

# *Catalog*

2007-2009

*Cell Culture*



*Cryogenics*



*Immuno Assays*



*ART/IVF*



*Storage & Handling*



*Proteomics/Genomics*



*Bio Production*



*Plates*



*Custom Services*



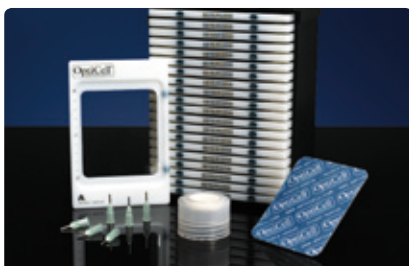
## New Products

### Cell Culture



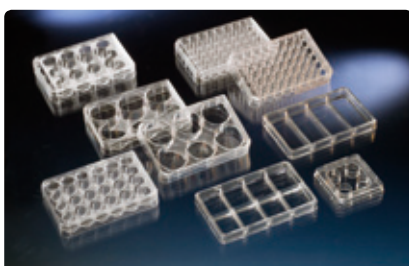
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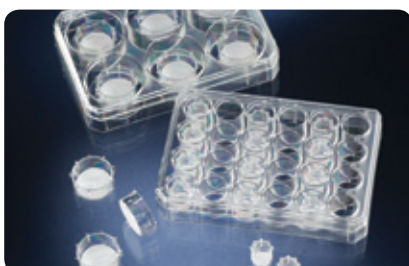
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**NEW**

New Products

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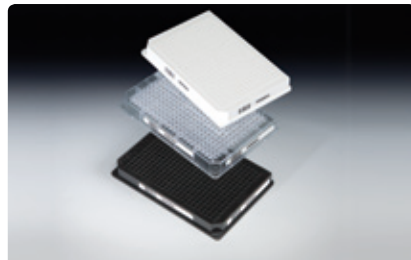


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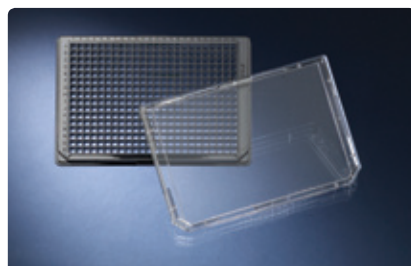
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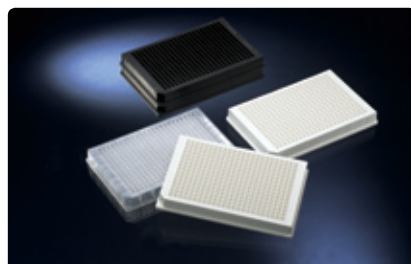
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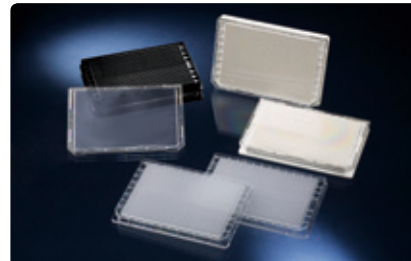
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All new products  
can also be found at:  
[www.nuncbrand.com](http://www.nuncbrand.com)

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# Introduction

Introduction

## We are pleased to introduce the 2007 – 2008 Nunc brand catalog

In this catalog you will find a wealth of products designed to enhance laboratory performance and productivity. The Nunc team is proud of our continued commitment to providing world-class technical support for our products. This includes application and product selection support.

In November of 2006 we became a part of Thermo Fisher Scientific. Through this exciting merger we will be able to expand our solution-based support to our customers by combining the best mix of brands and products.

Our new catalog is heavily supported by our website [www.nuncbrand.com](http://www.nuncbrand.com), where you always can find latest news and products, as well as technical and scientific research material to support your work.

We look forward to working with you to achieve your research and production goals and welcome your recommendations on how we can serve you better than before.

Thank you,

**Steve Silverman**

*Vice President/General Manager*

*Thermo Fisher Scientific, Laboratory Consumables Division*



## Nunc brand products

### – a part of Thermo Fisher Scientific

Nunc is a brand within Thermo Fisher Scientific, the world leader in serving science. Thermo Fisher Scientific enables customers to make the world healthier, cleaner and safer by providing analytical instruments, equipment, reagents and consumables, software and services for research, analysis, discovery and diagnostics. With annual sales of more than \$9 billion, Thermo Fisher Scientific has 30,000 employees and serves more than 350,000 customers in pharmaceutical and biotech companies, hospitals and clinical diagnostic labs, universities, research institutions and government agencies, as well as environmental, industrial quality and process control settings.

**ThermoFisher**  
SCIENTIFIC

## About the Catalog

The raw materials used to manufacture the products in the catalog are chosen for their suitability for the individual products. Each has the optimal characteristics for the intended applications. There are minimal additions made to the purest possible materials. We do not use releasing agents or similar additives in our injection molding processes.

Where applicable, we have quoted recommended working volumes. These are only meant as guidelines, as we are aware that our customers will decide for themselves what volumes to use in their application of our products. We have chosen to quote those values, which are used in our own laboratories.

Necessary details including dimensions of wells, which may, for example, be required for the optimization of assays, are appended in order to allow the best possible use of the products for as many applications as possible.

All the information is also available on our website,  
[www.nuncbrand.com](http://www.nuncbrand.com)

## Nunc products quality assurance

Quality involves all aspects of our organization from product development, choice of raw materials, through production to customer service. It is no accident that our quality control and assurance department is the largest in the company.

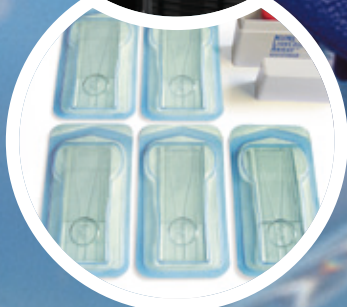
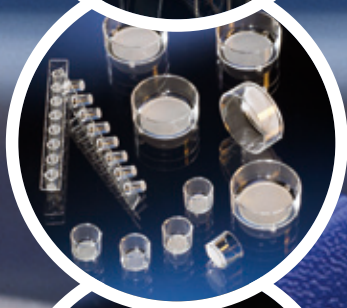
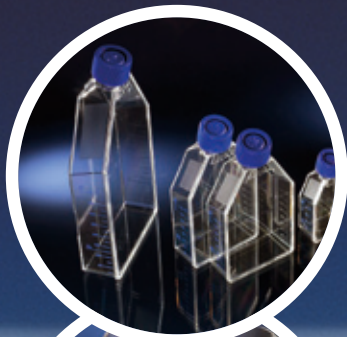
Nunc A/S is certified\* to ISO 9001:2000 and ISO 13485:2003 and designed to comply with US current Good Manufacturing Practice for Medical Devices.

Nunc A/S is certified\* to Environmental Management System Standard ISO 14001:2004. It is our policy to act in a way, that continuously reduces environmental impact in general, and focus especially on reducing waste-production, consumption of energy, water, materials and hazardous substances, while increasing the amounts of waste recycled.

*\* Valid for products manufactured in Denmark.  
Further information about our certifications can be found at our website.*



*The Art of  
CellCulture*





# Cell Culture Introduction

The products in this section are used in all kinds of basic and advanced cell culture research. The products are flasks, dishes, multidishes, slides and other products. Plates are found in the separate plate section of this catalog and products for large scale cell culture are found in the bio production section.

Most of Nunc brand's cell culture vessels are made of highly characterized, virgin polystyrene with a surface modified for adherent cell culture. The Nunclon trademark molded in the product indicates the item is manufactured from this special cell culture grade polystyrene and has undergone the Nunclon™Δ surface modification to facilitate cell attachment. The Nunclon™ treatment is limited to the intended growth area. Areas such as necks of flasks, sides of dishes and plates are not treated. This prevents cell attachment and growth in undesired areas.

