

# Vision Plates

Vision Plates™ are our best plates for your most advanced applications. When visualising fluorescent signals from anything between a single molecule to a whole cell, Vision Plates™ will give accurate and consistent results.

Suitable for cell based high content screening, confocal microscopy, FRET and homogeneous assays, results show an optimum signal to noise ratio and a high consistency essential for automated high throughput.

Using state-of-the-art manufacturing technology 4titude® have developed a product which offers key advantages to the end user.

## Laser Welding Technology

4titude's® Vision Plates™ are assembled using unique patented laser welding technology. The use of localised welding heat dramatically reduces base film distortion during production. This improves base flatness, which in turn reduces instrument auto-focusing time.

## Optical Quality of the Polymer Film

The clear base component of our Vision Plate™ demonstrates superior properties in terms of optical clarity (low absorbance and high transmission), low background fluorescence and consistency of material thickness.

The latest extrusion technology is used for manufacturing an ultra-clear base of 190µm thick, to provide optimum results with confocal microscopy and laser based detection systems.

Variation across the plate is minimised so the time required for complex screening applications can be reduced dramatically. In addition, cell plate types are available with a 700µm moulded base. This feature further improves the plate flatness and is critical for certain confocal readers, such as the IN Cell 3000.



## Benefits:

- Optimum signal-to-noise ratios
- Reduced autofluorescence
- Standard or 700µm polystyrene base options
- Good cell adhesion
- Cyto-toxic free
- Leak free
- SBS format
- Barcoding options available
- Wicking and bubble formation eliminated
- Compatible sealing options
- Also suitable for homogeneous assays

### Reduction of Autofluorescence

4titude's® Vision Plates™ are assembled using unique patented laser welding technology which reduces autofluorescence and does not inhibit cell growth. Other manufacturers assemble clear base microplates by gluing a clear film to the frame or heat-welding the components together. Both techniques can cause problems with cell growth and the subsequent microscopic or fluorometric analysis.

Heat welding of the two plate components under high pressure results in autofluorescence at the well edges, called "halo effect". Gluing uses organic solvents within the adhesives, which can also cause autofluorescence. These solvents can also have cytotoxic effects, which may lead to inhibition of cell growth or even cell death. Additionally, incomplete glue lines or weld lines often result in well-to-well leakage.

### Autofluorescence Intensity

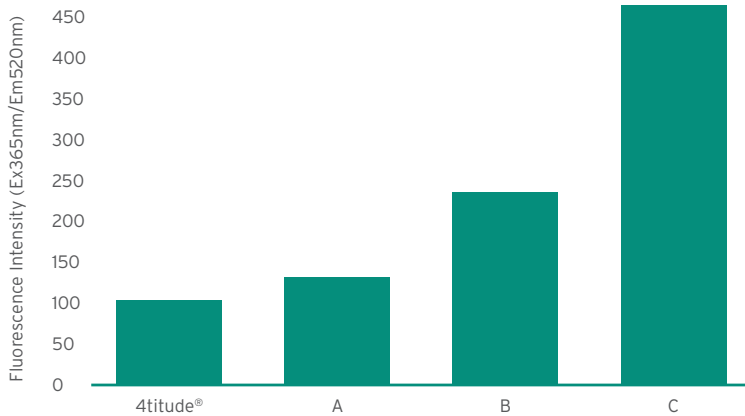


Figure 1: Graph to show the intensity of autofluorescence of 4titude's® Vision Plate™ compared to leading brand competitors A, B & C

