduction or transfection, Greiner Bio-One offers the synthetic Advanced TC™ surface and the CELLCOAT® product line.

The surface of the **Advanced TC™** cell culture vessels is chemically modified to positively influence cellular features and functions. Enhanced cell attachment and higher proliferation rates improve and accelerate cell expansion. The positive effect of the Advanced TC™ surface is particularly apparent following cellular stress induced by transfection or transduction processes. In contrast to biological coatings, the surface chemistry is synthetic. Advanced TC™ products are sterile, and can be stored at room temperature.

The **CELLCOAT®** product line comprises cell culture vessels which are coated with proteins of the extracellular matrix (Collagen Type I, Fibronectin, Laminin) or synthetic proteins (Poly-D-Lysine, Poly-L-Lysine). As a synthetic molecule, Poly-Lysine is free from contamination with other proteins. Biological coatings facilitate the growth of many cell types, including hepatocytes, muscle cells, epithelial/endothelial cells, neural cells and transfected cell lines. Many otherwise difficult-to-cultivate cells adhere to biological coatings, thereby enabling successful culture. Additionally, for certain cell lines, protein coating can have a positive influence on differentiation and morphology. CELLCOAT® surfaces are also highly suitable for serum-free and serum-reduced cell cultivation, promotion of cell adhesion and stressful procedures like transfection or automated washing.

For microplates especially developed to meet the requirements of **high content screening** applications, please refer to → chapter 3.5 (p. 13).

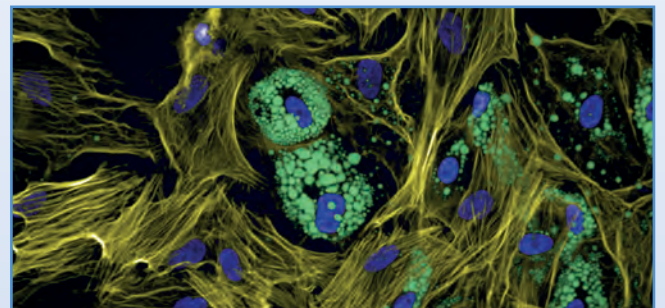


Figure 4: Adipogenesis of human mesenchymal stem cells on 384 well polystyrene film bottom microplates (REF 781091).  
Green = LipidTOX™ green, staining of lipid vesicles  
Yellow = Phalloidin TRITC, staining of the cytoskeleton  
Blue = DAPI staining of the nuclei



Table 2: Cell culture applications & corresponding microplates

Application	Product	Description
<b>Adherent Cell Culture</b>		
<ul style="list-style-type: none"> <li>• Standard</li> </ul>	CELLSTAR® TC	Physically modified, hydrophilic surface
<ul style="list-style-type: none"> <li>• Cultivation of fastidious cell lines</li> <li>• Cultivation under serum-free and serum-reduced conditions</li> <li>• Cultivation of transfected and transduced cell lines</li> <li>• Automated washing</li> </ul>	Advanced TC™ CELLCOAT®	Synthetic surface Biological coating with extracellular matrix or synthetical proteins
<b>Non-Adherent Cell Culture</b>		
<ul style="list-style-type: none"> <li>• Suspension culture</li> </ul>	CELLSTAR® suspension	Hydrophobic surface
<ul style="list-style-type: none"> <li>• Suspension culture of semi-adherent and adherent cell lines</li> <li>• Spheroid formation of tumour cells</li> <li>• Embryoid body formation and aggregation of stem cells</li> </ul>	CELLSTAR® cell-repellent surface	Chemically modified surface, inhibits cell adherence
<b>High Content Screening (see also → p. 13)</b>		
<ul style="list-style-type: none"> <li>• Confocal microscopy</li> <li>• High resolution microscopy</li> </ul>	SCREENSTAR	High quality cycloolefin film bottom microplates with CELLSTAR® TC surface
	SensoPlate™ SensoPlate™ Plus	Glass bottom microplates with accurate planarity

### 3.1.2 Non-adherent / Suspension Culture

**CELLSTAR® suspension culture** vessels are well suited for suspension culture of non-adherent cells. CELLSTAR® suspension products feature no surface treatment and are sterile.

The **CELLSTAR® cell-repellent surface** has been specifically developed to effectively prevent the attachment of semi-adherent and adherent cell lines. As the cell-repellent surface prevents cell-surface interactions, it is an ideal substrate for **3D cell culture** applications such as the formation of **tumor spheroids** or the cultivation of **stem cell aggregates**. In addition, microplates with cell-repellent surface are the perfect platform for **3D hydrogel cultures** and **magnetic cell culturing**. Inhibition of cell attachment is achieved through an innovative chemical surface modification. CELLSTAR® cell-repellent products are sterile.

