



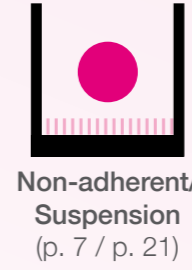
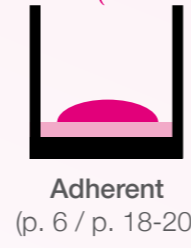
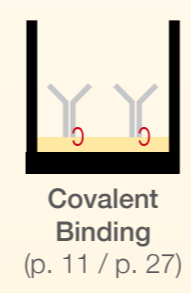
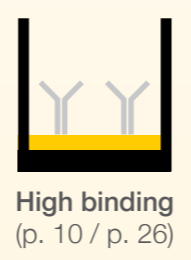
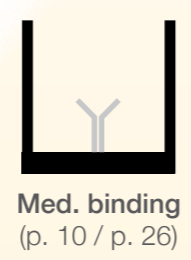
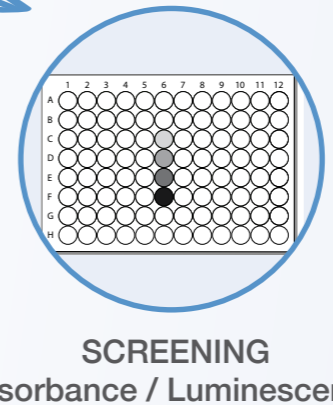
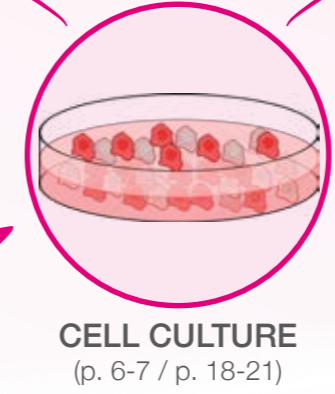
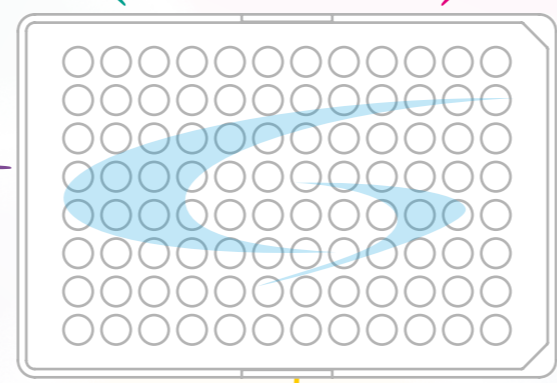
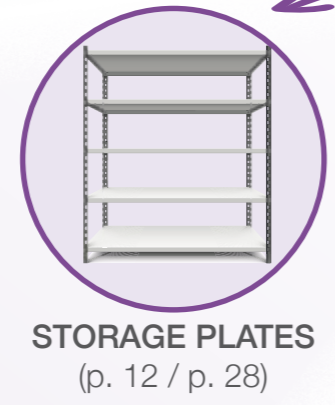
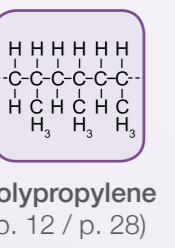
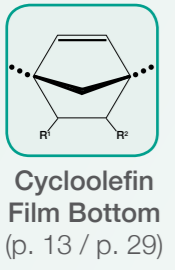
Microplate Selection Guide

Explore our world
of microplates

Microplate overview
as removable poster
inside of the brochure

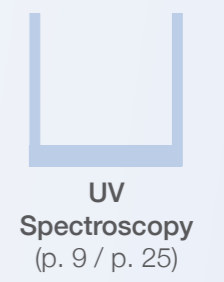
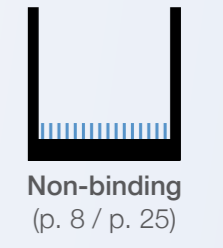
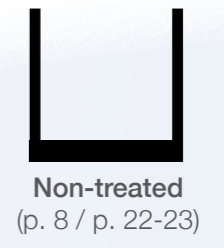
Greiner Bio-One World of Microplates

CELLSTAR® TC
CELLCOAT® protein coating
Advanced TC™



CELLSTAR®
Suspension

CELLSTAR®
cell-repellent
surface





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.

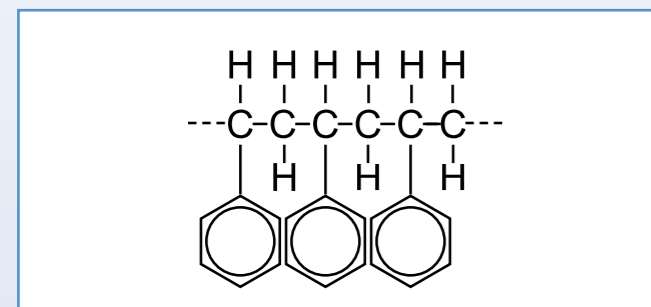


Figure 1: Chemical structure of polystyrene (PS)

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.

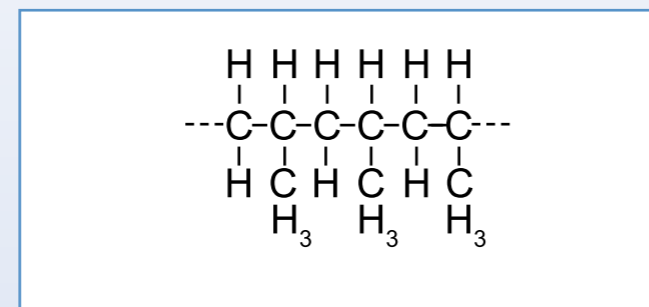


Figure 2: Chemical structure of polypropylene (PP)

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 manufactures' 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.

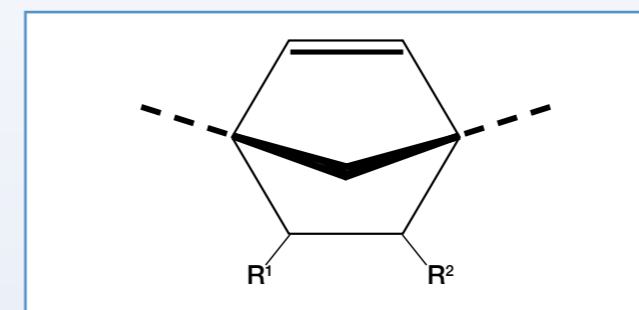


Figure 3: Chemical structure of norbornene (monomer of cycloolefin)

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.