The Nunclon™Δ polystyrene surface is certified for monolayer formation with two different cell lines and a primary cell culture. Cloning efficiency is performed with a specially selected cell line that has a high sensitivity to the presence of toxic compounds. The cell types used in the Nunclon™Δ certification procedure are as listed:

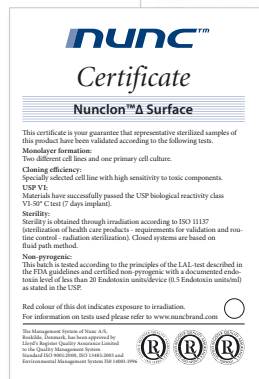
- **PCE:** Primary Chick Embryo cells. These cells are used to test for the Nunclon™Δ treated surface in support of primary cell growth.
- **F2002:** This line was derived from embryonic lung tissue of a human male. It is a diploid fibroblast-like cell line initially developed for use in vaccine development. It is used to test for monolayer formation.
- **HEL:** This line was derived from Human Embryonic Lung fibroblasts. It is used to test for monolayer formation.
- **V79-4 (ATCC CCL93):** This cell line was derived from the lung tissue of a male Chinese hamster. These cells are used to test for cloning efficiency.
- **L929 (ATCC CCL 1):** This fibroblast-like cell line was derived from a cloned strain. The parent L strain was derived from normal subcutaneous areolar and adipose tissue of a male C3H/An mouse. It is used for testing monolayer formation.

The raw material has successfully passed the USP biological reactivity class VI test -50°C (7 days implant). We observe the guidelines for sterility by irradiation as set out in the ISO documentation.

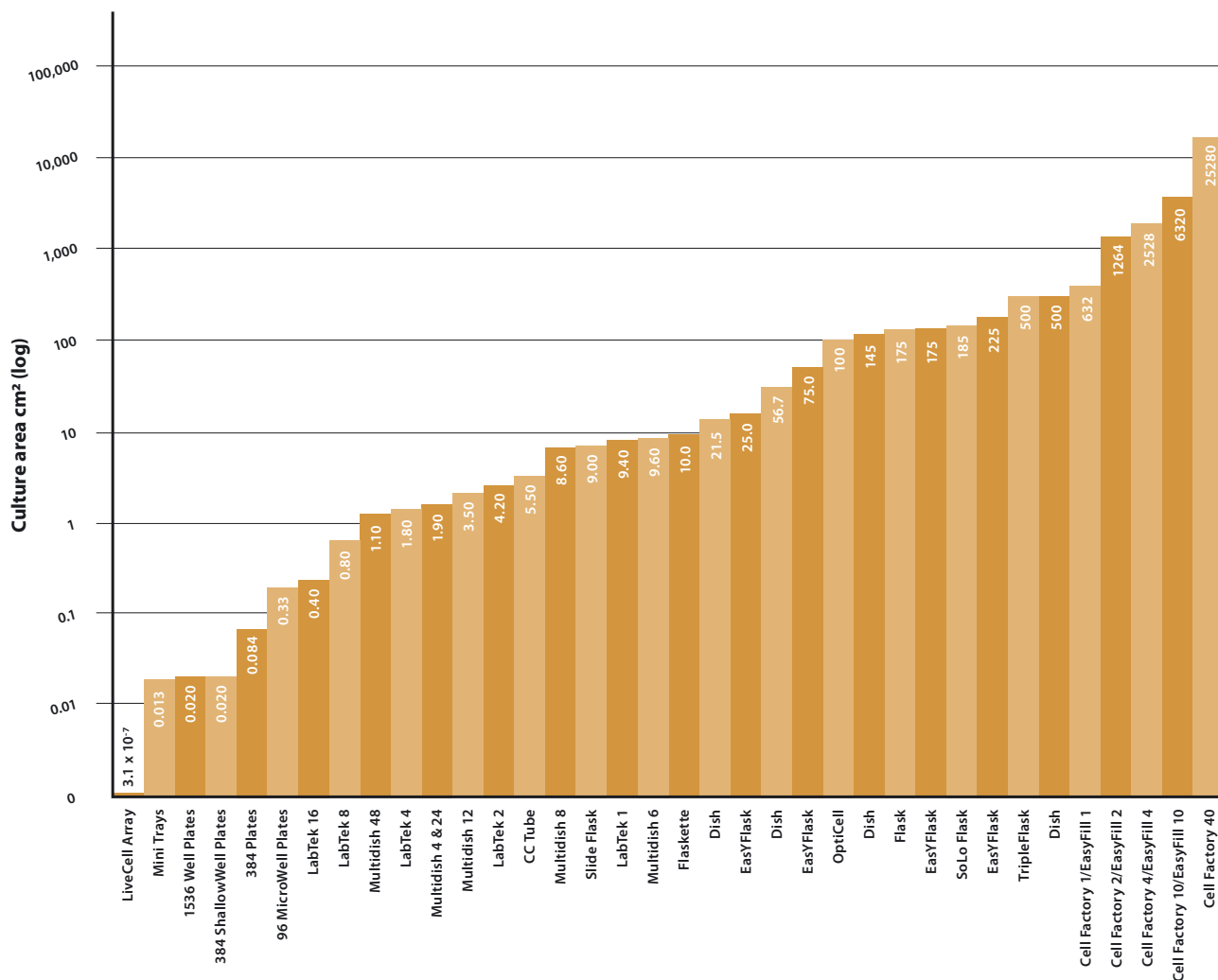
Pyrogens and endotoxins are biological compounds, which are heat stable and have a detrimental effect on cell growth and proliferation. As they are not destroyed by radiation a separate test is necessary to indicate their absence.

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# Cell Culture Range



# EasYFlasks™



- Nunclon™Δ certified or coated with Poly-D-Lysine or Collagen I (surface ensures cell attachment, facilitates growth)
- Allow full access to the growth surface
- Ergonomic closure, open or close in 1/3 turn
- "Y" - mark allows visual verification of vent position, even when stacked in incubators
- Volume graduations on both sides
- Vent/close and filter caps available
- Extra caps in every carton

## Literature:

Bulletin Nos: 2, 3, 5, 13  
Tech Note Nos: 2, 3, 25 Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

## Accessories:

Caps for Flasks Nunclon™Δ Page 14  
Serological Pipettes Page 17  
Cell Scrapers Page 17

## Filter caps for continuous venting

The caps are fitted with a hydrophobic filter to ensure consistent gas exchange

## "Y" mark indicating "vent" or "closed"

Any of the legs pointing vertically upwards indicates that the cap is in vent position

Any of the legs pointing vertically downwards indicates that the flask is closed

## Nunc EasYFlasks™ Nunclon™Δ

Polystyrene. Sterile



Cat. No.	156340	156367	156472	156499	159920*	159910*	159933*	159934*
Culture area, cm <sup>2</sup>	25	25	75	75	175	175	225	225
Neck style	Angled	Angled	Angled	Angled	Angled	Angled	Angled	Angled
Closure	Vent/close	Filter	Vent/close	Filter	Vent/close	Filter	Vent/close	Filter
Cap material	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE
Suggested working volume, ml	7	7	25	25	55	55	70	70
Units per pack/case	10/200	10/200	5/100	5/100	5/30	5/30	5/30	5/30

HDPE=High Density Polyethylene \* Batch No. and Cat. No. printed on each flask



## Nunc EasYFlasks™ Poly-D-Lysine and Collagen I coated

Filter Cap. Sterile

Cat. No.	132703	132704	132705	132706	132707	132708
Description	Poly-D-Lysine Coated 25cm <sup>2</sup> EasYFlask	Poly-D-Lysine Coated 75cm <sup>2</sup> EasYFlask	Poly-D-Lysine Coated 175cm <sup>2</sup> EasYFlask	Collagen I Coated 25cm <sup>2</sup> EasYFlask	Collagen I Coated 75cm <sup>2</sup> EasYFlask	Collagen I Coated 175cm <sup>2</sup> EasYFlask
Units per pack/case	10/60	5/30	5/30	10/60	5/30	5/30