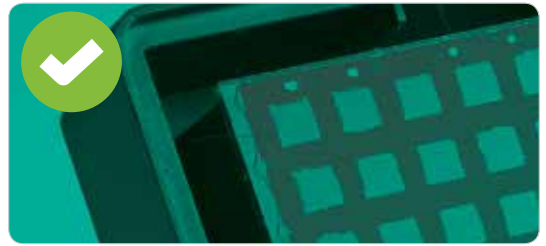


Figure 2: Vision Plate™ 384 showing ripple-free bonding of frame and base



Figure 3: Competitor's plate showing areas with no adhesive

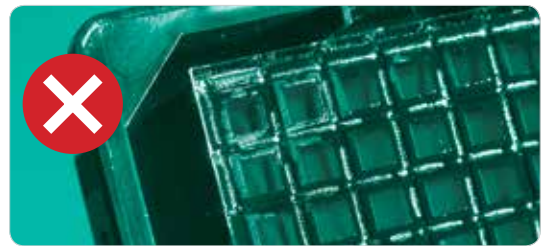


Figure 4: Competitor's plate showing adhesive ingressing into plate wells

With optimum signal-to-noise ratios and good cell adherence, Vision Plates™ are designed for high content screening and are ideal for homogenous assays.

## Improved Cell Adhesion

Polymers, such as polystyrene are very hydrophobic and need to be surface treated to increase wettability and to allow for cell adhesion. To introduce the necessary charges to the plastic surface, screening plates are commonly undergoing corona treatment or similar low cost modifications. The drawbacks of such treatments are they are partly reversible and the density of the charges varies across the surface area, resulting in uneven cell growth and a short shelf-life of the products.

4titude® uses a unique low pressure plasma process for treating the plastic surface which produces a more consistent and stable surface. The treatment has been especially designed to improve cell adhesion under difficult conditions (e.g. reduced serum conditions). It is also useful for growing cells with low adhesion properties such as transfected cells overexpressing proteins.

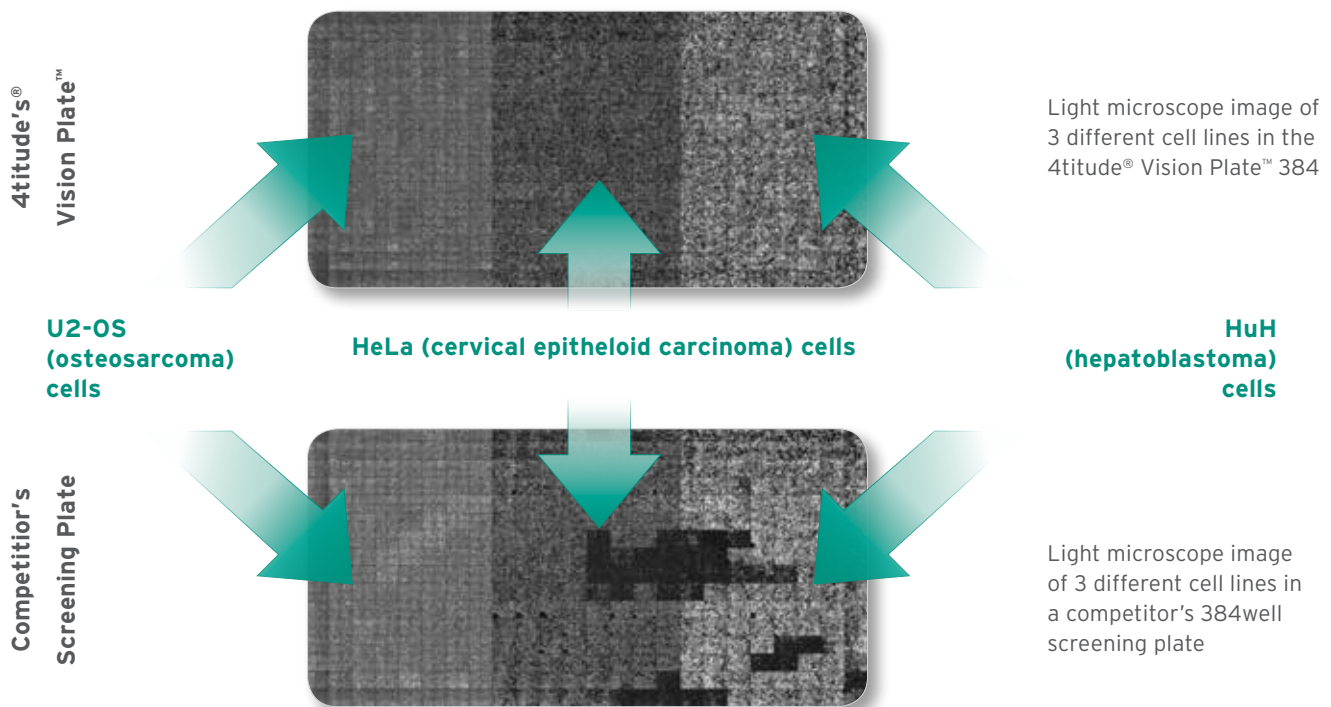
4titude® offers coatings with Collagen 1 and Poly D-Lysin.