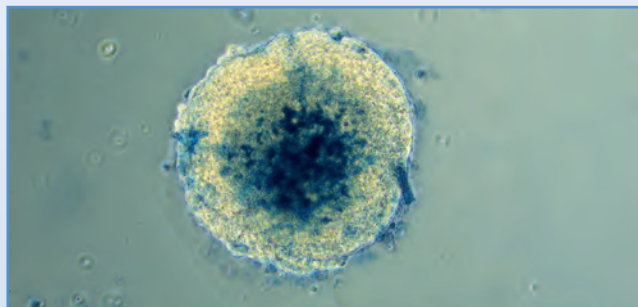
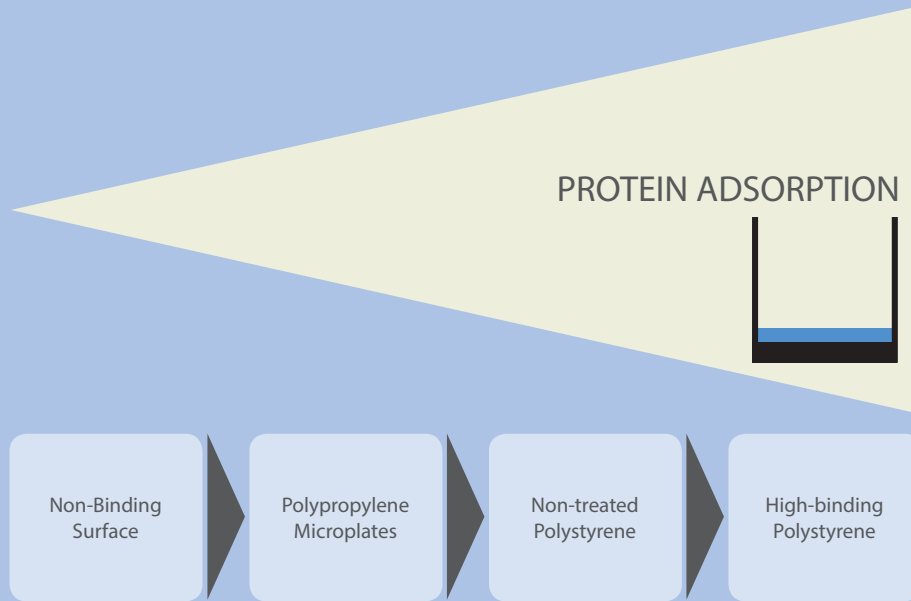


Figure 5: Trypan blue staining of a HEK spheroid grown on a 96 well polystyrene U-bottom microplate with cell-repellent surface





### 3.2 Screening and UV/VIS Spectroscopy

For biochemical screening applications, microplates made of **polystyrene** without surface treatment (**non-treated**) are frequently the plate of choice. Greiner Bio-One polystyrene microplates are manufactured of carefully selected raw material batches and demonstrate reproducibly low biomolecular binding. Due to their material properties, **polypropylene** microplates (see also → chapter 3.4, p. 12) feature less biomolecule adsorption than polystyrene. However, for very sensitive applications, even low amounts of biomolecular binding can interfere with the assay.

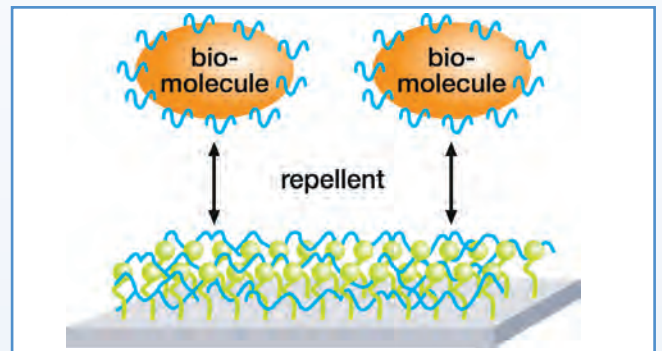
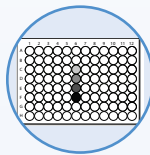


Figure 6: Technology of the non-binding surface. The hydrate layer, created by covalently linked functional groups, enables biomolecules to remain in solution, thereby preventing their binding to the surface.

Greiner Bio-One's **non-binding surface** for microplates effectively prevents binding. Characterised by low protein, peptide, DNA and RNA binding properties, the non-binding surface increases assay sensitivity by reducing background and, therefore, improving signal-to-noise ratio. The non-binding surface is achieved through a stable chemical modification of the microplate surface. It remains stable under common assay conditions, and does not degrade during short-term storage.

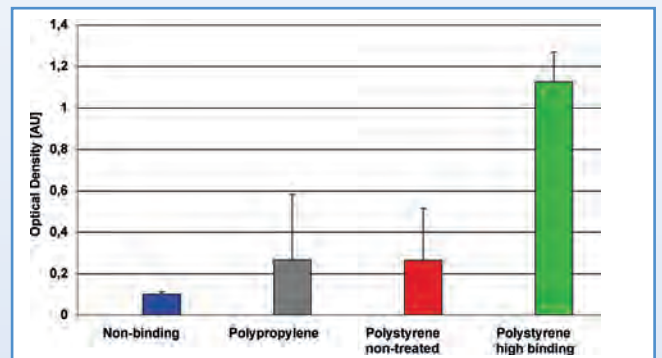


Figure 7: Peptide binding (5.8 kDa) on different surfaces

**High-binding** polystyrene microplates can be used for applications where sterile microplates are needed. Sterile polypropylene microplates are available upon request.



For colorimetric measurements in the visible wavelength range, transparent polystyrene microplates are ideal due to the high clarity of polystyrene. However, the transmission rate of most solid polystyrene vessels and plates drops sharply at approximately 400 nm. The usage of thin transparent film bottoms in black or white framed **μClear®** plates extends detection capability down to 340 nm. Microplates with **μClear®** film bottom are also an excellent choice for standard microscopic applications (see also → chapter 3.5, p. 13).

For measurements in the lower UV range, e.g. for the measurements of DNA or protein concentration, **UV-Star®** microplates manufactured out of cycloolefin with transmission down to 230 nm are mandatory.

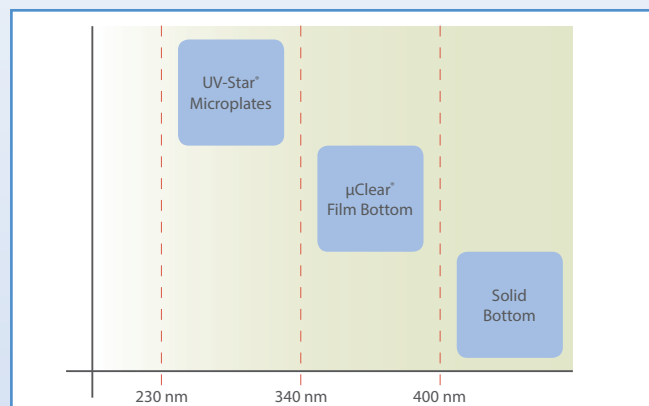


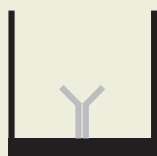
Figure 8: Suitability of microplate types with reference to the wavelength