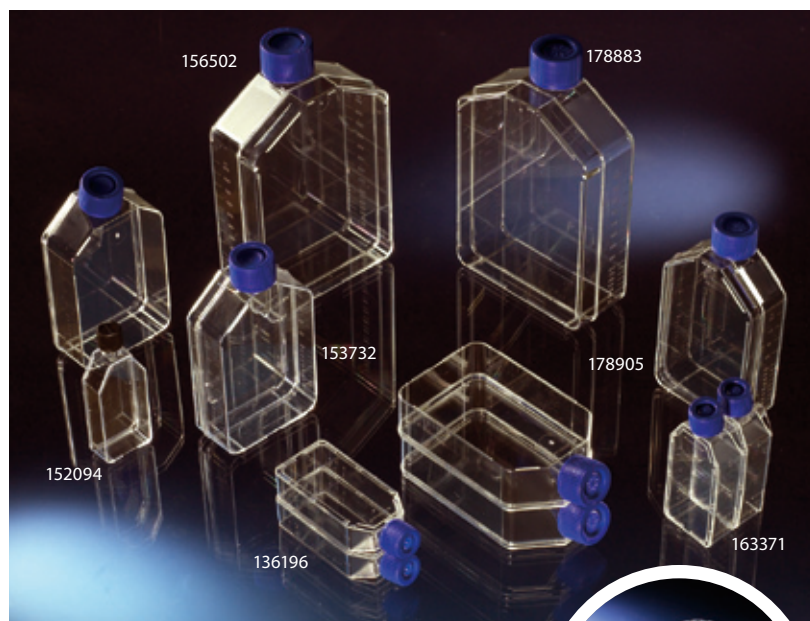
## Accessories

Loose Caps for Nunc EasyFlasks™ Nunclon™Δ. Sterile

Cat. No.	158892	158523	158240	157527	133001	133002
Closure	Vent/close	Filter	Vent/close	Filter	Vent/close	Filter
Use for flask size, cm <sup>2</sup>	25	25	75	75	175/225	175/225
Units per pack/case	1/100	1/100	1/100	1/100	1/100	1/100



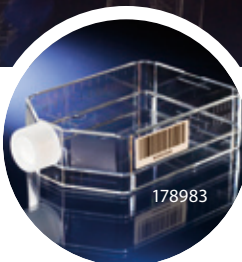
# Flasks Nunclon<sup>™</sup> Δ Surface



Vent/close Cap



Filter Cap



- Cell culture flasks with surface areas from 25-175 cm<sup>2</sup>
- Filter caps or vent/close caps available for good gas exchange
- Extra caps included in every carton
- Short, wide neck for easy access
- Individually leak tested
- Excellent optical quality
- Nunclon<sup>™</sup> Δ certified
- Barcoded 175 cm<sup>2</sup> with large Code 128

## Literature:

Bulletin Nos: 2, 3, 5

Tech Note Nos: 2, 3, 25 Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

## Accessories:

Caps for Flasks Nunclon<sup>™</sup> Δ

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Serological Pipettes

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Cell Scrapers

Page 17

## Nunc Flasks Nunclon<sup>™</sup> Δ

with Filter Cap  
Polystyrene. Sterile

Cat. No.	136196	178905	178883	178983*
Culture area, cm <sup>2</sup>	25	80	175	175
Neck style	Angled	Straight	Straight	Straight
Closure	Filter	Filter	Filter	Filter
Cap material	HDPE	HDPE	HDPE	HDPE
Suggested working vol., ml	7	30	68	68
Units per pack/case	20/160	5/50	4/32	4/32

HDPE = High Density Polyethylene

\*Barcoded with large Code 128

## Nunc Flasks Nunclon<sup>™</sup> Δ

with Vent/Close Cap  
Polystyrene. Sterile

Cat. No.	152094	163371	153732	156502
Culture area, cm <sup>2</sup>	24	25	80	175
Neck style	Straight	Angled	Straight	Straight
Closure	Vent/close	Vent/close	Vent/close	Vent/close
Cap material	HIPS	HDPE	HDPE	HDPE
Suggested working vol., ml	7	7	30	68
Units per pack/case	20/200	20/160	5/50	4/32

HIPS = High Impact Polystyrene / HDPE = High Density Polyethylene

# Flasks Non-treated



- Non-treated, sterile flasks for suspension cell cultures
- White caps for easy identification
- Extra cap in every carton
- Non-pyrogenic

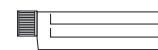
## Accessories:

Caps for Flasks Nunclon™Δ  
Serological Pipettes  
Cell Scrapers

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## Nunc Flasks Non-treated

Polystyrene. Sterile



Cat. No.	169900	156800	159926	144903	132903
Flask type	EasYFlask	EasYFlask	EasYFlask	SoLoFlask	TripleFlask
Culture area, cm <sup>2</sup>	25	75	175	185	500
Total volume, ml	70	260	645	600	800
Neck style	Angled	Angled	Angled	Angled	Straight
Closure	Filter	Filter	Filter	Filter	Filter
Cap material	HDPE	HDPE	HDPE	HDPE	HDPE
Suggested working vol., ml	7	30	55	75	200
Units per pack/case	10/200	5/100	5/30	5/50	4/32

## Caps for Non-treated Flasks

White. High Density Polyethylene (HDPE).  
Sterile

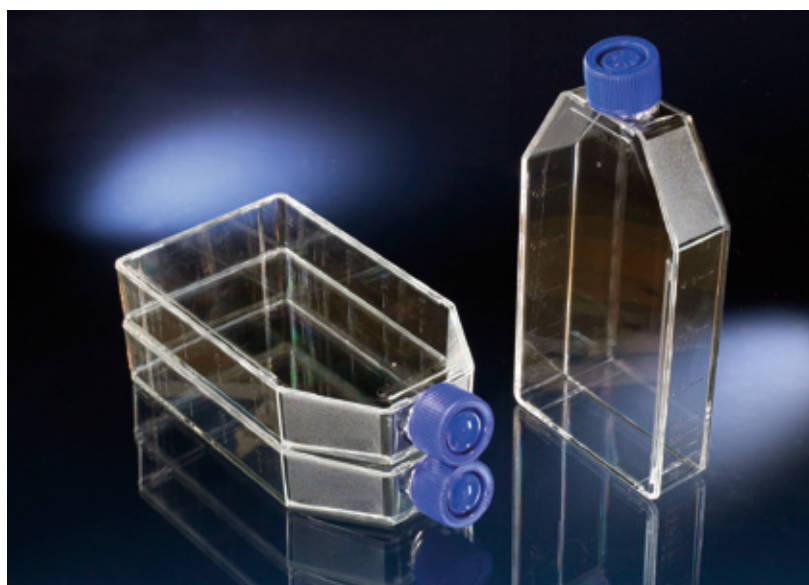


Cat. No.	178802	156753	159929
Closure	Filter	Filter	Filter
Use for flask size, ml	70	260	645
Units per pack/case	1/100	1/100	1/100



Filter Cap

## SoLo Flasks Nunclon™Δ Surface



- Low profile design saves incubator space
- Four stacked SoLo Flasks occupy the same space as three conventional flasks
- Large bore angled neck facilitates pipette and cell scraper access
- Nunclon™Δ certified

### Literature:

Bulletin Nos: 2, 3, 5

Tech Note Nos: 3, 25, Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

### Accessories:

Serological Pipettes  
Cell Scrapers

Page 17  
Page 17

### Nunc SoLo Flasks Nunclon™Δ

Polystyrene. Sterile



Cat. No.	144881
Culture area, cm <sup>2</sup>	185
Neck style	Angled
Closure	Vent/close
Cap material	HDPE
Suggested working volume, ml	75
Units per pack/case	5/50

HDPE = High Density Polyethylene

## Caps for Flasks Nunclon™Δ

### Caps for Barcoded Flasks

High Density Polyethylene (HDPE). Sterile

Cat. No.	146003
Closure	Filter
Color	White
Use for flask	Cat. No. 178983/132920
Units per pack/case	1/100

### Caps for Flasks Nunclon™Δ

High Density Polyethylene (HDPE). Sterile

Cat. No.	151152	151209	144458	144652	147074	147104
Closure	Vent/close	Filter	Vent/close	Filter	Vent/close	Filter
Color	Blue	Blue	Blue	Blue	Blue	Blue
Use for flask size, cm <sup>2</sup>	25	25	80	80	175/185/500	175/185/500
Units per pack/case	1/100	1/100	1/100	1/100	1/100	1/100



Filter Cap



Vent/close Cap

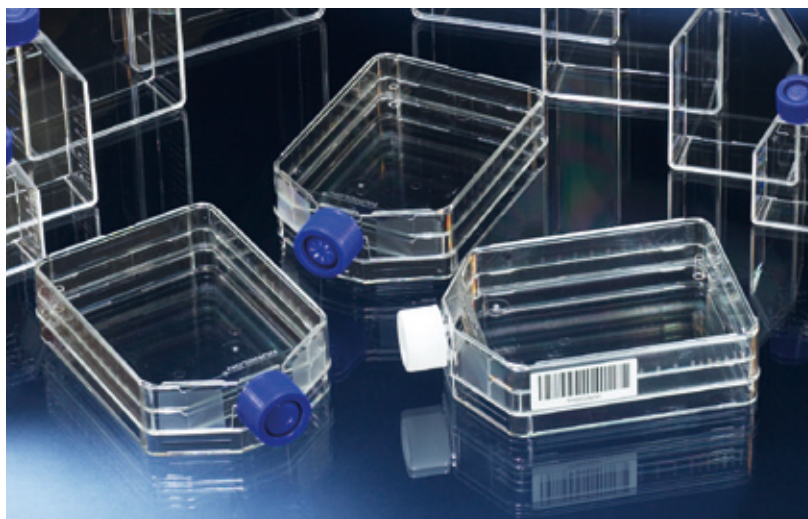


Filter Cap

The caps for Nunc flasks are made of High Density Polyethylene (HDPE). This material is slightly flexible which means that a tight seal can be achieved without high torque. The caps should be turned by gripping the closed end as squeezing the open end makes removal more difficult.