## Collagen 1

Collagen 1 is a protein of the extracellular matrix (ECM), an intercellular substance which, in vivo, influences adhesion, migration and proliferation among other processes. Collagen 1 is one of the most important ECM proteins for in vitro cell cultures. Difficult to cultivate cells adhere to Collagen 1 and display positive growth. Collagen 1 can also influence differentiation and morphology.

## Poly-D-Lysin

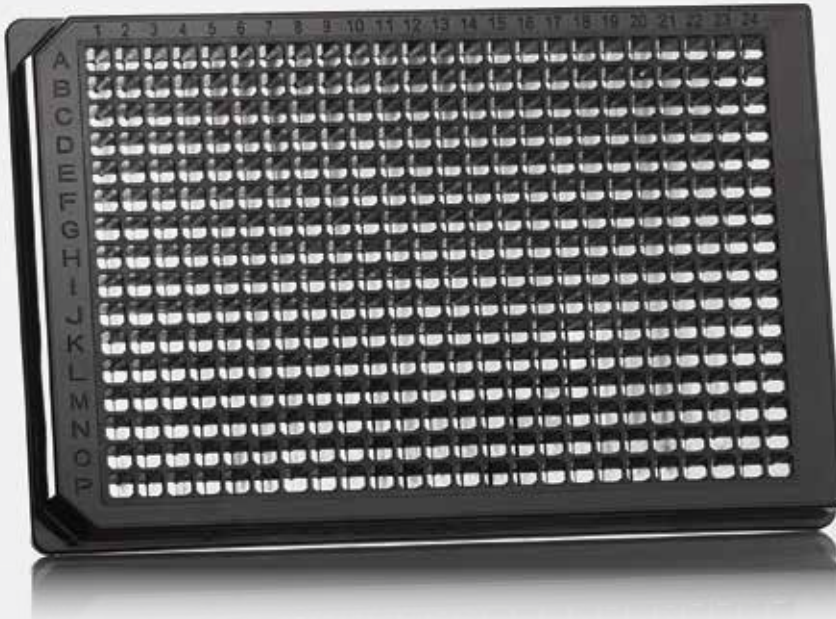
Poly-D-Lysin is a synthetic molecule that improves the adhesion of different cell types to polystyrene surfaces. It can improve cultivation efficiency of individual cell lines, especially when serum-free or serum-reduced medium is used, or when experiments such as transfections are performed.



2000 cells were seeded in each well and incubated for 48 hours to achieve 90% confluency. They were then fixed in PFA and stained with Hoechst nuclear stain, followed by 5 wash steps in a PW384. U2-OS cells stayed adherent in both plates, but the more sensitive HeLa and HuH cells only stayed adherent in all areas of the 4titude® Vision Plate™.

Figures 5: Comparison showing the cell adherence of the 4titude® Vision Plate™ (top) versus a competitor's (bottom)

# UltraVision™ Plates in 384well and 96well format



UltraVision™ plates consist of a frame and a special ultraclear base with improved transmission at low wavelengths (see graph below).

The ultraclear base allows DNA measurements at 260/280nm wavelengths in a medium or high throughput.

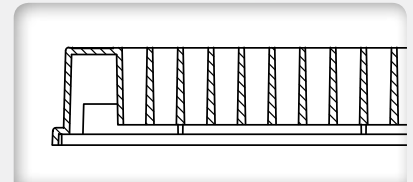
The plates fit most microplate readers and can be handled easily by robotic systems.