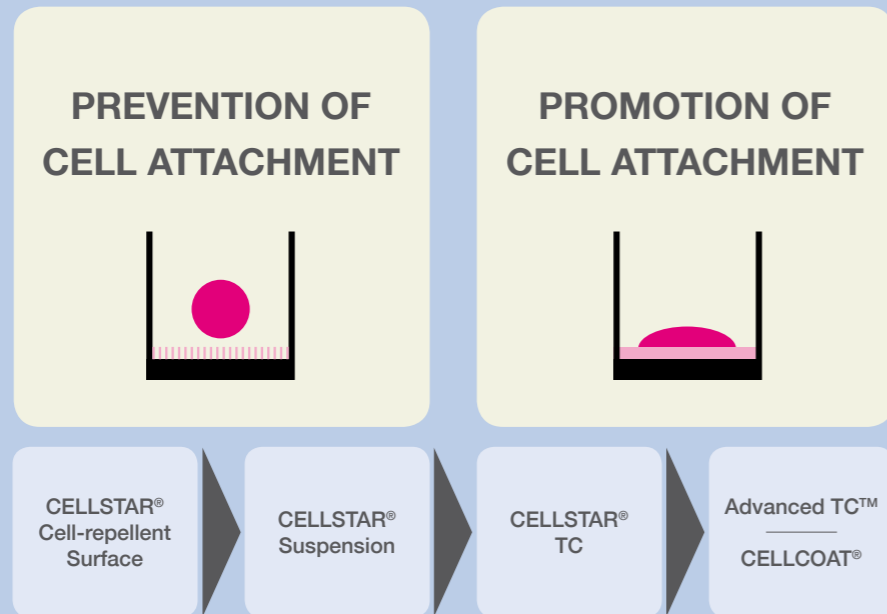
Table 1: Microplate colour & corresponding applications

Application	Product Description	Literature (→ p. 14-15)
Colorimetric Measurement		
	Transparent polystyrene microplates	4, 6, 8, 18
Fluorescence Measurement		
• Top reading	Black microplates with solid bottom White microplates to enhance signal intensity	9
• Bottom reading • Microscopy	Black microplates with transparent film bottom or glass bottom	1, 2, 3, 4, 5, 7, 17, 20
Luminescence Measurement		
• Top reading	Solid white microplates	5, 18
• 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.

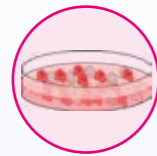
Surface Properties of Cell Culture Microplates



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).

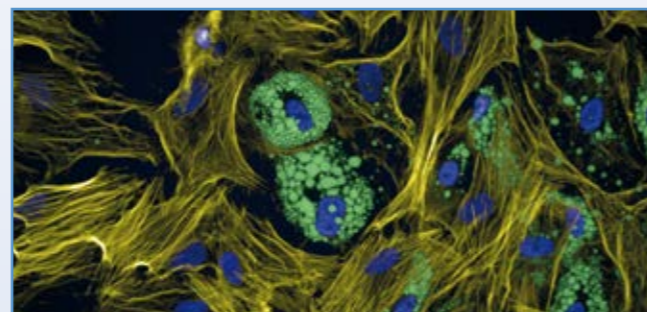


Figure 4: Adipogenesis of human mesenchymal stem cells on 384 well polystyrene film bottom microplates (REF 781091).
Green = LipidTOX™ green, staining of lipid vesicles
Yellow = Phalloidin TRITC, staining of the cytoskeleton
Blue = DAPI staining of the nuclei

Table 2: Cell culture applications & corresponding microplates

Application	Product	Description	Literature (→ p. 14-15)
Adherent Cell Culture			
• Standard	CELLSTAR® TC	Physically modified, hydrophilic surface	1, 2, 3, 5, 6, 7, 9, 18
• Cultivation of fastidious cell lines	Advanced TC™	Synthetic surface	1, 2, 7, 10, 16
• Cultivation under serum-free and serum-reduced conditions	CELLCOAT®	Biological coating with extracellular matrix or synthetic proteins	1, 2, 3, 5, 7, 11
• Cultivation of transfected and transduced cell lines			
• Automated washing			
Non-Adherent Cell Culture			
• Suspension culture	CELLSTAR® suspension	Hydrophobic surface	7, 19
• Suspension culture of semi-adherent and adherent cell lines	CELLSTAR® cell-repellent surface	Chemically modified surface, inhibits cell adherence	12, 13, 19
• Spheroid formation of tumour cells			
• Embryoid body formation and aggregation of stem cells			
High Content Screening (see also → p. 13)			
• Confocal microscopy	SCREENSTAR	High quality cycloolefin film bottom microplates with CELLSTAR® TC surface	17, 20
• High resolution microscopy	SensoPlate™ SensoPlate™ Plus	Glass bottom microplates with accurate planarity	1, 20

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.

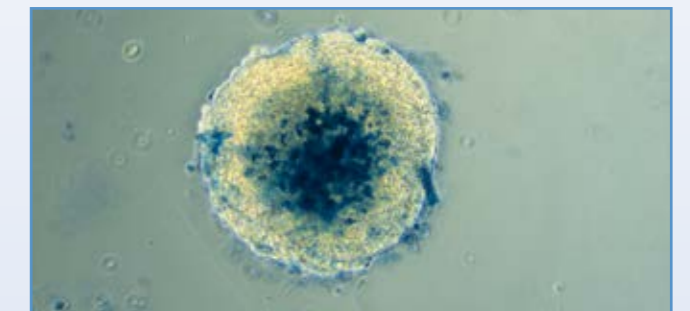
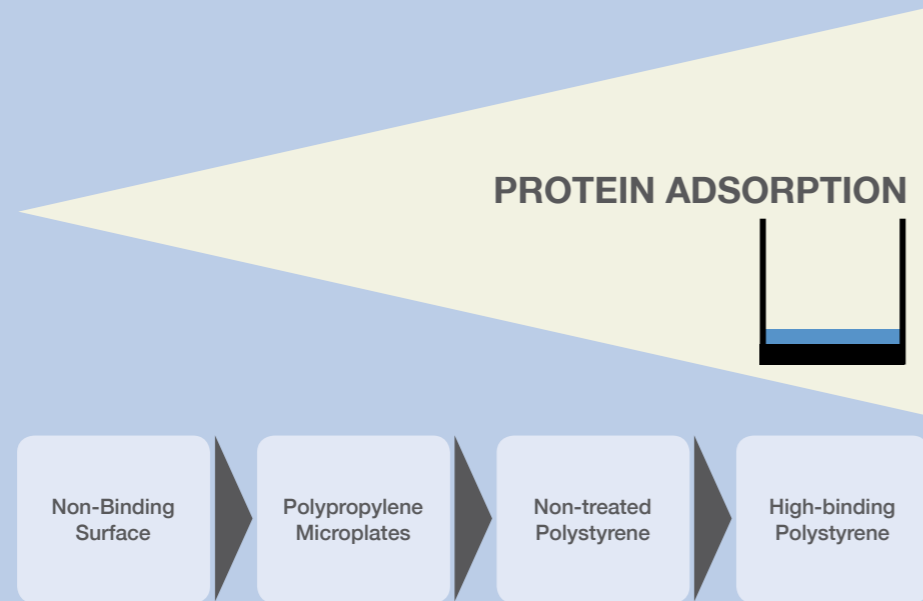
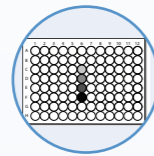


Figure 5: Trypan blue staining of a HEK spheroid grown on a 96 well polystyrene U-bottom microplate with cell-repellent surface

Surface Properties of Screening Microplates



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.