# TripleFlasks Nunclon™ Δ Surface



- Three parallel growth surfaces provide a total culture area of 500 cm<sup>2</sup>
- External dimensions of a 175 cm<sup>2</sup> standard flask
- Ideal for scale-up
- Extra caps in every carton
- Nunclon™Δ certified
- Barcoded with large Code 128

## Literature:

Bulletin Nos: 2, 3, 5

Tech Note Nos: 2, 3, 25, Vol. 4: 34, 35, 36, 37

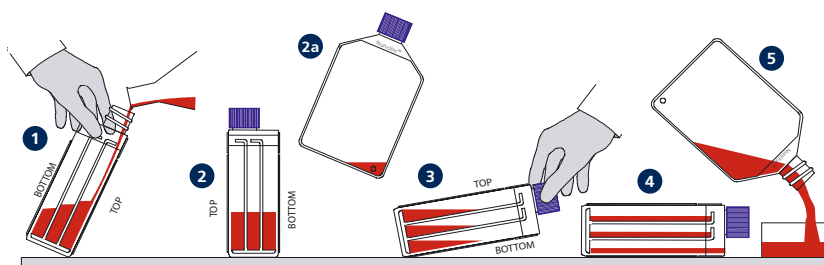
See Pages 195-196 for full reference list with titles and links

## Accessories:

Caps for Flasks Nunclon™Δ  
Serological Pipettes

Page 14

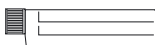
Page 17



1. Prepare homogeneous cell suspension. Pour into the TripleFlask, tilting flask slightly to avoid foam or bubbles. Recommended working volume is 100-200 ml
2. Leave the flask in the upright position for a short time to allow equilibration of liquid in each compartment
- 2a. The flask may be canted momentarily around the connecting channel corner for facilitating the equilibration of small volumes
3. Quickly but gently place the flask in the incubation position
4. The liquid is equally distributed over the three growth surfaces
5. The flask is emptied in the same way as a conventional flask. To harvest cells add 10-15 ml Trypsin

## Nunc TripleFlasks Nunclon™Δ

Polystyrene. Sterile



Cat. No.	132867	132913	132920
Barcode	-	-	+
Culture area, cm <sup>2</sup>	500	500	500
Neck style	Straight	Straight	Straight
Closure	Vent/close	Filter	Filter
Cap material	HDPE	HDPE	HDPE
Suggested working vol., ml	200	200	200
Units per pack/case	4/32	4/32	4/32

HDPE = High Density Polyethylene

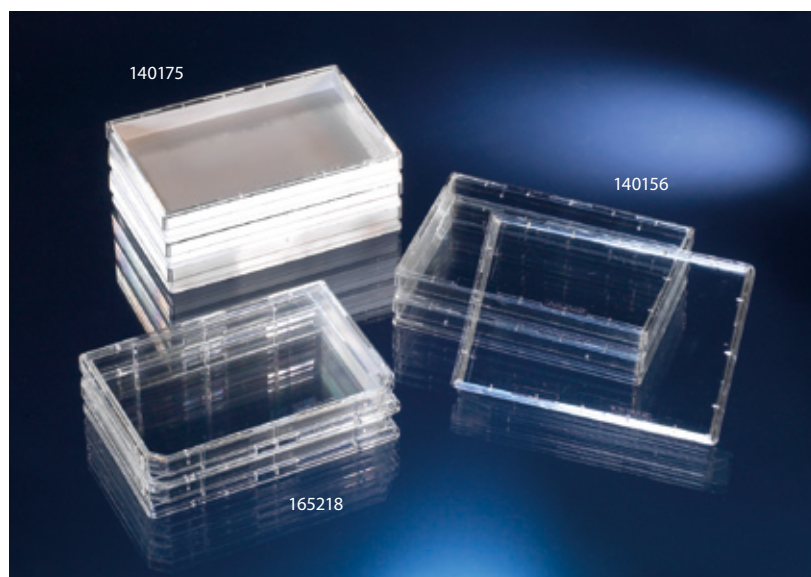


Vent/close Cap



Filter Cap

# OmniTrays Nunclon<sup>™</sup>Δ Surface



- Single well OmniTray ideal for a multitude of uses
- Available both as a standard version with notched corners and as a rectangular version optimized for computerized imaging and spotting
- Nunclon<sup>™</sup>Δ certified

## Literature:

Bulletin Nos: 2, 3

Tech Note Nos: Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

## Accessories:

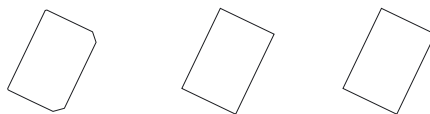
Lids for 96 and 384 Well Plates

Page 176

## Nunc OmniTrays Nunclon<sup>™</sup>Δ

External dimensions 128 x 86 mm

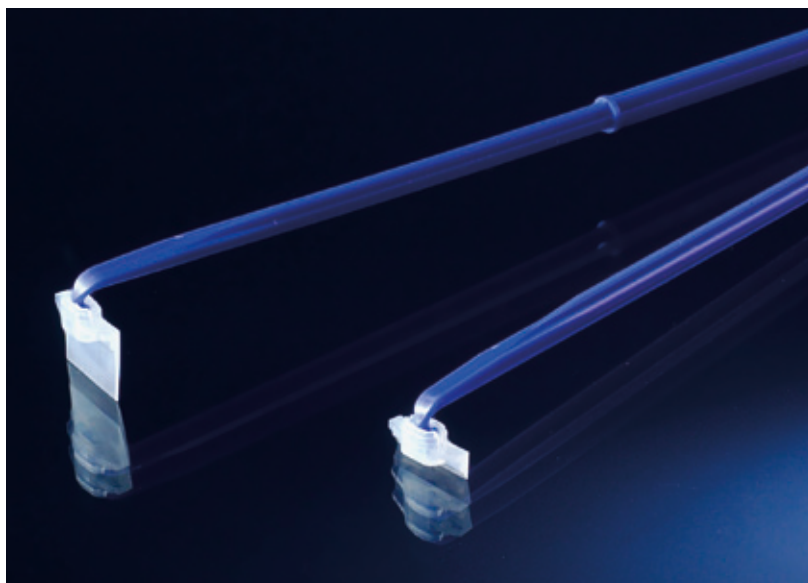
Polystyrene. Sterile



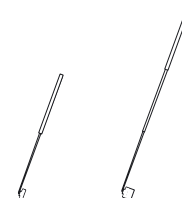
Cat. No.	165218	140156*	140175*
Color	Clear	Clear	White
Suggested working vol., ml	90	90	90
Culture area, cm <sup>2</sup>	84	84	84
Units per pack/case	10/60	10/90	10/90

\*Enhanced rectangular area ideal for automatic picking and viewing system

## Cell Scrapers



- Available in two lengths
- Blade adjustable for optimal application flexibility
- Non-pyrogenic