Table 3: Screening applications & corresponding microplates

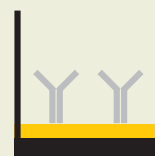
Application	Product	Description
<b>UV Spectroscopy (230 - 340 nm)</b>		
	UV-Star®	UV-transparent cycloolefin film bottom microplates
<b>Spectroscopic Measurements down to 340 nm (340 - 400 nm)</b>		
	μClear®	Polystyrene film bottom microplates with pigmented frame
<b>Colorimetric Measurements (&gt; 400 nm)</b>		
		Polystyrene microplates without surface treatment
<b>Fluorescence Measurements</b>		
• Top reading		Solid black or white microplates
• Bottom reading		Black μClear® microplates for bottom reading
<b>Luminescence Measurements</b>		
• Top reading		Solid white microplates
• Bottom reading		White μClear® microplates for bottom reading
<b>Basic Biochemical Assays</b>		
		Polystyrene microplates without surface treatment
<b>Sensitive Biochemical Assays</b>		
Sensitive biochemical assays	Non-binding microplates	Chemical surface modification

## Surface Properties of Immunology Microplates

LOW NUMBER OF  
POLAR GROUPS



HIGH NUMBER OF  
POLAR GROUPS



Medium-Binding Polystyrene

High-Binding Polystyrene

### 3.3 Immunology



For assays based on the immobilisation of biomolecules to the surface of microplates, polystyrene is by far the most commonly used base material. Due to its chemical nature, polystyrene is a hydrophobic compound and non-treated polystyrene plates feature hydrophobic characteristics. If attachment to the solid surface is based upon passive adsorption, e.g. in ELISA\*, physiochemical forces like hydrophobic bonds, hydrophilic interactions and H-bonding are relevant. Therefore, ELISA microplates are most often physically treated to introduce a defined number of hydrophilic groups to the microplate surface.

Greiner Bio-One offers both a **medium** and a **high binding surface** for passive adsorption. The high binding surface features a relatively high number of polar groups, whereas the number of polar groups is limited on the medium binding surface. The determination for which surface is best suited for a specific application should be evaluated empirically, as, in addition to surface properties, it is important to consider issues such as non-specific binding and other assay parameters to make the appropriate selection.

Table 4: Immunology applications & corresponding microplates

Application	Product	Description
ELISA*	MICROLON® 200 MICROLON® 600	Transparent microplates for immunological assays
FIA*	FLUOTRAC™ 200 FLUOTRAC™ 600	Black microplates for immunological assays
LIA*	LUMITRAC™ 200 LUMITRAC™ 600	White microplates for immunological assays

\* ELISA = Enzyme-linked Immunosorbent Assay

FIA = Fluorescence Immunoassay

LIA = Luminescence Immunoassay





### 3.4 Storage Plates

Traditionally, microplates used for storage of active reagents, patient samples or biomolecules are made of **polypropylene** (see also → chapter 3.2, p. 8). Storage plates are characterised by biological inertness, resistance to numerous solvents, e.g. DMSO, and a wide range for temperature resistance. **MASTERBLOCK® storage plates** feature as well elevated well walls to facilitate sealing. The footprint is compatible with automated systems. Polypropylene storage plates are available from the 96 to the 1536 well format and with U- and V-bottom well design. The 384 **Deep Well MASTERBLOCK®** extends the range of polypropylene storage plates. Its conical well shape enables precise pipetting with almost no dead volume in parallel with a maximised well volume. Therefore the Deep Well MASTERBLOCK® is the ideal solution for the storage of compound libraries.



Special demands on storage plates are made by **acoustic liquid handling applications**. Therefore Greiner Bio-One's **compound storage plates** meant for acoustic liquid handling are subject to stringent production specifications to ensure constant well bottom features. These microplates are deionised after production and packed in antistatic bags. Besides a 384 well **polypropylene** storage plate, Greiner Bio-One offers a range of **cycloolefin storage plates** for acoustic liquid handling in the 384 well and 1536 well format.

Cycloolefin combines many utile features: resistance to polar solvents like DMSO, high optical clarity and glass like optical properties, excellent water and vapour barrier functions to minimise evaporation, nearly no leaching extractables and low biomolecule binding.

Table 5: Storage applications & corresponding microplates

Application	Product	Description
Storage	MASTERBLOCK®	Polypropylene microplates
Compound storage for acoustic liquid handling		PP / COP microplates for compound storage



### 3.5 Microscopy and High Content Screening



New applications in high throughput and high content screening, as well as high resolution and confocal microscopy, have increased the demand for microplates with pigmented walls and clear bottom. The product portfolio of Greiner Bio-One contains clear bottom microplates either with glass or a high-quality film bottom.

**μClear® film bottom microplates** combine a pigmented frame with a transparent bottom, a prerequisite for luminescence and fluorescence applications where bottom reading or microscopy are involved. Due to the limited thickness of the film, the intrinsic autofluorescence of polystyrene is minimised. Black and white μClear® microplates are available both non-treated (see → p. 22-23) and with a wide variety of surface properties and coatings (see → p. 18-21) well-suited for standard detection and microscopic applications.

**SCREENSTAR microplates with cycloolefin film bottom** are optimised for the specialised requirements of high content screening and high resolution microscopy. The 190 μm cycloolefin film bottom guarantees maximum resolution, even at high microscopic magnification, and the physical surface treatment assures a proven performance for consistent cell attachment.

**SensoPlate™ / SensoPlate™ Plus glass bottom microplates** consist of a black pigmented polystyrene frame on to which a 175 μm thick borosilicate glass bottom is bonded. Thanks to the accurate planarity and superior optical properties, SensoPlate™ microplates are especially recommended for fluorescence correlation spectroscopy and sophisticated microscopic applications. The optimised plate geometry of the SensoPlate™ Plus permits the complete utilisation of all wells even for measurements with immersion objectives.