		4ti-0214
	Plate width:	127.76 ± 0.25 mm
	Plate depth:	85.48 ± 0.25 mm
	Plate height (a):	14.35 ± 0.25 mm
	Well depth (b):	11.35 ± 0.25 mm
	Well diameter (c):	3.70 ± 0.10 mm
	Distance to centre of A1 from top edge:	8.99 ± 0.25 mm
	Distance to centre of A1 from left edge:	12.13 ± 0.25 mm
	Pitch (distance between A1 and A2):	4.50 mm

Code	Description	Quantity
4ti-0214	UltraVision Plate™ 384, non-sterile, UV base	30 plates
4ti-0234	UltraVision Plate™ 96, non-sterile, UV base	30 plates
4ti-0280	384well Assay Plate lid, low profile	100 lids
4ti-0284	96well Assay Plate lid, low profile	100 lids

### Barcode ordering codes

Please add to ordering code /SBC for Standard Single Barcoding or /DBC for Standard Double Barcoding. (See page 54 for more details)



### Colour options

Black (384well), clear (96well)

### Other options

- Available barcoded



**WORKING = 120µl**  
**4ti-0214**

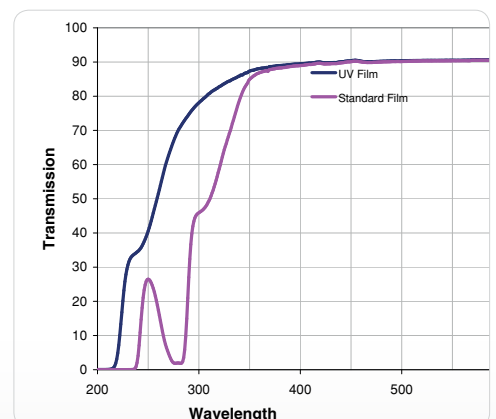


**WORKING = 350µl**  
**4ti-0234**

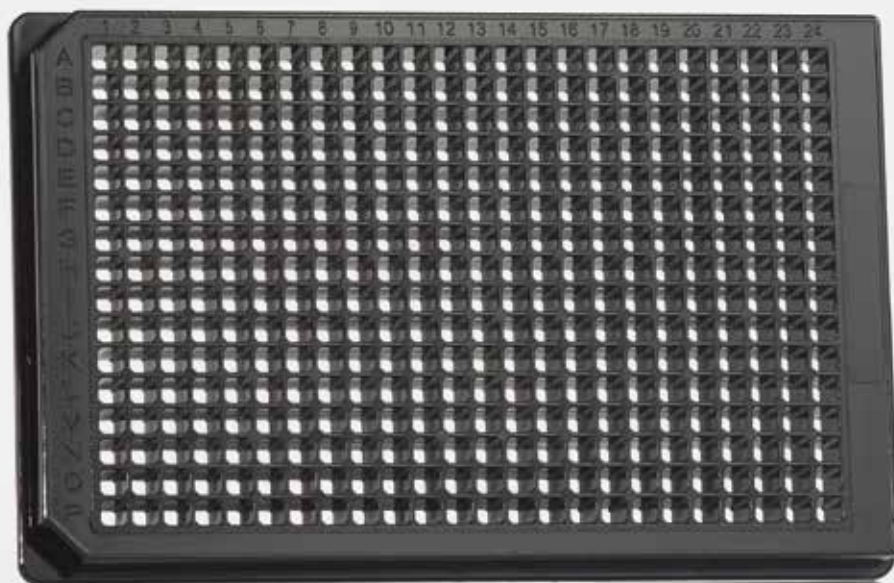
- Ultraclear base improves transmission for low wavelengths
- Peel-back film on the base for scratch free surface (384well plate)
- Optimum signal-to-noise ratios
- Alphanumeric grid reference
- Low profile lid available
- Suitable for adhesive and heat sealing
- Free from DNase, RNase and human genomic DNA



### Also see

- HEAT SEALING (PAGE 66-73)
- 4S3 HEAT SEALER (PAGE 64-65)
- ADHESIVE SEALING (PAGE 76-83)
- BARCODING (PAGE 54)



# Vision Plate™ 384



**Other options**

- Available barcoded

The Vision Plate™ assures the necessary accuracy and consistency for automated high throughput systems, generating optimum signal-to-noise ratios. Vision Plates™ are assembled using unique patented laser welding technology that reduces autofluorescence and does not inhibit cell growth. Available with standard 190µm or 700µm clear base, which is suitable for use with IN Cell 3000 analysers.