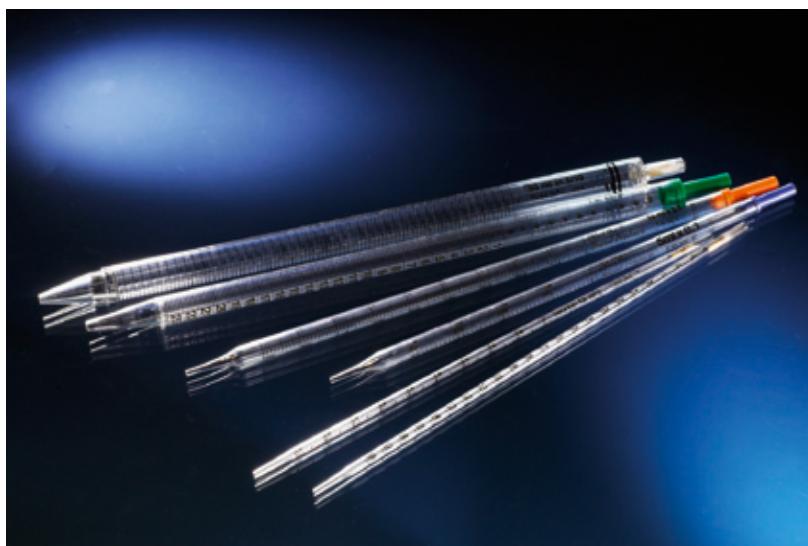


### Nunc Cell Scrapers

Sterile

Cat. No.	179693	179707
Use for flask size, cm <sup>2</sup>	25-80	75-175
Total length, cm	23	32
Blade offset, mm	7.5	16
Blade width, mm	15.5	17.5
Units per pack/case	1/250	1/250

## Serological Pipettes



- Accurate, disposable plastic pipettes plugged and sterilized
- Sterility assurance level (SAL) of 10<sup>-6</sup>
- Bold clear graduations with easy-to-read scale markings
- Color-coded packaging for ease in sorting and selecting the correct size
- Individually wrapped in paper-peelable bags
- Convenient extra graduations to full pipette volume
- Printed with a black scale
- Non-pyrogenic

### Nunc Serological Pipettes

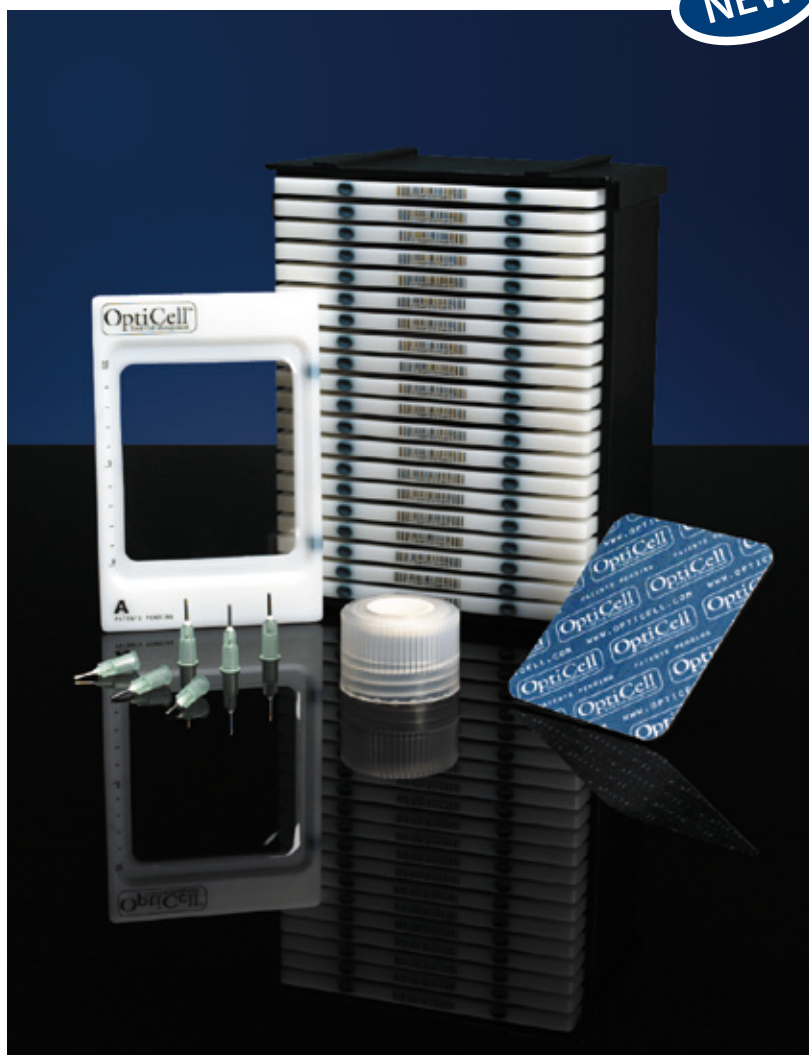
Polystyrene. Sterile

Cat. No.	159609	159617	159625	159633	159641	159668
Total volume, ml	1	2	5	10	25	50
Sub division, ml	0.01	0.01	0.1	0.1	0.2	0.5
Extra grad., ml	0.3	0.3	2	3	10	10
Tolerance ±	0.02	0.04	0.10	0.20	0.50	0.75
Color code	Black	Black	Blue	Orange	Green	Purple
Units per pack/case	200/1000	125/500	50/200	50/200	50/200	25/100

# OptiCell™ Cell Culture System

Cell Culture

NEW



- OptiCell™ is a unique cell culture format for growing, monitoring, and transporting cells
- Two parallel gas-permeable, cell culture treated polystyrene membranes attached to a standard microtiter plate-sized frame
  - Each side has a growth area of 50 cm<sup>2</sup>, total 100 cm<sup>2</sup>
  - 75 µm thick membranes, 2 mm apart
- Thin profile design maximizes incubator space and reduces medium consumption
- Recommended medium/cell fill volume 10 ml for OptiCell and 30 ml for OptiCell MAX
- Two resealing access ports provide closed growth environment with sterile fluid path, thereby reducing risk of contamination
- Barcoded for easy tracking and automation handling
- Applications
  - Transportation of live cells
  - Hybridoma antibody production (OptiCell MAX)
  - Short-term freezing and thawing of cells
  - Biomagnetic cell separation (OptiMag Kit)
  - Cell imaging and staining
  - Transfection

OptiCell™ is a registered trademark of BioCrystal, LTD.

NEW

## Nunc OptiCell™ Kits and Chambers

Cat. No.	155330	155331	155332	155333
Description	OptiCell 1100 Starter Kit. Contains 20 each of OptiCell 1100, 1 rack, 1 knife, 50 tips, manual	OptiCell 1100 Chambers	OptiCell 1100 Chambers	OptiCell 1100 Chambers
Units per case	1	20	100	500

NEW

## Nunc OptiCell™ MAX Kits and Chambers

Cat. No.	155334	155335	155336
Description	OptiCell MAX 2100 Starter Kit. Contains 5 each of OptiCell MAX 2100, 1 rack, 50 tips, Hybridoma Ab production protocol/manual	OptiCell MAX 2100 Chambers	OptiCell MAX 2100 Chambers
Units per case	1	20	100







**NEW**

### Nunc OptiCell™ Separation Kit and Magnet

Cat. No.	155337	155338
Description	OptiMag Cell Separation Kit. Contains 20 each of OptiCell 1100, 1 magnet, 50 tips, 1 rack, 2 clips, OptiMag cell separation protocol /manual	OptiMag Magnet
Units per case	1	1

**NEW**

### Nunc OptiCell™ Mailer Kit

Cat. No.	155339	155340
Description	OptiCell Mailer Kit. Contains 5 each of OptiCell 1100, 50 tips, 5 OptiCell Mailers, shipping protocol /manual	OptiCell Mailer
Units per case	1	10

**NEW**

### Accessories for Nunc OptiCell™ Cell Culture System

Cat. No.	155342	155343	155344
Description	OptiCell Rack for OptiCell 1100 and 2100	OptiCell Insertion Tips	OptiCell Knife
Units per case	1	100	3

# Multidishes Nunclon™ Δ Surface



- Useful in all areas of cell culture including scale-up and cloning
- Raised well rims to lower risk of cross contamination
- Excellent optical quality
- Nunclon™Δ certified
- Multidish 6 is available coated with Poly-D-Lysine or Collagen I

## Literature:

Bulletin Nos: 2, 3

Tech Note Nos: 2, 3, 25 Vol. 4: 34, 35, 36, 37

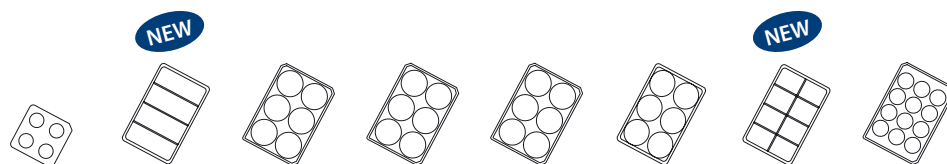
See Pages 195-196 for full reference list with titles and links