Table 6: Microscopic applications & corresponding microplates

Application	Product	Description
<b>Microscopic applications</b> (where accurate planarity is required)	SensoPlate™	Black frame, glass bottom
<b>High magnification</b>	SensoPlate™ Plus	Black frame, glass bottom, recessed rim
<b>Fluorescence / luminescence applications in combination with bottom reading or microscopy</b>	μClear®	Pigmented frame, transparent film bottom
<b>High content screening / high resolution microscopy</b>	SCREENSTAR	Cycloolefin film bottom microplates
<b>UV spectroscopy</b>	UV-Star®	Cycloolefin film bottom with high transparency in the UV range



## 5. Barcode Service for Microplates

### 5.1 General Information

Eliminating the use of barcodes for sample tracking and sample management in today's routine work in pharma research and diagnostics is unthinkable, given the significantly increasing amounts of data.

Barcode systems simplify and expedite work processes. In addition, they permit the unequivocal identification of labelled samples at any time and help minimise errors due to sample mix up in manual data collection.

Greiner Bio-One offers a comprehensive barcode service for all 96, 384 and 1536 well microplates. In an automated production process, labels imprinted with barcodes are mounted on the outside rims of the microplates. The type of barcode used, the barcode sequence, the labelling as well as the position of the barcode are all specified by the customer. The barcode labels used are temperature-resistant (-70 °C to +50 °C). The label and the barcode imprint are smear-resistant and stable to numerous solvents.

A thumbnail image of a barcode order form. The form is titled 'Barcode Order Form' and contains various fields for customer information, product specifications, and ordering details. It includes a barcode at the bottom right.

**F073015**  
Ordering form  
for barcoded microplates

### 5.2 Barcode Ordering Procedure

The complete and detailed filling out of our barcode order form is the basis for the error-free and fast barcode service which we wish to provide to our customers.

1. You will find the **barcode order form** on our homepage in the Download Center (F073015) or you may contact your sales representative at Greiner Bio-One for a printed copy.
2. After completely filling out the form, please verify the correctness of your information with your **signature**.
3. Having received the completely filled out and signed barcode order form, Greiner Bio-One will **check the feasibility** of the requested barcode. A customer-specific item number is assigned to the order and communicated to you by your sales representative at Greiner Bio-One, along with an expected delivery date.
4. If desired and in consultation with your representative at Greiner Bio-One, prototype **specimen plates** with barcode can first be produced as free samples.
5. For **reorders**: Please indicate the desired numbering sequence begin and the desired sequence end on your order. Only written orders can be accepted. If you have altered the general barcode requirements for your plates in the reorders (e.g. a different barcode type, a different labelling), we request that you fill out a completely new barcode order form.



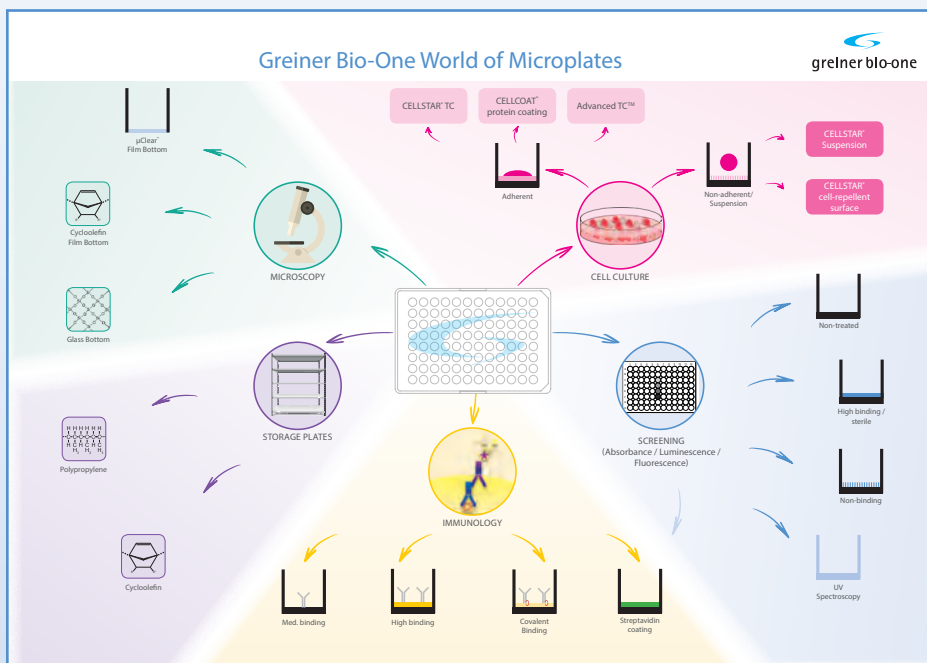


## 6. Microplate Ordering Information

The following part of our brochure gives you an overview of all multiwell plates and microplates offered by Greiner Bio-One. All plates are **categorised by the applications** introduced before. The colour coding for all applications stays the same.

Moreover, the plates are arranged by the number of wells, colour, bottom material, well design and surface treatment. This helps you to **find the article number** of the best microplate for your specific application.

If you need any assistance in choosing the right microplate or if you would like to request samples, please contact your responsible Greiner Bio-One sales representative or contact us via e-mail to [info@de.gbo.com](mailto:info@de.gbo.com).