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.

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

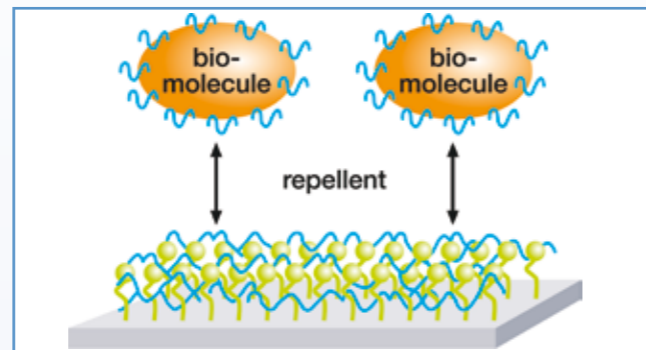


Figure 6: Technology of the non-binding surface. The hydrate layer, created by covalently linked functional groups, enables biomolecules to remain in solution, thereby preventing their binding to the surface.

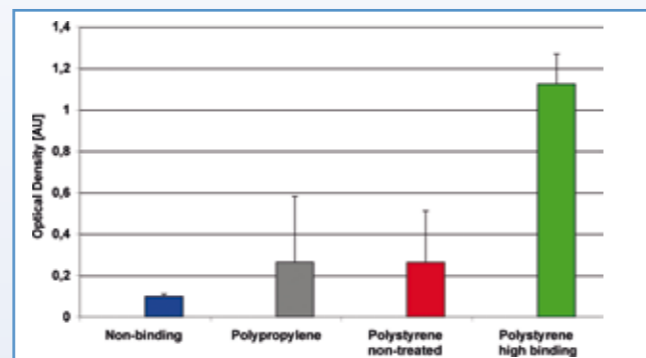


Figure 7: Peptide binding (5.8 kDa) on different surfaces

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.

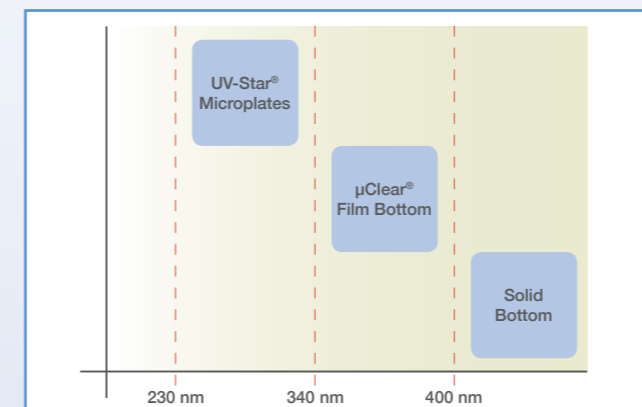
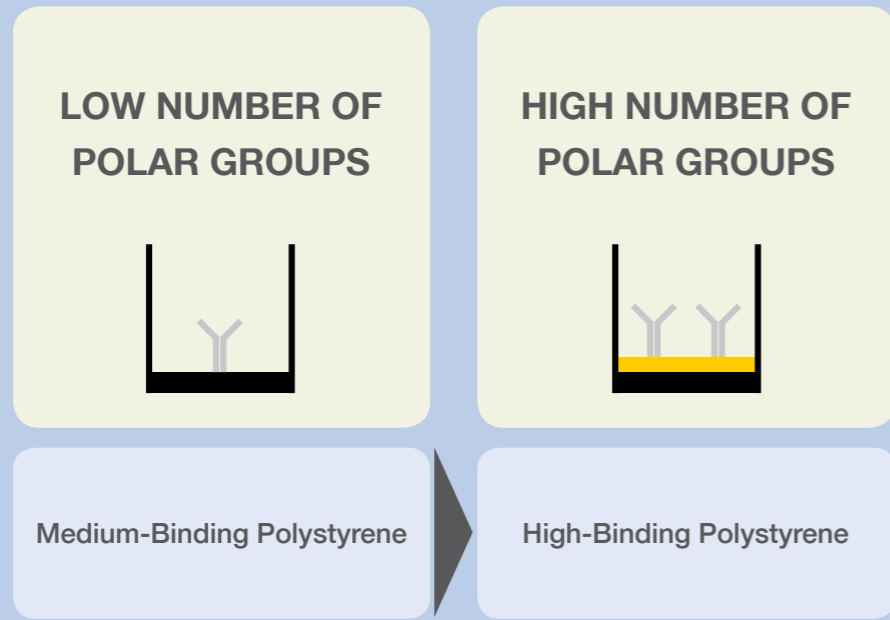


Figure 8: Suitability of microplate types with reference to the wavelength

Table 3: Screening applications & corresponding microplates

Application	Product	Description	Literature (→ p. 14-15)
UV Spectroscopy (230 - 340 nm)			
	UV-Star®	UV-transparent cycloolefin film bottom microplates	4, 18
Spectroscopic Measurements down to 340 nm (340 - 400 nm)			
	μClear®	Polystyrene film bottom microplates with pigmented frame	4, 18
Colorimetric Measurements (> 400 nm)			
		Polystyrene microplates without surface treatment	4, 18
Fluorescence Measurements			
• Top reading		Solid black or white microplates	18
• Bottom reading		Black μClear® microplates for bottom reading	1, 7, 11, 17, 20
Luminescence Measurements			
• Top reading		Solid white microplates	9, 18
• Bottom reading		White μClear® microplates for bottom reading	1, 18
Basic Biochemical Assays			
		Polystyrene microplates without surface treatment	4, 9
Sensitive Biochemical Assays			
Sensitive biochemical assays	Non-binding microplates	Chemical surface modification	

Surface Properties of Immunology Microplates



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*, physicochemical 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.