## Accessories:

Cell Scrapers	Page 17
Serological Pipettes	Page 17
Nunc Cell Culture Inserts	Page 22
Coverslips	Page 27
Microscope Slides	Page 27

## Nunc Multidishes

Polystyrene. With lid



Cat. No.	176740	167063	140675	140685	152035	152034	167064	150628
Number of wells	4	4	6	6	6	6	8	12
Surface	Nunclon Δ	Nunclon Δ	Nunclon Δ	Nunclon Δ	Poly-D-Lysine	Collagen I, rat tail	Nunclon Δ	Nunclon Δ
Bottom shape	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
Sterile	+	+	+	+	-	-	+	+
Suggested working vol., ml/well	1	5	3	3	3	3	3	2
Culture area, cm <sup>2</sup> /well	1.9	21.8	9.6	9.6	9.6	9.6	10.5	3.5
External dimensions, mm	66 x 66	128 x 86	128 x 86	128 x 86	128 x 86	128 x 86	128 x 86	128 x 86
Units per pack/case	4/120	10/100	1/75	5/85	5/20	5/20	10/100	1/75

## Nunc Multidishes Nunclon™Δ

Polystyrene. With lid. Sterile



Cat. No.	142475*	142485*	150687	152640
Number of wells	24	24	48	48
Bottom shape	Flat	Flat	Flat	Flat
Suggested working vol., ml/well	1.0	1.0	0.5	0.5
Culture area, cm <sup>2</sup> /well	1.9	1.9	1.1	1.1
External dimensions, mm	128 x 86	128 x 86	128 x 86	128 x 86
Units per pack/case	1/75	5/85	1/75	5/85

\*New MD 24: No. 142475 and 142485 replace No. 143982 and 146485

# Multidishes *Non-treated*



- Non-treated, sterile multidishes for suspension cell cultures
- Raised well rims to lower risk of cross contamination
- Excellent optical quality
- Non-pyrogenic

## Literature:

Bulletin Nos: 2, 3, 5  
Tech Note Nos: 3, 25, Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

## Accessories:

Serological Pipettes Page 17  
Nunc Cell Culture Inserts Page 22

## Multidishes, Non-treated

Polystyrene. With lid. Sterile



Cat. No.	179820	150239	150200	144530	150787
Number of wells	4	6	12	24	48
Bottom shape	Flat	Flat	Flat	Flat	Flat
Suggested working vol., ml/well	1	3	2	1.0	0.5
External dimensions, mm	66 x 66	128 x 86	128 x 86	128 x 86	128 x 86
Units per pack/case	4/120	1/75	1/75	1/75	1/75



# Cell Culture Inserts

**NEW**



- For multidishes 6, 12, 24
- Treated and tested for cell attachment
- Easy cultivation of most cell types without matrix coating
- Used in a variety of applications, including transport studies, toxicity tests, chemotaxis studies and electron microscopy
- Non-toxic
- Packed in sterile Nunclon<sup>™</sup>Δ treated multidishes
- Packed in resealable bags.
- Non-pyrogenic
- Tabs for better grip/handling

## Literature:

Tech Note No: 13  
Porous Cell Culture Inserts  
[www.nuncbrand.com/go/ccinserts](http://www.nuncbrand.com/go/ccinserts)

See Pages 195-196 for full reference list with titles and links

## Accessories:

Multidishes

Page 20

Application examples	Pore size
<b>Transport studies:</b> Molecules, including hormones and growth factors Drug transport across epithelial (Caco-2) and endothelial barriers Drug transport across brain microvascular endothelial cells	0.4, 3.0 μm
<b>Chemotaxis studies:</b> Migration of cells, including eosinophils, neutrophils, macrophages	3.0, 8.0 μm
<b>Invasion studies:</b> Tumor invasion and metastasis models Invasion inhibitors Extra cellular matrix effects	3.0, 8.0 μm
<b>Co-cultivation studies:</b> Cell-cell interaction Cell-matrix interaction Cell-substrate interaction	0.4, 3.0 μm
<b>Tissue engineering:</b> Angiogenesis Dermal/epidermal and epithelial tissue models	0.4, 3.0 μm



NEW

# Nunc Cell Culture Inserts

Sterile



Cat. No.	140620	140627	140629	140652	140654	140656
Pore size, $\mu\text{m}$	0.4	3	8	0.4	3	8
For use in and packed in	Multidish 24	Multidish 24	Multidish 24	Multidish 12	Multidish 12	Multidish 12
Pore density, pores/ $\text{cm}^2$	$<0.85 \times 10^8$	$<1.7 \times 10^6$	$<0.85 \times 10^5$	$<0.85 \times 10^8$	$<1.7 \times 10^6$	$<0.85 \times 10^5$
Porosity	$<6.8\%$	$<7.7\%$	$<2.7\%$	$<6.8\%$	$<7.7\%$	$<2.7\%$
Max thickness of membrane	11 $\mu\text{m}$	13 $\mu\text{m}$	16 $\mu\text{m}$	11 $\mu\text{m}$	13 $\mu\text{m}$	16 $\mu\text{m}$
Culture area, $\text{cm}^2$	0.47	0.47	0.47	1.13	1.13	1.13
Dimensions, mm	8/13	8/13	8/13	12/18	12/18	12/18
Suggested working volume, ml	0.5	0.5	0.5	1.1	1.1	1.1
Units per pack/case	12/48	12/48	12/48	12/48	12/48	12/48

All Nunc Cell Culture Inserts: Suggested working volume, ml = in addition to normal well working volume

NEW

# Nunc Cell Culture Inserts

Sterile



Cat. No.	140640	140642	140644	140660	140663	140668
Pore size, $\mu\text{m}$	0.4	3	8	0.4	3	8
For use in and packed in	Multidish 6	Multidish 6	Multidish 6	Multidish 6	Multidish 6	Multidish 6
Pore density, pores/ $\text{cm}^2$	$<0.85 \times 10^8$	$<1.7 \times 10^6$	$<0.85 \times 10^5$	$<0.85 \times 10^8$	$<1.7 \times 10^6$	$<0.85 \times 10^5$
Porosity	$<6.8\%$	$<7.7\%$	$<2.7\%$	$<6.8\%$	$<7.7\%$	$<2.7\%$
Max thickness of membrane	11 $\mu\text{m}$	13 $\mu\text{m}$	16 $\mu\text{m}$	11 $\mu\text{m}$	13 $\mu\text{m}$	16 $\mu\text{m}$
Culture area, $\text{cm}^2$	3.14	3.14	3.14	4.1	4.1	4.1
Dimensions, mm	20/25	20/25	20/25	23/34	23/34	23/34
Suggested working volume, ml	1.5	1.5	1.5	1.75	1.75	1.75
Units per pack/case	6/24	6/24	6/24	6/24	6/24	6/24

All Nunc Cell Culture Inserts: Suggested working volume, ml = in addition to normal well working volume

# Cell Culture Inserts



- Easy of cultivation of most cell types without matrix coating
- Treated for cell culture
- Inserts with 0.02 µm Anopore™ membrane have maximum clarity for microscopy, and are non-auto-fluorescent and highly porous
- Polycarbonate membranes in larger pore sizes are adaptable to many uses in cell culture, including transport studies, toxicity tests, chemotaxis studies and electron microscopy
- Both membrane types are transparent when wet and suitable for phase contrast and Nomarski Optic Systems

*Anopore™ is a trademark of Whatman Scientific Ltd.*

## Literature:

Tech Note No: 13  
Porous Cell Culture Inserts  
[www.nuncbrand.com/go/ccinserts](http://www.nuncbrand.com/go/ccinserts)

See Pages 195-196 for full reference list with titles and links

## Nunc Cell Culture Inserts

Anopore membrane.  
Sterile



Cat. No.	162243	161395	136935	137044	136730
Pore size, µm	0.02	0.02	0.2	0.2	0.2
Diameter size, mm	10	25	10	25	8 well Strip
For use in	Multidish 24	Multidish 6	Multidish 24	Multidish 6	MicroWell™ Plate
Pore density, pores/cm <sup>2</sup>	10 <sup>11</sup>	10 <sup>11</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>
Porosity %	25-30	25-30	50	50	50
Thickness, micron	45	45	45	45	45
Height above base of well, mm	1	1	1	1	3
Culture area, cm <sup>2</sup>	0.5	4.2	0.5	4.2	0.08
Suggested working volume, ml	0.5	1.75	0.5	1.75	60 µl
Units per pack/case	6/48	6/48	6/48	6/48	5/15

All Nunc Cell Culture Inserts: Suggested working volume, ml = in addition to normal well working volume.