## Adherent Cell Culture



## CELLSTAR® TC [Material = PS]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>				Surface <sup>2</sup>	Packing Size	Sterile	Lid	
			Clear	Black	White	Solid	µClear® film	F/C	U	V	HA					
6	1182L95	657160	•			•		•				TC	1/100	•	• <sup>3</sup>	
12	1182L99	665180	•			•		•				TC	1/100	•	• <sup>3</sup>	
24	1182M01	662160	•			•		•				TC	1/100	•	• <sup>3</sup>	
48	1182M06	677180	•			•		•				TC	1/100	•	• <sup>3</sup>	
96 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>				Surface <sup>2</sup>	Packing Size	Sterile	Lid	
	Clear	Black	White	Solid	µClear® film	F/C	U	V	HA							
		1184J20	655160	•			•		•			TC	1/100	•		
		1184J31	655162	•			•		•			TC	5/100	•		
		1184J32	655180	•			•		•			TC	1/100	•	• <sup>3</sup>	
		1184J33	655182	•			•		•			TC	10/160	•	• <sup>3</sup>	
		1184J18	650160	•			•		•			TC	1/100	•		
		1184J19	650180	•			•		•			TC	1/100	•	•	
		1184J20	651160	•			•			•		TC	1/100	•		
		1184J21	651180	•			•			•		TC	1/100	•	•	
		1184J39	675180	•			•				•	TC	8/32	•	•	
		1184J23	655079		•		•		•			TC	10/40	•		
		1184J25	655086		•		•		•			TC	8/32	•	• <sup>3</sup>	
		1184J36	675086		•		•				•	TC	8/32	•	•	
		1184J26	655087		•			•	•			TC	10/40	•		
		1184J28	655090		•			•	•			TC	8/32	•	• <sup>3</sup>	
		1184J37	675090		•			•			•	TC	8/32	•	•	
		1184J22	655073			•	•		•			TC	10/40	•		
		1184J24	655083			•	•		•			TC	8/32	•	• <sup>3</sup>	
		1184J35	675083			•	•				•	TC	8/32	•	•	
	1184J27	655088			•		•	•			TC	10/40	•			
	1184J29	655098			•		•	•			TC	8/32	•	• <sup>3</sup>		
	1184J38	675098			•		•			•	TC	8/32	•	•		
384 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface <sup>2</sup>	Packing Size	Sterile	Lid		
	Clear	Black	White	Solid	µClear® film	F	SV HiBase	SV LoBase								
		1184P59	781165	•			•		•		TC	10/40	•			
		1184P60	781182	•			•		•		TC	8/32	•	•		
		1184P51	781079		•		•		•		TC	10/40	•			
		1184P53	781086		•		•		•		TC	8/32	•	•		
		1184P64	784086		•		•		•		TC	8/32	•	•		
		1184P66	788086		•		•			•	TC	15/60	•	•		
		1184P56	781092		•			•	•		TC	10/40	•			
		1184P55	781091		•			•	•		TC	8/32	•	•		
		1184P54	781090		•			•	•		TC	20/120	•	•		
		1184P68	788092		•			•		•	TC	10/80	•			
		1184P50	781073			•	•		•		TC	10/40	•			
		1184P52	781080			•	•		•		TC	8/32	•	•		
		1184P63	784080			•	•		•		TC	8/32	•	•		
		1184P65	788073			•	•			•	TC	10/80	•			
		1184P57	781093			•		•	•		TC	10/40	•			
		1184P69	788093			•		•		•	TC	10/80	•			

1) Explanation of different well designs and abbreviations on p. 30

2) TC = Tissue culture treatment

3) Lid with condensation rings

## Adherent Cell Culture

## CELLSTAR® TC [Material = PS]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>		Surface <sup>2</sup>	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear® film	F HiBase	F LoBase				
1 536 WELL	1184P81	782180	•			•		•		TC	1/32	•	•
	1184P76	782078		•		•		•		TC	15/60	•	
	1184P78	782086		•		•		•		TC	10/40	•	•
	1184P79	782092		•			•	•		TC	15/60	•	
	1184P82	783092		•			•		•	TC	15/60	•	
	1184P75	782073			•	•		•		TC	15/60	•	
	1184P77	782080			•	•		•		TC	10/40	•	•
	1184P80	782093			•		•	•		TC	15/60	•	

## CELLCOAT® Protein Coating [Material = PS]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>		Surface <sup>2</sup>	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear® film	F/C	SV				
6 WELL	1183B17	657950	•			•		•		Col I	5/50		• <sup>3</sup>
	1183B16	657940	•			•		•		PDL	5/50		• <sup>3</sup>
	1183B15	657930	•			•		•		PLL	5/50		• <sup>3</sup>
24 WELL	1183B20	662950	•			•		•		Col I	5/50		• <sup>3</sup>
	1183B19	662940	•			•		•		PDL	5/50		• <sup>3</sup>
	1183B18	662930	•			•		•		PLL	5/50		• <sup>3</sup>
96 WELL	1183B29	655950	•			•		•		Col I	5/20		• <sup>3</sup>
	1183B23	655940	•			•		•		PDL	5/20		• <sup>3</sup>
	1183B21	655930	•			•		•		PLL	5/20		• <sup>3</sup>
	1183B31	655956		•			•	•		Col I	5/20		• <sup>3</sup>
	1183B26	655946		•			•	•		PDL	5/20		• <sup>3</sup>
	1183B28	655948		•			•	•		PDL	20/120		• <sup>3</sup>
	1183B22	655936		•			•	•		PLL	5/20		• <sup>3</sup>
	1183B24	655944			•		•	•		PDL	5/20		• <sup>3</sup>
384 WELL	1183B40	781950	•			•		•		Col I	5/20		•
	1183B34	781940	•			•		•		PDL	5/20		•
	1183B32	781930	•			•		•		PLL	5/20		•
	1183B41	781956		•			•	•		Col I	5/20		•
	1183B37	781946		•			•	•		PDL	5/20		•
	1183B39	781948		•			•	•		PDL	20/120		•
	1183B33	781936		•			•	•		PLL	5/20		•
	1183B36	781945			•	•		•		PDL	5/20		•
	1183B35	781944			•		•	•		PDL	5/20		•

1) Explanation of different well designs and abbreviations on p. 30

2) TC = Tissue culture treatment; Col I = Collagen Type I; PDL = Poly-D-Lysine; PLL = Poly-L-Lysine