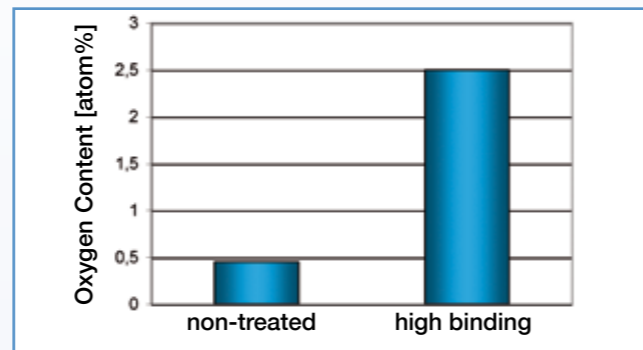


Figure 9: Oxygen content of untreated and high binding polystyrene surface determined by X-ray photoelectron spectroscopy

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.

For some applications, adsorptive binding to a physically modified polystyrene surface is not feasible. One alternative is to take advantage of the strong non-covalent interaction between streptavidin and biotin. Here, **streptavidin coated microplates** act as solid surface, upon which biotinylated biomolecules can be attached very effectively, enabling a robust tool for microplate binding assays.

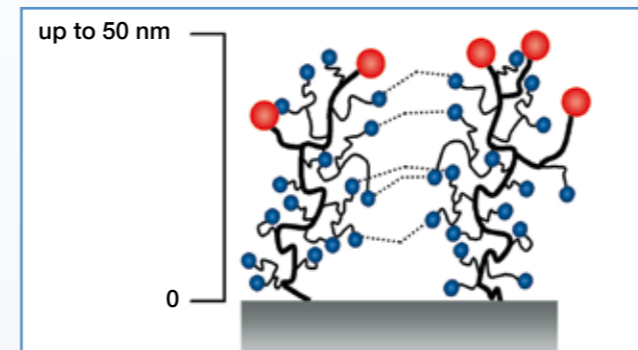


Figure 10: 3-dimensional functional matrix

Microplates with a functional 3-dimensional matrix as surface offer the possibility for **covalent binding** of biomolecules to the microplate surface. Coupling can take place in standard coating buffers and needs no additional steps. Due to the nature of the 3-dimensional functional matrix, non-specific background is very low, and, in comparison to physically treated microplates, the 3D matrix enhances signal intensity.

Table 4: Immunology applications & corresponding microplates

Application	Product	Description	Literature (→ p. 14-15)
ELISA*	MICROLON® 200 MICROLON® 600	Transparent microplates for immunological assays	4, 6, 8, 14, 18
FIA*	FLUOTRAC™ 200 FLUOTRAC™ 600	Black microplates for immunological assays	14, 18
LIA*	LUMITRAC™ 200 LUMITRAC™ 600	White microplates for immunological assays	14, 18
Binding of biotinylated molecules	Streptavidin-coated microplates	Streptavidin coating	
Covalent binding	3D functional matrix	3-dimensional matrix coating	

* 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 of 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.

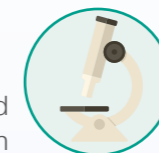
Cycloolefin combines many utile features: resistance to polar solvents like DMSO, high optical clarity and glass like optical properties, excellent water and vapour barrier functions to minimise evaporation, nearly no leaching extractables and low biomolecule binding.

Table 5: Storage applications & corresponding microplates

Application	Product	Description	Literature (→ p. 14-15)
Storage	MASTERBLOCK®	Polypropylene microplates	15, 22
Compound storage for acoustic liquid handling		PP / COP microplates for compound storage	21, 22

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	Literature (→ p. 14-15)
Microscopic applications (where accurate planarity is required)	SensoPlate™	Black frame, glass bottom	1, 17, 20
High magnification	SensoPlate™ Plus	Black frame, glass bottom, recessed rim	20
Fluorescence / luminescence applications in combination with bottom reading or microscopy	µClear®	Pigmented frame, transparent film bottom	1, 2, 3, 4, 5, 7, 17
High content screening / high resolution microscopy	SCREENSTAR	Cycloolefin film bottom microplates	17, 20
UV spectroscopy	UV-Star®	Cycloolefin film bottom with high transparency in the UV range	4

4. Literature about Microplates

This chapter gives you an overview of our publications, application notes and reports as well as our Greiner Bio-One Forum issues and brochures about microplates. All documents are published as pdf files on our website. Just search for the respective article number in the search function of the Download Center. You can also order a printed copy via e-mail to info@de.gbo.com.

4.1 Application Notes



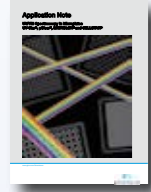
(1) F010003 Application Note:
Selection of cell culture surfaces for the adipogenic differentiation of human mesenchymal stem cells (hMSC)



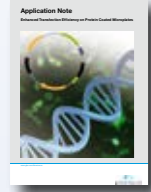
(2) F071105 Application Note:
siRNA dependent gene silencing in HeLa cells cultivated on various cell culture surfaces



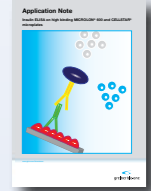
(3) F073022 Application Note:
Influence of washing steps on cell attachment: Comparison of PDL-coated and cell culture treated microplates



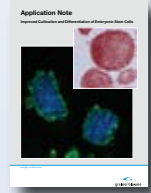
(4) F073041 Application Note:
UV/VIS spectroscopy in microplates UV-Star®, µClear®, MICROLON® and CELLSTAR®



(5) F073103 Application Note:
Enhanced transfection efficiency on protein coated microplates



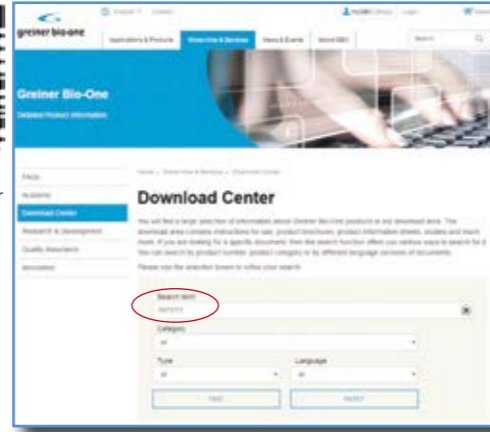
(6) F073106 Application Note:
Insulin ELISA on high binding MICROLON® 600 and CELLSTAR® microplates



(7) F073117 Application Note:
Improved cultivation and differentiation of embryonic stem cells



Link to our Download Center



(8) F073118 Application Note:
Influence of coating buffer and incubation conditions on ELISA performance