## What is the difference between the Anopore and the Polycarbonate membrane used in the cell culture inserts?

Both the membranes are specially treated to provide a surface that is excellent for cell attachment and growth. The Anopore membrane is a rigid inorganic membrane that is highly transparent when wet and highly porous (40-50% surface porosity). This membrane provides maximum clarity for microscopy, is non-autofluorescent, and highly resistant to most solvents. Some typical applications are epithelial polarization studies, transport studies, toxicity testing and electron microscopy. An applications manual is available. See Technical articles index to order.

The Polycarbonate membrane does not have the transparent characteristics of the Anopore membrane. Due to the larger pore sizes available with the polycarbonate membrane, it is particularly suitable for chemotaxis studies. These membranes are easily removed and are ideal for sectioning for transmission electron microscopy using a glass knife.



## Nunc Cell Culture Inserts

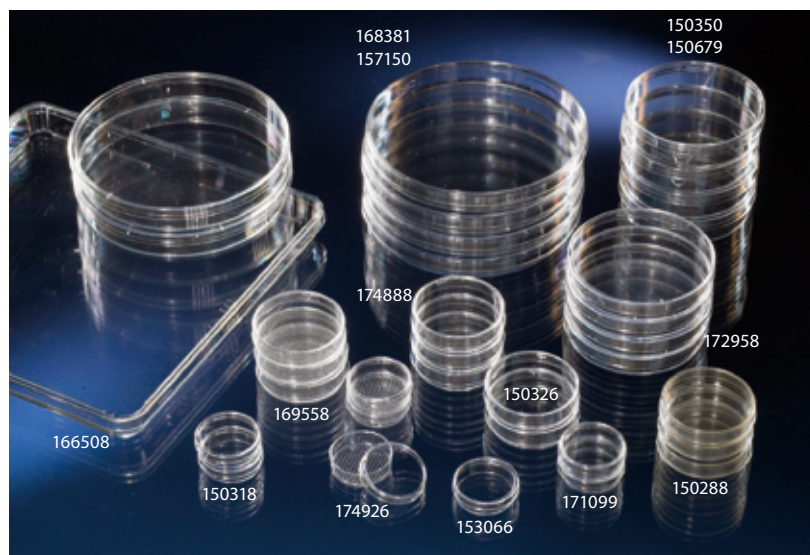
Polycarbonate membrane.  
Sterile



Cat. No.	137052	137060	137370	137435	137443	137508
Pore size, $\mu\text{m}$	0.4	0.4	3.0	3.0	8.0	8.0
Diameter size, mm	10	25	10	25	10	25
For use in	Multidish 24	Multidish 6	Multidish 24	Multidish 6	Multidish 24	Multidish 6
Pore density, pores/ $\text{cm}^2$	$1.5 \times 10^8$	$1.5 \times 10^8$	$3 \times 10^6$	$3 \times 10^6$	$10^5$	$10^5$
Porosity %	18	18	14	14	5	5
Film thickness, micron	20	20	17	17	12	12
Height above base of well, mm	1	1	1	1	1	1
Culture area, $\text{cm}^2$	0.5	4.2	0.5	4.2	0.5	4.2
Suggested working volume, ml	0.5	1.75	0.5	1.75	0.5	1.75
Units per pack/case	6/48	6/48	6/48	6/48	6/48	6/48

All Nunc Cell Culture Inserts: Suggested working volume, ml = in addition to normal well working volume.

# Dishes Nunclon™Δ Surface



- Large range available, surface treated for cell culture
- Optically clear and suitable for microscopy
- 60 and 40 mm dishes available with grids for cloning or determination of plating efficiency
- Nunclon™Δ certified

## Literature:

Bulletin Nos: 2, 3, 5

Tech Note Nos: 2, 3, 25 Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

## Accessories:

Serological Pipettes  
Cell Scrapers

Page 17  
Page 17

## Dishes Nunclon™Δ

Polystyrene. With lid. Sterile



Cat. No.	150318	153066	174926	171099*	174888**	150326	150288	150340* ‡	169558
Name	35 x 10	35 x 10	35 x 10	35 x 10	60 x 15	60 x 15	60 x 15	60 x 15	60 x 15
Grid size, mm	-	-	2 x 2	-	-	-	-	-	2 x 2
Culture area, cm <sup>2</sup>	8.8	8.8	8.8	8.8	20.8	21.5	21.5	21.5	21.5
Airvent	-	+	+	+	+	-	+	+	+
Max. external dimensions, mm	40 x 12	40 x 12	40 x 12	40 x 12	60 x 15	60 x 15	60 x 15	60 x 15	60 x 15
Max. external diameter bottom, mm	36.2	36.2	36.2	36.2	48	53.5	53.5	53.5	53.5
Suggested working volume, ml	3	3	3	3	5	5	5	5	5
Units per pack/case	10/500	10/500	20/500	20/500	20/500	10/400	10/400	10/400	10/400

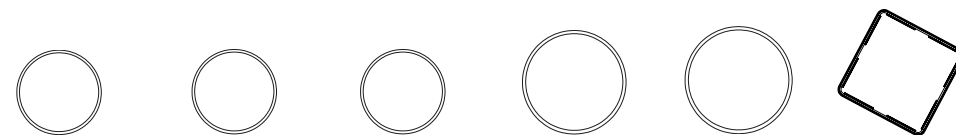
\* For suspension culture - not Nunclon™Δ treated

\*\*Made from Permanox™

‡ Not available Americas

## Dishes Nunclon™Δ

Polystyrene. With lid. Sterile



Cat. No.	150350* ‡	150679 †	172958*	168381*	157150	166508
Name	100 x 15	100 x 15	100 x 20	150 x 20	150 x 20	-
Grid size, mm	-	-	-	-	-	-
Culture area, cm <sup>2</sup>	56.7	56.7	56.7	145	150	500
Airvent	+	+	+	+	+	-
Max. external dimensions, mm	92 x 17	100 x 15	92 x 21	144 x 21	147 x 18	245 x 245 x 25
Max. external diameter bottom, mm	87.2	136	87.1	138.3	136	-
Suggested working volume, ml	12.5	12.5	12.5	35	35	135
Units per pack/case	10/150	10/450	10/480	10/80	10/120	4/16

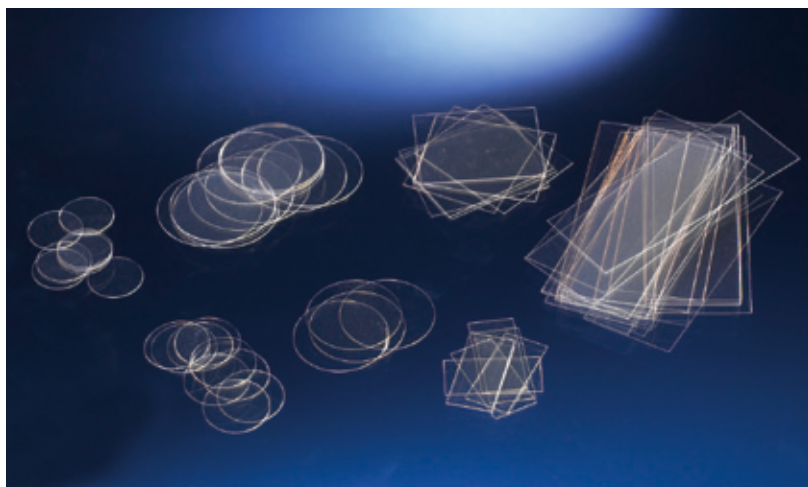
\* Packed in resealable bags

‡ Not available in Americas

† Available only in Americas



## Thermanox™ Coverslips



- 0.2 mm thickness
- Resistant to commonly used solvents
- Safe and easy to handle
- Autofluorescent in the range 380 to 545 nm
- Surface treatment on one side for optimal cell attachment and growth

### Literature:

Bulletin No: 13

Tech Note Nos: 33, Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

### Accessories:

Multidishes

Page 20

### Thermanox™ Coverslips

Sterile



Cat. No.	150067	174969	174977
External dimensions, mm	24 x 30	15 dia.	22 dia.
Units per pack/case	50/500	50/500	50/500