3) Lid with condensation rings



## Adherent Cell Culture

## Advanced TC™ [Material = PS]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>		Surface <sup>2</sup>	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear® film	F/C	HA				
6	1182M07	657960	•			•		•		AdTC	1/100	•	• <sup>3</sup>
12	1182M08	665980	•			•		•		AdTC	1/100	•	• <sup>3</sup>
24	1182M09	662960	•			•		•		AdTC	1/100	•	• <sup>3</sup>
48	1182M10	677980	•			•		•		AdTC	1/100	•	• <sup>3</sup>
96 WELL	1184J50	655980	•			•		•		AdTC	1/100	•	• <sup>3</sup>
	1184J51	655982	•			•		•		AdTC	10/160	•	• <sup>3</sup>
	1184J53	655986		•			•	•		AdTC	8/32	•	• <sup>3</sup>
	1184J55	675986		•			•	•		AdTC	8/32	•	•
	1184J54	675983			•		•	•		AdTC	8/32	•	•
384 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>		Surface <sup>2</sup>	Packing Size	Sterile	Lid
	Clear	Black	White	Solid	µClear® film	F	LoBase	SV					
	1184P71	781986		•			•	•		AdTC	8/32	•	•
	1184P85	788986		•			•	•		AdTC	15/60	•	• <sup>4</sup>
1184P70	781983			•		•	•		AdTC	8/32	•	•	

1) Explanation of different well designs and abbreviations on p. 30

2) AdTC = Advanced TC™

3) Lid with condensation rings

4) Ultra low profile lid

## Non-Adherent Cell Culture / Suspension Culture

### CELLSTAR® Suspension Culture [Material = PS]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear® film	F/C	U	V				
6	1184X20	657185	•			•		•			suspension	1/100	•	• <sup>3</sup>
12	1182L97	665102	•			•		•			suspension	1/100	•	• <sup>3</sup>
24	1182M00	662102	•			•		•			suspension	1/100	•	• <sup>3</sup>
48	1182M04	677102	•			•		•			suspension	1/100	•	• <sup>3</sup>
96 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid
	Clear	Black	White	Solid	µClear® film	F/C	U	V						
	1184J41	650185	•			•		•			suspension	1/60	•	•
1182L94	655185	•			•		•			suspension	1/60	•	• <sup>3</sup>	

### CELLSTAR® Cell-Repellent Surface [Material = PS]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface <sup>2</sup>	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear® film	F	U	V				
6	1182M22	657970	•			•		•			cell-rep.	1/5	•	• <sup>3</sup>
24	1182M23	662970	•			•		•			cell-rep.	1/5	•	• <sup>3</sup>
48	1182M24	677970	•			•		•			cell-rep.	1/5	•	• <sup>3</sup>
96 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface <sup>2</sup>	Packing Size	Sterile	Lid
	Clear	Black	White	Solid	µClear® film	F/C	U	V						
	1184J57	655970	•			•		•			cell-rep.	1/6	•	• <sup>3</sup>
1184J56	650970	•			•		•			cell-rep.	1/6	•	•	
384 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface <sup>2</sup>	Packing Size	Sterile	Lid
	Clear	Black	White	Solid	µClear®	F	U	V						
1184P74	781970	•				•		•			cell-rep.	1/60	•	•

1) Explanation of different well designs and abbreviations on p. 30

2) Cell-rep. = cell-repellent surface

3) Lid with condensation rings

## Non-treated [Material = PS]

Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>					Surface	Packing Size	Sterile	Lid
		Clear	Black	White	Solid	µClear®	F	F/C	HA	U	V				
Polystyrene microplates															
1184P89	655101	•			•		•					non-treated	10/100		
1184J48	655161	•			•		•					non-treated	2/100	•	
1182M31	675101	•			•				•			non-treated	10/40		
1182M32	675161	•			•				•			non-treated	10/40	•	
1184P86	650101	•			•					•		non-treated	10/100		
1184J43	650161	•			•					•		non-treated	2/100	•	
1184P88	651101	•			•						•	non-treated	10/100		
1184J46	651161	•			•					•		non-treated	2/100	•	
1184P98	655076		•		•				•			non-treated	10/40		
1184Q14	675076		•		•					•		non-treated	10/40		
1184Q05	655096		•			•			•			non-treated	10/40		
1184Q18	675096		•			•				•		non-treated	10/40		
1184P97	655075			•	•				•			non-treated	10/40		
1184Q13	675075			•	•					•		non-treated	10/40		
1184Q04	655095			•	•				•			non-treated	10/40		
1184Q17	675095			•	•					•		non-treated	10/40		
Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>					Surface	Packing Size	Sterile	Lid
		Natural	Black	White	Solid	µClear®	F/C	U/C	V/C						
Polypropylene microplates															
1183A86	655201	•			•		•					non-treated	10/100		
1183A79	650201	•			•					•		non-treated	10/100		
1183A82	650261	•			•					•		non-treated	10/100	•	
1183A83	651201	•			•						•	non-treated	10/100		
1184X18	655209		•		•		•					non-treated	10/100		
1183A81	650209		•		•					•		non-treated	10/100		
1183A84	651209		•		•						•	non-treated	10/100		
1183A87	655207			•	•		•					non-treated	10/100		
1183A80	650207			•	•					•		non-treated	10/100		

1) Explanation of different well designs and abbreviations on p. 30

→ Further **polypropylene microplates** on p. 28.