(9) F074058 Application Note:
Establishing a cell culture assay based on time-resolved fluorescence resonance energy transfer (TR-FRET) for screening G-Protein coupled receptors



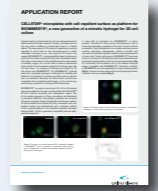
(10) F076036 Application Report:
Advanced TC™: A novel cell culture surface improving the cultivation and differentiation of embryonic stem cells



(11) F073113 Application Note:
Cultivation and differentiation of human adipose derived mesenchymal Stem Cells with CELLSTAR® and CELLCOAT® cell culture products



(12) F073792 Application Report:
Advantage of CELLSTAR® cell culture vessels with cell-repellent surface for 3-D cell culture in hydrogels



(13) F073797 Application Report:
CELLSTAR® microplates with cell-repellent surface as platform for BIOMIMESYS®, a new generation of a mimetic hydrogel for 3D cell culture



4.2 Greiner Bio-One Forum



(14) F073004 Forum No. 9:
Microplates for Enzyme Linked Immunosorbent Assays (ELISA)



(15) F073000 Forum No. 11:
A new 384 well storage plate reducing compound consumption and supporting assay miniaturisation



(16) F071104 Forum No. 12:
Advanced TC™: An innovative surface improving cellular assays



(17) F073120 Forum No. 15:
SCREENSTAR: A new 1536 well microplate for high content and high throughput screening



(18) F073121 Forum No. 16:
96 well half area microplates and their application in fluorescence, luminescence and transmission measurements



(19) F073777 Forum No. 17:
CELLSTAR® cell culture vessels with cell-repellent surface



(20) F073787 Forum No. 18:
SCREENSTAR and SensoPlate™ Plus: microplates for advanced microscopy



(21) F073795 Forum No. 20:
1536 well cycloolefin microplate for compound storage and acoustic liquid handling

4.3 Brochures



(22) F073917:
Intelligent solutions for sample storage



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.



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 all 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 GreinerBio-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.

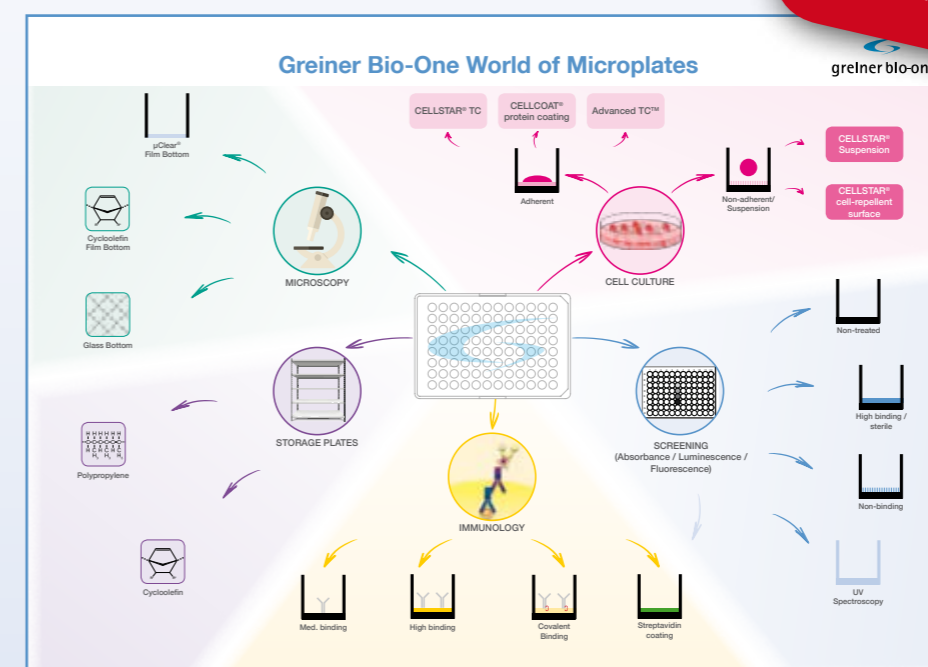
6. Microplate Ordering Information

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.

Remove the poster from this brochure as a microplate overview for your office or laboratory



Adherent Cell Culture



Advanced TC™

	REF	Colour			Bottom		Well Design ¹			Surface ²	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear® film	F/C	HA						
6	657960	•			•		•			AdTC	1/100	•	• ³	PS
12	665980	•			•		•			AdTC	1/100	•	• ³	PS
24	662960	•			•		•			AdTC	1/100	•	• ³	PS
48	677980	•			•		•			AdTC	1/100	•	• ³	PS
96 WELL	655980	•			•		•			AdTC	1/100	•	• ³	PS
	655982	•			•		•			AdTC	10/160	•	• ³	PS
	655986		•			•				AdTC	8/32	•	• ³	PS
	675986		•			•		•		AdTC	8/32	•	•	PS
	655983			•		•		•		AdTC	8/32	•	• ³	PS
675983			•		•		•		AdTC	8/32	•	•	PS	
384 WELL	REF	Colour			Bottom		Well Design ¹			Surface ²	Packing Size	Sterile	Lid	Material
	Clear	Black	White	Solid	µClear® film	F	SV	LoBase						
	781986		•			•	•			AdTC	8/32	•	•	PS
	788986		•			•		•		AdTC	15/60	•	• ⁴	PS
	781983			•		•	•			AdTC	8/32	•	•	PS
788983			•		•		•		AdTC	15/60	•	• ⁴	PS	

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

	REF	Colour			Bottom		Well Design ¹			Surface	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear® film	F/C	U	V					
6	657185	•			•		•			suspension	1/100	•	• ³	PS
12	665102	•			•		•			suspension	1/100	•	• ³	PS
24	662102	•			•		•			suspension	1/100	•	• ³	PS
48	677102	•			•		•			suspension	1/100	•	• ³	PS
96 WELL	REF	Colour			Bottom		Well Design ¹			Surface	Packing Size	Sterile	Lid	Material
	Clear	Black	White	Solid	µClear® film	F/C	U	V						
	650185	•			•			•			suspension	1/60	•	•
655185	•			•			•			suspension	1/60	•	• ³	PS