	Plate width:	127.76 ± 0.25 mm
	Plate depth:	85.48 ± 0.25 mm
	Plate height (a):	14.35 ± 0.25 mm
	Well depth (b):	11.35 ± 0.25 mm
	Well diameter (c):	3.70 ± 0.10 mm
	Distance to centre of A1 from top edge:	8.99 ± 0.25 mm
	Distance to centre of A1 from left edge:	12.13 ± 0.25 mm
	Pitch (distance between A1 and A2):	4.50 mm

Code	Description	Plates/Case
4ti-0201*	Vision Plate™ 384, sterile, TC treated	24 plates with lids
4ti-0202*	Vision Plate™ 384, sterile, TC treated	30 plates
4ti-0203*	Vision Plate™ 384, sterile	30 plates
4ti-0204*	Vision Plate™ 384, non-sterile, untreated	30 plates
4ti-0205	Vision Plate™ 384, Collagen 1 treated, sterile	100 plates
4ti-0206	Vision Plate™ 384, Poly-D-Lysin treated, sterile	100 plates
4ti-0280	Vision Plate™ lid, low profile, no condensation rings, non-sterile	100 lids

\*700µm ultra-clear base ordering code  
Add "/700" to the code to order 700µm base version. e.g. 4ti-0201/700

### Barcode ordering codes

Please add to ordering code /SBC for Standard Single Barcoding or /DBC for Standard Double Barcoding. (See page 54 for more details)

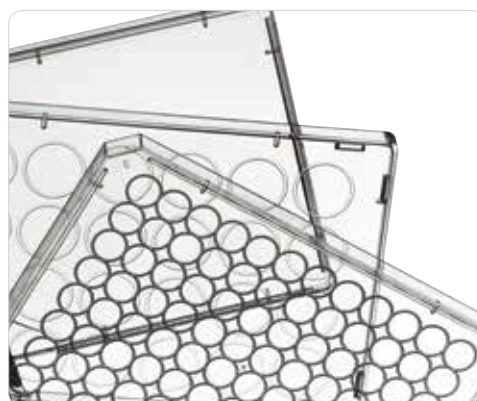
### For instrument compatibility

See our website [www.4ti.co.uk/technical](http://www.4ti.co.uk/technical)

- 190µm or 700µm clear base
- Treated options: Poly-D-Lysin, Collagen 1 or TC
- Good cell adherence
- Alphanumeric grid reference
- Optimum signal-to-noise ratios
- Low profile lid available
- Suitable for adhesive and heat sealing
- RNase, DNase, Human Genomic DNA Free

### Also see

- HEAT SEALING (PAGE 66-73)
- 4S3 HEAT SEALER (PAGE 64-65)
- ADHESIVE SEALING (PAGE 76-83)
- BARCODING (PAGE 54)



# Vision Plate™ 96



**Other options**

- Available barcoded

The Vision Plate™ assures the necessary accuracy and consistency for automated high throughput systems, generating optimum signal-to-noise ratios. Vision Plates™ are assembled using unique patented laser welding technology that reduces autofluorescence and does not inhibit cell growth. Available with standard 190µm or 700µm clear base, which is suitable for use with IN Cell 3000 analysers.

	Plate width:	127.76 ± 0.25 mm
	Plate depth:	85.48 ± 0.25 mm
	Plate height (a):	14.35 ± 0.25 mm
	Well depth (b):	10.8 ± 0.25 mm
	Well diameter (c):	6.3 ± 0.10 mm
	Distance to centre of A1 from top edge:	11.24 ± 0.25 mm
	Distance to centre of A1 from left edge:	14.38 ± 0.25 mm
	Pitch (distance between A1 and A2):	9.0 mm