## Non-treated [Material = PS]

Thomas No.	Mfr. No.	Clear / Natural	Colour		Bottom		Well Design <sup>1</sup>				Surface	Packing Size	Sterile	Lid	
			Black	White	Solid	µClear®	F	V	SV Hi	SV Lo					
<b>Polystyrene microplates</b>															
1184Q20	781101	•			•		•					non-treated	10/100		
1184Q21	781162	•			•		•					non-treated	10/100	•	
1184Q22	781185	•			•		•					non-treated	1/32	•	•
1184Q23	781186	•			•		•					non-treated	8/32	•	•
1184Q37	784101	•			•				•			non-treated	10/40		
1184Q38	788101	•			•					•		non-treated	10/80		
1184Q39	788161	•			•					•		non-treated	10/80	•	
1184Q27	781076		•		•		•					non-treated	10/40		
1184Q42	784076		•		•				•			non-treated	10/40		
1184Q45	784076-25		•		•				•			non-treated	25/150		
1184Q47	788076		•		•					•		non-treated	10/80		
1184Q31	781096		•			•	•					non-treated	10/40		
1184Q50	788096		•			•				•		non-treated	10/80		
1184Q26	781075			•	•		•					non-treated	10/40		
1184Q30	781095			•		•	•					non-treated	10/40		
1184Q41	784075			•	•				•			non-treated	10/40		
1184Q44	784075-25			•	•				•			non-treated	25/150		
1184Q46	788075			•	•					•		non-treated	10/80		
1184Q49	788095			•		•				•		non-treated	10/80		
<b>Polypropylene microplates</b>															
781201	781201	•			•		•					non-treated	10/100		
781280	781280	•			•				•			non-treated	10/100		
781209	781209		•		•		•					non-treated	10/100		
1183A91	781207			•	•		•					non-treated	10/100		

Thomas No.	Mfr. No.	Clear / Natural	Colour		Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid	
			Black	White	Solid	µClear®	F Hi	F Lo	V DW					
<b>Polystyrene microplates</b>														
1184Q51	782101	•			•		•				non-treated	15/60		
1184Q52	783101	•			•				•		non-treated	15/60		
1184Q56	782076		•		•		•				non-treated	15/60		
1184Q64	783076		•		•				•		non-treated	15/60		
1184Q60	782096		•			•	•				non-treated	15/60		
1184Q67	783096		•			•			•		non-treated	15/60		
1184Q55	782075			•	•		•				non-treated	15/60		
1184Q63	783075			•	•				•		non-treated	15/60		
1184Q59	782095			•		•	•				non-treated	15/60		
<b>Polypropylene microplates</b>														
1183A77	782270	•			•					•	non-treated	15/60		

1) Explanation of different well designs and abbreviations on p. 30  
DW = Deep Well

→ Further **polypropylene microplates** on p. 28.

## High binding / sterile [Material = PS]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>		Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear®	F/C	HA				
96 WELL	1184Q15	675077		•		•			•	high binding	10/40	•	
	1184Q06	655097		•			•	•		high binding	10/40	•	
	1184P96	655074			•	•		•		high binding	10/40	•	
	1184Q12	675074			•	•			•	high binding	10/40	•	
	1184Q03	655094			•		•	•		high binding	10/40	•	
	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>		Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear®	F					
384 Well	1184Q24	781061	•			•			•	high binding	10/40	•	
	1184Q28	781077		•		•			•	high binding	10/40	•	
	1184Q32	781097		•			•		•	high binding	10/40	•	
	1184Q25	781074			•	•			•	high binding	10/40	•	
	1184Q29	781094			•		•		•	high binding	10/40	•	
	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>		Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear®	F	Hi				
1536 WELL	1184Q53	782061	•			•			•	high binding	15/60	•	
	1184Q57	782077		•		•			•	high binding	15/60	•	
	1184Q61	782097		•			•		•	high binding	15/60	•	
	1184Q54	782074			•	•			•	high binding	15/60	•	
	1184Q58	782094			•		•		•	high binding	15/60	•	

1) Explanation of different well designs and abbreviations on p. 30

## Non-binding [Material = PS]



	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear <sup>®</sup>	F/C	U	V				
96 WELL	1184Q72	655901	•			•		•			non-binding	10/40		
	1184Q69	650901	•			•			•		non-binding	10/40		
	1184Q70	651901	•			•				•	non-binding	10/40		
	1184Q71	655900		•		•		•			non-binding	10/40		
	1184Q75	655906		•			•	•			non-binding	10/40		
	1184Q74	655904			•	•		•			non-binding	10/40		
	1184Q73	655903			•		•	•			non-binding	10/40		
	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear <sup>®</sup>	F	SV	Hi				
384 WELL	1184Q77	781901	•			•		•			non-binding	10/40		
	1184Q76	781900		•		•		•			non-binding	10/40		
	1184Q81	784900		•		•			•		non-binding	10/40		
	1184Q80	781906		•			•	•			non-binding	10/40		
	1184Q79	781904			•	•		•			non-binding	10/40		
	1183B00	784904			•	•			•		non-binding	10/40		
	1184Q78	781903			•		•	•			non-binding	10/40		
	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	µClear <sup>®</sup>	F	Hi	SV				
1536 WELL	1184Q83	782900		•		•			•		non-binding	15/60		
	1184Q84	782904			•	•			•		non-binding	15/60		

UV Spectroscopy (UV-Star<sup>®</sup>) [Material = COC]

	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	Film	F/C	HA	SV				
96 WELL	1184Q85	655801	•				•	•				10/40		
	1184Q87	675801	•				•		•			10/40		
	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface	Packing Size	Sterile	Lid
			Clear	Black	White	Solid	Film	F	SV	HA				
384 WELL	1184Q88	781801	•				•	•				10/40		

1) Explanation of different well designs and abbreviations on p. 30

2) COC = Cycloolefin co-polymer

## Medium binding [Material = PS]



96 WELL

Thomas No.	Mfr. No.	Colour			Well Design <sup>2</sup>						Surface <sup>3</sup>	Packing Size	Lid	
		Clear	Black	White	F	F/C	HA	U	V	C				
<b>Standard ELISA Microplates</b>														
1184P94	655001	•			•							med. bind	10/40	
1184Q00	655080	•				•						med. bind	10/40	
1184Q10	675001	•					•					med. bind	10/40	
1184P90	650001	•						•				med. bind	10/40	
1184P92	651001	•							•			med. bind	10/40	
<b>F8 / U8 Strip Plates</b>														
1176R04	762070	•			•							med. bind	10/100	
1184X22	767070	•						•				med. bind	10/100	
1176R08	762076		•		•							med. bind	10/100	
1176R07	762075			•	•							med. bind	10/100	
<b>C8 Single-Break Strip Plates</b>														
1176Q77	705070	•								•		med. bind	10/100	
1176Q73	705063	• <sup>1</sup>								•		med. bind	10/100	
1176Q75	705065	• <sup>1</sup>								•		med. bind	10/100	
1176Q76	705066	• <sup>1</sup>								•		med. bind	10/100	
<b>F16 / U16 Strip Plates</b>														
1176R00	756070	•			•							med. bind	10/100	
1176Q95	754070	•						•				med. bind	10/100	