CELLSTAR® Cell-Repellent Surface

	REF	Colour			Bottom		Well Design ¹			Surface ²	Packing Size	Sterile	Lid	Material	
		Clear	Black	White	Solid	µClear® film	F	U	V						
6	657970	•			•		•			cell-rep.	1/5	•	• ³	PS	
24	662970	•			•		•			cell-rep.	1/5	•	• ³	PS	
48	677970	•			•		•			cell-rep.	1/5	•	• ³	PS	
96 WELL	REF	Colour			Bottom		Well Design ¹			Surface ²	Packing Size	Sterile	Lid	Material	
	Clear	Black	White	Solid	µClear® film	F/C	U	V							
	655970	•			•			•			cell-rep.	1/6	•	• ³	PS
	650970	•			•			•			cell-rep.	1/6	•	•	PS
	651970	•			•				•		cell-rep.	1/6	•	•	PS
655976		•			•		•			cell-rep.	8/32	•	• ³	PS	
655976-SIN		•			•		•			cell-rep.	1/32	•	• ³	PS	
384 WELL	REF	Colour			Bottom		Well Design ¹			Surface ²	Packing Size	Sterile	Lid	Material	
	Clear	Black	White	Solid	µClear®	F	U								
	781970	•			•			•			cell-rep.	1/60	•	•	PS
	781976		•			•		•			cell-rep.	8/32	•	•	PS
781976-SIN		•			•		•			cell-rep.	1/32	•	•	PS	
787979	•			•				•		cell-rep.	8/32	•	•	PS	

1) Explanation of different well designs and abbreviations on p. 30
 2) Cell-rep. = cell-repellent surface
 3) Lid with condensation rings

Non-treated

REF	Colour			Bottom		Well Design ¹					Surface	Packing Size	Sterile	Lid	Material
	Clear	Black	White	Solid	µClear®	F	F/C	HA	U	V					
Polystyrene microplates															
655101	•			•		•					non-treated	10/100			PS
655161	•			•		•					non-treated	2/100	•		PS
675101	•			•			•				non-treated	10/40			PS
675161	•			•			•				non-treated	10/40	•		PS
650101	•			•				•			non-treated	10/100			PS
650161	•			•				•			non-treated	2/100	•		PS
651101	•			•					•		non-treated	10/100			PS
651161	•			•					•		non-treated	2/100	•		PS
655076		•		•		•					non-treated	10/40			PS
675076		•		•			•				non-treated	10/40			PS
655096		•		•		•					non-treated	10/40			PS
675096		•		•			•				non-treated	10/40			PS
655075			•	•		•					non-treated	10/40			PS
675075			•	•			•				non-treated	10/40			PS
655095			•	•		•					non-treated	10/40			PS
675095			•	•			•				non-treated	10/40			PS
REF	Colour			Bottom		Well Design ¹			Surface	Packing Size	Sterile	Lid	Material		
	Natural	Black	White	Solid	µClear®	F/C	U/C	V/C							
Polypropylene microplates															
655201	•			•		•				non-treated	10/100			PP	
650201	•			•			•			non-treated	10/100			PP	
650261	•			•			•			non-treated	10/100	•		PP	
651201	•			•				•		non-treated	10/100			PP	
655209		•		•		•				non-treated	10/100			PP	
650209		•		•			•			non-treated	10/100			PP	
651209		•		•				•		non-treated	10/100			PP	
655207			•	•		•				non-treated	10/100			PP	
650207			•	•			•			non-treated	10/100			PP	

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

→ Further polypropylene microplates on p. 28.

Non-treated

REF	Colour			Bottom		Well Design ¹				Surface	Packing Size	Sterile	Lid	Material	
	Clear / Natural	Black	White	Solid	µClear®	F	V	SV Hi	SV Lo						
Polystyrene microplates															
781101	•			•		•				non-treated	10/100			PS	
781162	•			•		•				non-treated	10/100	•		PS	
781185	•			•		•				non-treated	1/32	•	•	PS	
781186	•			•		•				non-treated	8/32	•	•	PS	
784101	•			•			•			non-treated	10/40			PS	
788101	•			•				•		non-treated	10/80			PS	
788161	•			•				•		non-treated	10/80	•		PS	
781076		•		•		•				non-treated	10/40			PS	
784076		•		•			•			non-treated	10/40			PS	
784076-25		•		•			•			non-treated	25/150			PS	
788076		•		•				•		non-treated	10/80			PS	
781096		•		•		•				non-treated	10/40			PS	
788096		•		•				•		non-treated	10/80			PS	
781075			•	•		•				non-treated	10/40			PS	
781095			•	•		•				non-treated	10/40			PS	
784075			•	•			•			non-treated	10/40			PS	
784075-25			•	•			•			non-treated	25/150			PS	
788075			•	•				•		non-treated	10/80			PS	
788095			•	•		•			•	non-treated	10/80			PS	
Polypropylene microplates															
781201	•			•		•				non-treated	10/100			PP	
781280	•			•			•			non-treated	10/100			PP	
781209		•		•		•				non-treated	10/100			PP	
781289		•		•			•			non-treated	10/100			PP	
781207			•	•		•				non-treated	10/100			PP	
781287			•	•			•			non-treated	10/100			PP	
REF	Clear / Natural	Black	White	Solid	µClear®	F	F	V		Surface	Packing Size	Sterile	Lid	Material	
						Hi	Lo	DW							
Polystyrene microplates															
782101	•			•		•				non-treated	15/60			PS	
783101	•			•			•			non-treated	15/60			PS	
782076		•		•		•				non-treated	15/60			PS	
783076		•		•			•			non-treated	15/60			PS	
782096		•		•		•				non-treated	15/60			PS	
783096		•		•			•			non-treated	15/60			PS	
782075			•	•		•				non-treated	15/60			PS	
783075			•	•			•			non-treated	15/60			PS	
782095			•	•		•				non-treated	15/60			PS	
Polypropylene microplates															
782270	•			•				•		non-treated	15/60			PP	
782261	•			•				•		non-treated	15/60	•		PP	

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

→ Further polypropylene microplates on p. 28.

High binding / sterile

96 WELL	REF	Colour			Bottom		Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear®	F/C	HA					
	655077	•			•		•		high binding	10/40	•		PS
	675077	•			•			•	high binding	10/40	•		PS
	655097	•				•	•		high binding	10/40	•		PS
	655074		•		•		•		high binding	10/40	•		PS
	675074		•		•			•	high binding	10/40	•		PS
	655094		•		•		•		high binding	10/40	•		PS

384 Well	REF	Colour			Bottom		Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear®	F						
	781061	•			•		•		high binding	10/40	•		PS
	781077		•		•		•		high binding	10/40	•		PS
	781097		•			•	•		high binding	10/40	•		PS
	781074			•	•		•		high binding	10/40	•		PS
	781094			•		•	•		high binding	10/40	•		PS

1536 WELL	REF	Colour			Bottom		Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear®	F	Hi					
	782061	•			•		•		high binding	15/60	•		PS
	782077		•		•		•		high binding	15/60	•		PS
	782097		•			•	•		high binding	15/60	•		PS
	782074			•	•		•		high binding	15/60	•		PS
	782094			•		•	•		high binding	15/60	•		PS