Code	Description	Plates/Case
4ti-0221*	Vision Plate™ 96, sterile, TC treated	24 plates with lids
4ti-0222*	Vision Plate™ 96, sterile, TC treated	30 plates
4ti-0223*	Vision Plate™ 96, sterile	30 plates
4ti-0224*	Vision Plate™ 96, non-sterile, untreated	30 plates
4ti-0225	Vision Plate™ 96, Collagen 1 treated, sterile	24 plates with lids
4ti-0226	Vision Plate™ 96, Poly-D-Lysin treated, sterile	24 plates with lids
4ti-0282	Vision Plate™ lid, low profile, 96 condensation rings, non-sterile	45 lids

\*700µm ultra-clear base ordering code  
Add "/700" to the code to order 700µm base version. e.g. 4ti-0221/700

### Barcode ordering codes

Please add to ordering code /SBC for Standard Single Barcoding or /DBC for Standard Double Barcoding. (See page 54 for more details)

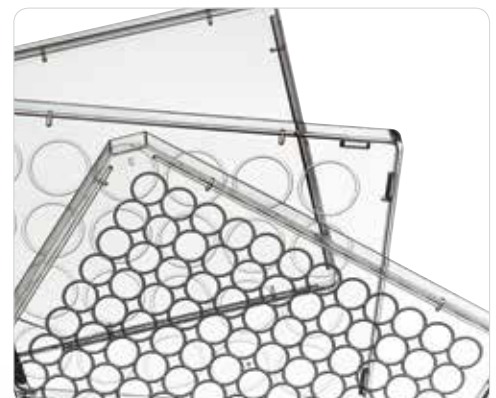
### For instrument compatibility

See our website [www.4ti.co.uk/technical](http://www.4ti.co.uk/technical)

- 190µm or 700µm clear base
- Treated options: Poly-D-Lysin, Collagen 1 or TC
- Good cell adherence
- Alphanumeric grid reference
- Optimum signal-to-noise ratios
- Low profile lid available
- Suitable for adhesive and heat sealing
- RNase, DNase, Human Genomic DNA Free

### Also see

- HEAT SEALING (PAGE 66-73)
- 4S3 HEAT SEALER (PAGE 64-65)
- ADHESIVE SEALING (PAGE 76-83)
- BARCODING (PAGE 54)



# Vision Plate™ 24



The Vision Plate™ assures the necessary accuracy and consistency for automated high throughput systems, generating optimum signal-to-noise ratios. Vision Plates™ are assembled using unique patented laser welding technology that reduces autofluorescence and does not inhibit cell growth. Available with standard 190µm or 700µm clear base, which is suitable for use with IN Cell 3000 analysers.

	Plate width:	127.76 ± 0.25 mm
	Plate depth:	85.48 ± 0.25 mm
	Plate height (a):	15.0 ± 0.25 mm
	Well depth (b):	12.5 ± 0.25 mm
	Well diameter (c):	14.5 ± 0.10 mm
	Distance to centre of A1 from top edge:	15.74 ± 0.25 mm
	Distance to centre of A1 from left edge:	18.88 ± 0.25 mm
	Pitch (distance between A1 and A2):	18.0 mm

Code	Description	Plates/Case
4ti-0241*	Vision Plate™ 24, sterile, TC treated	24 plates with lids
4ti-0242*	Vision Plate™ 24, sterile, TC treated	30 plates
4ti-0243*	Vision Plate™ 24, sterile	30 plates
4ti-0244*	Vision Plate™ 24, non-sterile, untreated	30 plates
4ti-0245	Vision Plate™ 24, Collagen 1 treated, sterile	24 plates with lids
4ti-0246	Vision Plate™ 24, Poly D-Lysin treated, sterile	24 plates with lids
4ti-0282	Vision Plate™ lid, low profile, 96 condensation rings, non-sterile	45 lids

\*700µm ultra-clear base ordering code  
Add "/700" to the code to order 700µm base version. e.g. 4ti-0221/700

### Barcode ordering codes

Please add to ordering code /SBC for Standard Single Barcoding or /DBC for Standard Double Barcoding. (See page 54 for more details)

### For instrument compatibility

See our website [www.4ti.co.uk/technical](http://www.4ti.co.uk/technical)