## High binding [Material = PS]



96 WELL

Thomas No.	Mfr. No.	Colour			Well Design <sup>2</sup>						Surface <sup>3</sup>	Packing Size	Lid	
		Clear	Black	White	F	F/C	HA	U	V	C				
<b>Standard ELISA Microplates</b>														
1184P95	655061	•			•							high bind	10/40	
1184Q01	655081	•				•						high bind	10/40	
1184Q11	675061	•					•					high bind	10/40	
1184P91	650061	•						•				high bind	10/40	
1184P93	651061	•							•			high bind	10/40	
<b>F8 / U8 Strip Plates</b>														
1176R05	762071	•			•							high bind	10/100	
1176R12	767071	•						•				high bind	10/100	
1176R09	762077		•		•							high bind	10/100	
1176R06	762074			•	•							high bind	10/100	
<b>C8 Single-Break Strip Plates</b>														
1176Q78	705071	•								•		high bind	10/100	
1176Q79	705073	• <sup>1</sup>								•		high bind	10/100	
1176Q80	705074	• <sup>1</sup>								•		high bind	10/100	
1176Q81	705075	• <sup>1</sup>								•		high bind	10/100	
1176Q82	705076	• <sup>1</sup>								•		high bind	10/100	
<b>F16 / U16 Strip Plates</b>														
1176R01	756071	•			•							high bind	10/100	
1176Q94	754061	•						•				high bind	10/100	

1) Colour coding of ELISA strip plates: clear with • red / • green / • yellow / • blue rim

2) Explanation of different well designs and abbreviations on p. 30

3) Med. bind = medium binding surface; high bind = high binding surface



## Polypropylene microplates



	Thomas No.	Mfr. No.	Colour		Bottom Solid	Well Design <sup>1</sup>			Description	Packing Size	Sterile	Lid		
			Natural Black	White		F/C	U/C	V/C						
96 WELL	1183A86	655201	•		•	•				10/100				
	1183A79	650201	•		•		•			10/100				
	1183A82	650261	•		•		•			10/100	•			
	1183A83	651201	•		•			•		10/100				
	1184X18	655209		•	•	•				10/100				
	1183A81	650209		•	•		•			10/100				
	1183A84	651209		•	•			•		10/100				
	1183A87	655207			•	•				10/100				
	1183A80	650207			•			•		10/100				
<b>Polypropylene MASTERBLOCK®</b>														
	Thomas No.	Mfr. No.	Colour		Bottom Solid	Well Design <sup>1</sup>		Volume	Packing Size	Sterile	Lid			
			Natural Black	White		U	V							
96 WELL	1183A72	786201	•		•		•	0.5 ml	8/80					
	1183A73	786261	•		•		•	0.5 ml	1/80	•				
	1183A66	780215	•		•	•		1 ml	5/50					
	1183A67	780261	•		•	•		1 ml	1/50	•				
	1183A68	780270	•		•		•	2 ml	1/50					
	1183A70	780285	•		•		•	2 ml	5/50					
	1184X19	780271	•		•		•	2 ml	1/50	•				
384 WELL	Thomas No.	Mfr. No.	Colour		Bottom Solid	Well Design <sup>1</sup>				Description	Packing Size	Sterile	Lid	
			Natural Black	White		F	V	SV	DW					DW
		1183A64	781201	•		•	•					10/100		
		1183B02	781201-906	•		•	•				for ac. liquid handl.	10/100		
		1183A94	781280	•		•		•				10/100		
		1183A98	784201	•		•			•			10/100		
		1183A74	781270	•		•				•	MASTERBLOCK®	6/60		
	1183A75	781271	•		•				•	MASTERBLOCK®	6/60	•		



1) Explanation of different well designs and abbreviations on p. 30; DW = Deep Well

## Glass bottom microplates (SensoPlate™ / SensoPlate™ Plus)

[Material = PS]



	Thomas No.	Mfr. No.	Colour			Bottom		Well Design <sup>1</sup>			Surface / Description <sup>2</sup>	Packing Size	Sterile	Lid	
			Clear	Black	White	Solid	Glass	F	F/C						
24 WELL	1184Q90	662892	•			•		•				1/12	•	•	
	1184Q93	655892	•			•		•				1/16	•	•	
	1184Q91	655891	•			•		•		TC, SP+		1/16	•	•	
384 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design			Surface / Description <sup>2</sup>	Packing Size	Sterile	Lid	
			Clear	Black	White	Solid	Glass	F	SV	F					Lo
	1184Q99	781892	•			•		•					1/16	•	•
1184Q97	781856	•			•		•			SP+		1/16			
1536 WELL	Thomas No.	Mfr. No.	Colour			Bottom		Well Design			Surface / Description <sup>2</sup>	Packing Size	Sterile	Lid	
			Clear	Black	White	Solid	Glass	F	F	F					Hi
	1184R03	782892	•			•		•					1/16	•	•
	1184R05	783892	•			•		•					1/16	•	•
1184R07	783856	•			•		•			SP+		4/16			

### µClear® film bottom microplates

Black and white µClear® microplates are available both non-treated (p. 22-23) and with a wide variety of surface properties and coatings (p. 18-21) well-suited for standard detection and microscopic applications.