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

Non-binding

96 WELL	REF	Colour			Bottom		Well Design ¹			Surface	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear®	F/C	U	V					
	655901	•			•		•			non-binding	10/40			PS
	650901	•			•			•		non-binding	10/40			PS
	651901	•			•				•	non-binding	10/40			PS
	655900		•		•		•			non-binding	10/40			PS
	655906		•			•	•			non-binding	10/40			PS
	655904			•	•		•			non-binding	10/40			PS
	655903			•		•	•			non-binding	10/40			PS

384 WELL	REF	Colour			Bottom		Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear®	F	SV Hi					
	781901	•			•		•		non-binding	10/40			PS
	781900		•		•		•		non-binding	10/40			PS
	784900		•		•			•	non-binding	10/40			PS
	781906		•			•	•		non-binding	10/40			PS
	781904			•	•		•		non-binding	10/40			PS
	784904			•	•			•	non-binding	10/40			PS
	781903			•		•	•		non-binding	10/40			PS

1536 WELL	REF	Colour			Bottom		Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
		Clear	Black	White	Solid	µClear®	F	Hi					
	782900		•		•		•		non-binding	15/60			PS
	782904			•	•		•		non-binding	15/60			PS

UV Spectroscopy (UV-Star®)

96 WELL	REF	Colour			Bottom		Well Design ¹		Surface	Packing Size	Sterile	Lid	Material ²
		Clear	Black	White	Solid	Film	F/C	HA					
	655801	•				•	•			10/40			COC
	675801	•				•		•		10/40			COC

384 WELL	REF	Colour			Bottom		Well Design ¹		Surface	Packing Size	Sterile	Lid	Material ²
		Clear	Black	White	Solid	Film	F	SV					
	781801	•				•	•			10/40			COC
	788876		•			•		•		10/80			COC

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

2) COC = Cycloolefin co-polymer

Medium binding



REF	Colour			Well Design ²						Surface ³	Packing Size	Lid	Material	
	Clear	Black	White	F	F/C	HA	U	V	C					
Standard ELISA Microplates														
655001	•			•							med. bind	10/40		PS
655080	•				•						med. bind	10/40		PS
675001	•					•					med. bind	10/40		PS
650001	•						•				med. bind	10/40		PS
651001	•							•			med. bind	10/40		PS
F8 / U8 Strip Plates														
762070	•			•							med. bind	10/100		PS
767070	•						•				med. bind	10/100		PS
762076		•		•							med. bind	10/100		PS
762075			•	•							med. bind	10/100		PS
C8 Single-Break Strip Plates														
705070	•									•	med. bind	10/100		PS
705063	• ¹									•	med. bind	10/100		PS
705065	• ¹									•	med. bind	10/100		PS
705066	• ¹									•	med. bind	10/100		PS
F16 / U16 Strip Plates														
756070	•			•							med. bind	10/100		PS
754070	•						•				med. bind	10/100		PS

High binding



REF	Colour			Well Design ²						Surface ³	Packing Size	Lid	Material	
	Clear	Black	White	F	F/C	HA	U	V	C					
Standard ELISA Microplates														
655061	•			•							high bind	10/40		PS
655081	•				•						high bind	10/40		PS
675061	•					•					high bind	10/40		PS
650061	•						•				high bind	10/40		PS
651061	•							•			high bind	10/40		PS
F8 / U8 Strip Plates														
762071	•			•							high bind	10/100		PS
767071	•						•				high bind	10/100		PS
762077		•		•							high bind	10/100		PS
762074			•	•							high bind	10/100		PS
C8 Single-Break Strip Plates														
705071	•									•	high bind	10/100		PS
705073	• ¹									•	high bind	10/100		PS
705074	• ¹									•	high bind	10/100		PS
705075	• ¹									•	high bind	10/100		PS
705076	• ¹									•	high bind	10/100		PS
F16 / U16 Strip Plates														
756071	•			•							high bind	10/100		PS
754061	•						•				high bind	10/100		PS

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

→ **Non-treated** microplates and further **high binding** microplates on p. 22-24.

Streptavidin Coating



REF	Colour			Bottom Solid	Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
	Clear	Black	White		C bottom	F bottom					
655990	•			•		•	Streptavidin	5/40			PS
655997		•		•		•	Streptavidin	5/40			PS
655995			•	•		•	Streptavidin	5/40			PS

REF	Colour			Bottom Solid	Well Design ¹		Surface ²	Packing Size	Sterile	Lid	Material
	Clear	Black	White		F bottom	C bottom					
781990	•			•		•	Streptavidin	5/40			PS
781997		•		•		•	Streptavidin	5/40			PS
781995			•	•		•	Streptavidin	5/40			PS

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

Covalent binding



Microplates with a **covalent binding** surface can be ordered on request. Please contact your sales representative for more information.

Polypropylene microplates



96 WELL	REF	Colour		Bottom Solid	Well Design ¹			Description	Packing Size	Sterile	Lid	Material	
		Natural	Black		White	F/C	U/C						V/C
	655201	•		•	•				10/100			PP	
	650201	•		•		•			10/100			PP	
	650261	•		•		•			10/100	•		PP	
	651201	•		•					10/100			PP	
	655209		•	•	•				10/100			PP	
	650209		•	•		•			10/100			PP	
	651209		•	•					10/100			PP	
	655207			•	•				10/100			PP	
	650207			•		•			10/100			PP	
Polypropylene MASTERBLOCK®													
96 WELL	REF	Colour		Bottom Solid	Well Design ¹		Volume	Packing Size	Sterile	Lid	Material		
		Natural	Black		White	U						V	
	786201	•		•		•	0.5 ml	8/80			PP		
	786261	•		•		•	0.5 ml	1/80	•		PP		
	780201	•		•	•		1 ml	1/50			PP		
	780215	•		•	•		1 ml	5/50			PP		
	780261	•		•	•		1 ml	1/50	•		PP		
	780270	•		•		•	2 ml	1/50			PP		
	780285	•		•		•	2 ml	5/50			PP		
	780271	•		•		•	2 ml	1/50	•		PP		
384 WELL	REF	Colour		Bottom Solid	Well Design ¹				Description	Packing Size	Sterile	Lid	Material
		Natural	Black		White	F	V	SV					
		781201	•		•	•					10/100		PP
		781201-906	•		•	•				for ac. liquid handl.	10/100		PP
		781280	•		•		•				10/100		PP
		784201	•		•			•			10/100		PP
		781270	•		•				•	MASTERBLOCK®	6/60		PP
		781271	•		•				•	MASTERBLOCK®	6/60	•	PP
		781209		•	•	•					10/100		PP
		781289		•	•		•				10/100		PP
	781207			•	•					10/100		PP	
	781287			•	•					10/100		PP	
1536 WELL	REF	Colour		Bottom Solid	Well Design ¹		Description	Packing Size	Sterile	Lid	Material		
		Natural	Black		White	DW						V	
		782270	•		•		•		15/60			PP	
	782261	•		•		•		15/60	•		PP		