**Other options**

- Available barcoded

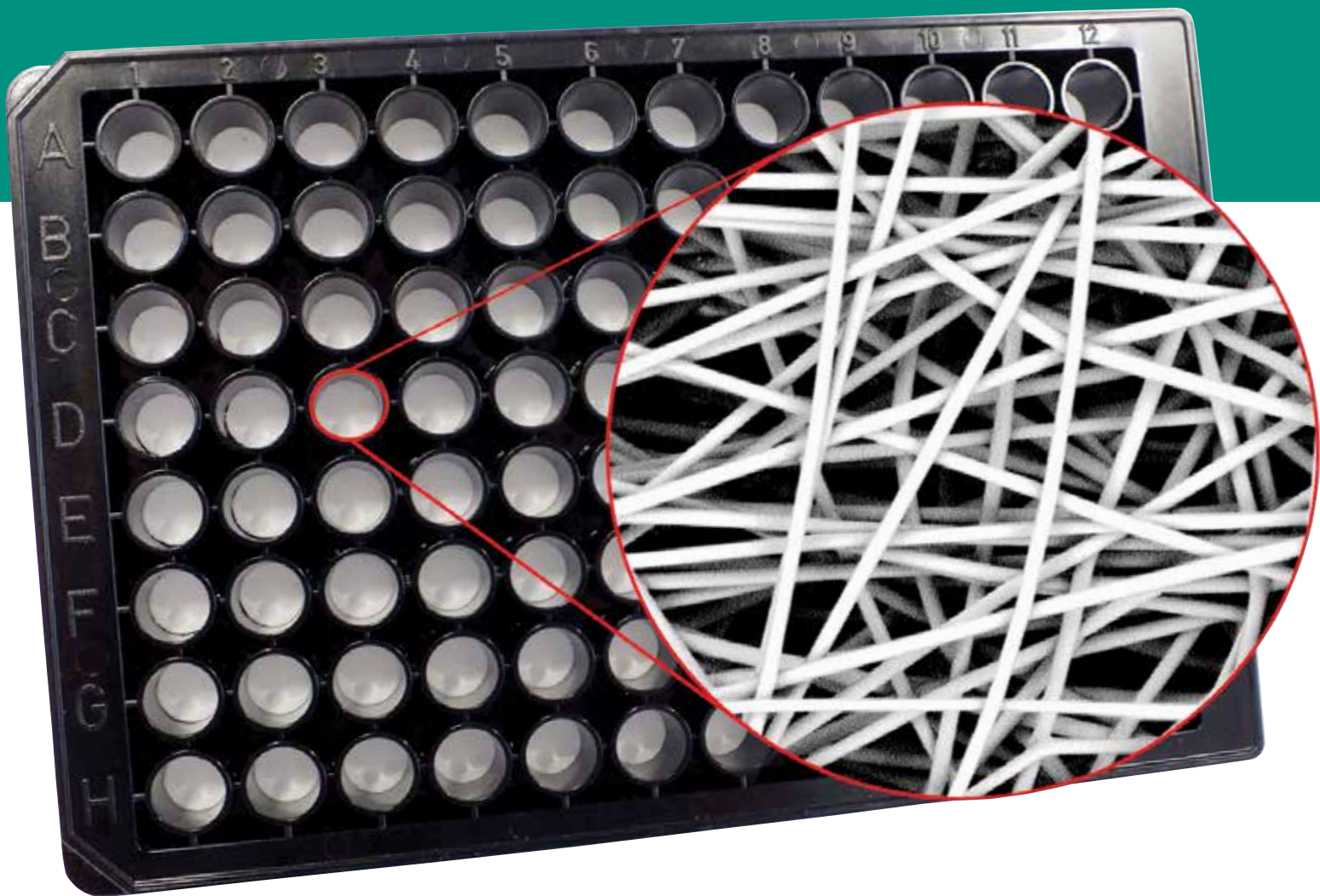
- 190µm or 700µm clear base
- Treated options: Poly-D-Lysin, Collagen 1 or TC
- Good cell adherence
- Alphanumeric grid reference
- Optimum signal-to-noise ratios
- Low profile lid available
- Suitable for adhesive and heat sealing
- RNase, DNase, Human Genomic DNA Free

### Also see

- HEAT SEALING (PAGE 66-73)
- 4S3 HEAT SEALER (PAGE 64-65)
- ADHESIVE SEALING (PAGE 76-83)
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# Mimetix™ Multi-Well Plate

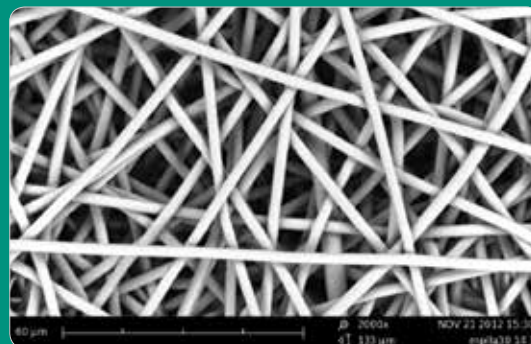
3D cell culture in a scaffold of polymer fibres



 MIMETIX



Mimetix™ scaffolds for 3D cell culture: Mimetix™ scaffolds are highly porous and mimic the extracellular matrix, providing an ideal environment to support the growth of cells in 3D. They are created by electrospinning the medical grade polymer poly-L-lactide (PLLA) into fibres. The Mimetix™ scaffold is highly consistent well-to-well with respect to fibre diameter and pore size, resulting in excellent reproducibility of cell-based assays. Mimetix™ has been validated with a number of primary cells, cell lines and stem cells and is available in a range of ready-to-use, sterile laboratory consumable formats.



Mimetix™ scaffold resembles the extracellular matrix.

### Why Use 3D Models in Drug Discovery?

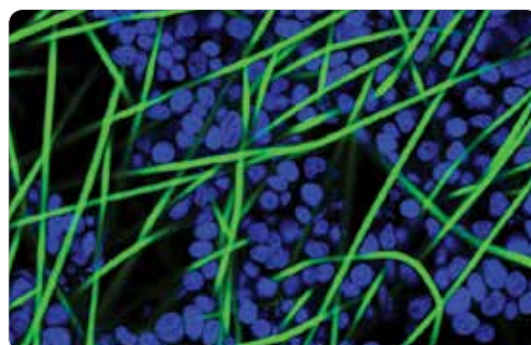
Cells grown in a 3D micro-environment look and behave more like cells in human tissues than those cultured in 2D. They are in contact with other cells and produce extracellular matrix, which influences tissue-specific gene expression, cell growth, and the uptake and metabolism of drugs. 3D cell-based in vitro assays can provide more realistic data on the efficacy of drug candidates against tumour cells or their toxicity, and could potentially reduce the risk of failure in expensive clinical trials.

### Mimetix™ multiwell plate

The 96 well plate is based on the successful Visionplate range with superior optical clarity of the base and laser welding technology to weld bases to the frame with minimal base distortion and no use of cytotoxic glues. It contains the Mimetix™ scaffold laser-welded into the base, and is designed to be compatible with industry standard for automated handling and imaging equipment. It is available in fibre diameters of 2 µm and 4 µm, corresponding to pore sizes of 10-18 µm and 15-31 µm and at a scaffold thickness of 50 µm. It is supplied gamma-irradiated in individually sealed plastic wrapping.

Code	Description	Plates/Case
4ti-0250/2	96well plate with fibres of 2 µm diameter	24
4ti-0250/4	96well plate with fibres of 4 µm diameter sterile, lidded	24

- Mimetix™ benefits in 3D assays
- True 3D environment high batch-to-batch consistency for reproducible cell-based assays
- Ready to use, sterile, standard size plates are compatible with industry-standard automated handling and imaging equipment
- Minimal protocol adaption required to switch from 2D to 3D
- Material does not degrade or alter over the course of an experiment
- Thin scaffold provides benefits of 3D cell morphology and behaviour yet allows fluorescent microscopic imaging



MCF7 breast cancer cells growing within Mimetix™ scaffold.