Cycloolefin microplates (for acoustic liquid handling)



384 WELL	REF	Colour		Bottom Solid	Well Design ¹		Description	Packing Size	Sterile	Lid	Material
		Clear	Black		White	SV					
	793855	•		•		•		15/60			COC
1536 WELL	REF	Colour		Bottom Solid	Well Design ¹		Description	Packing Size	Sterile	Lid	Material
		Clear	Black		White	F					
		782855	•		•		•		15/60		
	792870-906	•		•		•		15/60			COP

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

Glass bottom microplates (SensoPlate™ / SensoPlate™ Plus)



96 WELL	REF	Colour		Bottom Solid	Glass	Well Design ¹			Surface / Description ²	Packing Size	Sterile	Lid	Material	
		Clear	Black			White	F	F/C						
	662892	•		•		•				1/12	•	•	PS	
	655892	•		•		•				1/16	•	•	PS	
	655891	•		•				•	TC, SP+	1/16	•	•	PS	
384 WELL	REF	Colour		Bottom Solid	Glass	Well Design			Surface / Description ²	Packing Size	Sterile	Lid	Material	
		Clear	Black			White	F	SV						F
		781892	•		•		•				1/16	•	•	PS
		781856	•		•				•	SP+	1/16			PS
	788896	•		•				•		1/16	•		PS	
1536 WELL	REF	Colour		Bottom Solid	Glass	Well Design			Surface / Description ²	Packing Size	Sterile	Lid	Material	
		Clear	Black			White	F	F						F
		782892	•		•		•				1/16	•	•	PS
		783892	•		•				•		1/16	•	•	PS
	783856	•		•				•	SP+	4/16			PS	

Cycloolefin film bottom microplates (SCREENSTAR)



96 WELL	REF	Colour		Bottom Solid	CO Film	Well Design ¹		Surface ²	Packing Size	Sterile	Lid	Material
		Clear	Black			White	F/C					
	655866	•		•		•		TC	1/16	•	•	COP
384 WELL	REF	Colour		Bottom Solid	CO Film	Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
		Clear	Black			White	F					
	789836	•		•		•		TC	10/40	•	• ³	COP
1536 WELL	REF	Colour		Bottom Solid	CO Film	Well Design ¹		Surface	Packing Size	Sterile	Lid	Material
		Clear	Black			White	F					
	789866	•		•		•		TC	17/68	•		COP

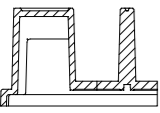
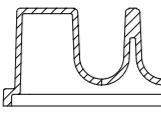
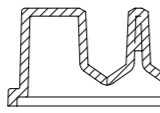
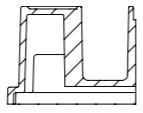
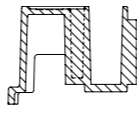
1) Explanation of different well designs and abbreviations on p. 30
 xtra Lo = extra LoBase
 2) TC = Tissue culture treatment; SP+ = SensoPlate™ Plus
 3) Ultra low profile lid


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.

Well Designs of Greiner Bio-One Microplates

96 Well Microplates

F  F-Bottom	U  U-Bottom	V  V-Bottom	C  C-Bottom	HA  Half Area
<p>For precise optical measurements and microscopic applications (bottom reading)</p>	<p>For easy and residue-free pipetting</p>	<p>For precise pipetting and sample storage</p>	<p>Flat-bottom profile with rounded corners For residue-free pipetting and precise optical measurements</p>	<p>An alternative to the use of high-format microplates due to a reduction of the sample volume of up to 50 %</p>

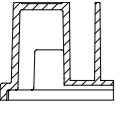
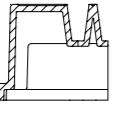
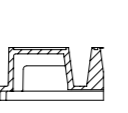


*** / C**

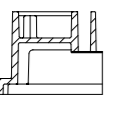
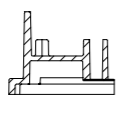
Chimney Well

The standard microplate well has the same profile as the chimney well. The difference from the standard plate is the chimney-like arrangement of the wells. Each well stands on its own. Therefore the risk of sample carryover and cross contamination is minimised.

384 Well Microplates

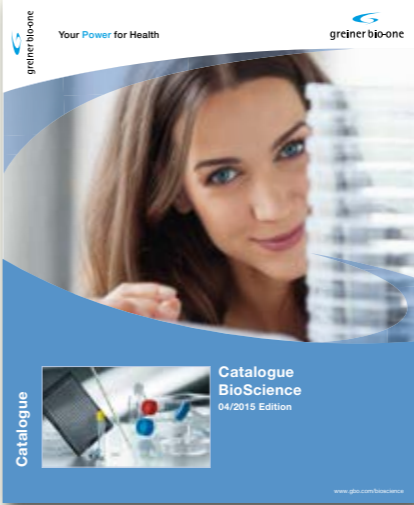
F  F-Bottom	SV Hi  Small Volume™ HiBase	SV Lo  Small Volume™ LoBase
<ul style="list-style-type: none"> • For top reading even at low working volumes • Savings in reagents similar to 1536 well microplates • For transmission/fluorescence/luminescence applications • Excellent optical properties 	<ul style="list-style-type: none"> • For bottom reading even at low working volumes • Savings in reagents similar to 1536 well microplates • For transmission/fluorescence/luminescence applications • Excellent optical properties 	<ul style="list-style-type: none"> • For bottom reading even at low working volumes • Savings in reagents similar to 1536 well microplates • For transmission/fluorescence/luminescence applications • Excellent optical properties

1536 Well Microplates

F Hi  F-Bottom HiBase	F Lo  F-Bottom LoBase
<ul style="list-style-type: none"> • For top reading even at low working volumes • For transmission/fluorescence/luminescence applications • Excellent optical properties 	<ul style="list-style-type: none"> • For bottom reading even at low working volumes • For transmission/fluorescence/luminescence applications • Excellent optical properties

Notes

INFORMATION




Interested in details?

For further information about microplates, well geometries and dimensions, please refer to our **BioScience product catalogue** (chapters 1-3).

Customer drawings and datasheets of each microplate can be downloaded as pdf files from our website www.gbo.com.

Just enter the respective article number into the search function of the website or browse in your desired product category.





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