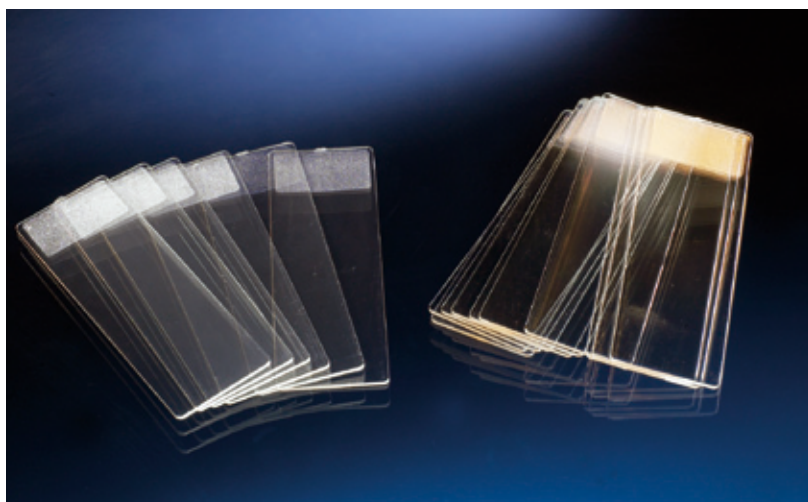
### Thermanox™ Coverslips

Sterile



Cat. No.	174950	174985	174942	174934
For use in Nunc product	24 well Multidish	6 well Multidish	4 well Multidish	8 well Multidish
External dimensions, mm	13 dia.	25 dia.	22 x 60 (rect.)	10.5 x 22 (rect.)
Units per pack/case	50/500	50/500	50/500	50/500

## Microscope Slides



- Surface treatment ensures optimal conditions for cell attachment and growth

### Literature:

Bulletin No: 2

Tech Note Nos: 15, 20, Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

### Nunc Microscope Slides

27 x 75 mm. Sterile

Cat. No.	160005	160004
Material	Permanox™	Polystyrene
Units per pack/case	20/100	20/100

# LiveCell Array™ Microscope Slides

NEW



- First slide-based tool for realtime study of individual, living cells (adhering or non-adhering) within heterogeneous populations
- Disposable, sterile microscope slide with an embedded transparent array of picowells
- Enables multiple functional assays on living cells followed by post fixation studies on the same cells
- Staining, rinsing and perfusion do not displace cells
- Compatible with standard microscopes
- Image Analysis Software Software, commercially-available, can designate an address to each cell

LiveCell™ is a licensed trademark of Molecular Cytomics Inc.



NEW

## Nunc LiveCell Array™ Slides

Cat. No.	130504	130506	130508	130510	130505	130507	130509	130511
Description	Slide with 15 µm well	Slide with 20 µm well	Slide with 100 µm well	Slide with 250 µm well	Slide with 15 µm well	Slide with 20 µm well	Slide with 100 µm well	Slide with 250 µm well
Units per pack	1	1	1	1	5	5	5	5

NEW

## Nunc LiveCell Array™ Apoptosis Kits

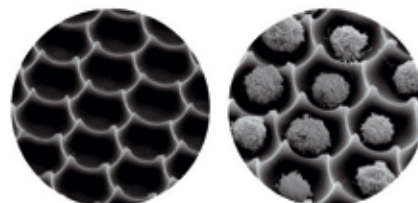
Cat. No.	130512	130513	130514	130515
Description	Apoptosis Kit, slides with 15 µm well	Apoptosis Kit, slides with 20 µm well	Apoptosis Kit, slides with 100 µm well	Apoptosis Kit, slides with 250 µm well
Units per pack	5 slides plus reagents	5 slides plus reagents	5 slides plus reagents	5 slides plus reagents



NEW

## Nunc LiveCell Array™ Cell Surface Marker Kits

Cat. No.	130516	130517	130518	130519
Description	Cell Surface Marker Kit, slides with 15 µm well	Cell Surface Marker Kit, slides with 20 µm well	Cell Surface Marker Kit, slides with 100 µm well	Cell Surface Marker Kit, slides with 250 µm well
Units per pack	5 slides plus reagents	5 slides plus reagents	5 slides plus reagents	5 slides plus reagents



## Tubes Nunclon™ Δ Surface



- Round bottom version with screw or push-on cap
- Flat-sided tube for culture of adherent cells
- Flat side allows easy microscopy, a coverslip can be used in the tube
- Medium retained in the flat sided tube in horizontal position
- Excellent optical quality
- Nunclon™Δ certified

### Literature:

Tech Note Nos: Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

### Accessories:

Serological Pipettes

Page 17

Coverslips, Cat. No. 174934

Page 27

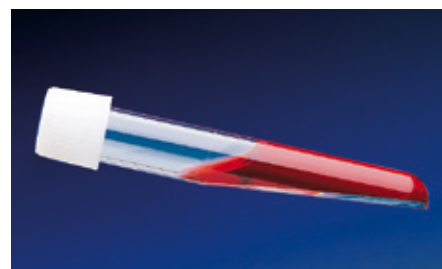
### Nunc Tubes Nunclon™Δ

Polystyrene tubes  
Polyethylene caps. Sterile



Cat. No.	146183	145470 ‡	156758
Shape	Round	Round	Flat
Cap type	Screw cap	Push-on-cap	Screw cap
Suggested working volume, ml	7	7	3
Culture area, cm <sup>2</sup>	-	-	5.5
External dimensions, mm	100 x 14	100 x 13	110 x 16
Units per pack/case	100/600	100/600	75/450

‡ Not available in Americas



## MiniTrays Nunclon™ Δ

### Nunc MiniTrays

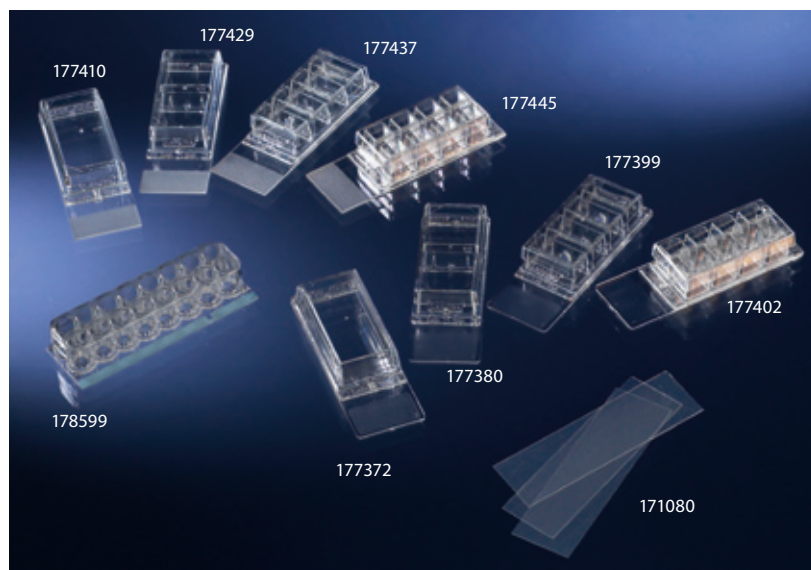
Sterile. Polystyrene  
External dimensions 84 x 59 mm



Cat. No.	163118	136528
Number of wells	60	72
Well shape	Conical	Conical
With lid	+	+
Suggested working vol., µl	8	8
Culture area, cm <sup>2</sup>	0.013	0.013
Units per pack/case	10/150	10/150



## Lab-Tek™ Chamber Slide™ System



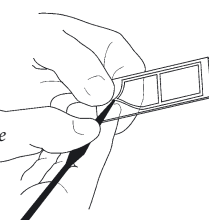
- Cells grow on a standard microscope slide
- No cell transfer needed prior to visualization/staining
- Upper structure can be removed when culturing is complete
- Useful for viral and mycoplasma testing, chromosome studies, toxicity tests and immunocytology
- Broad range of formats and well numbers
- Fits standard equipment
- Saves time and reagents
- Suitable for use with fluorescent labels
- CE marked

### Media Chamber and Gasket Removal

Fix and stain. Gasket may be used as reservoir for reagent incubation. To detach slide from media chamber, grip end of slide with one hand. Gently squeeze both ends of media chamber toward the center lifting chamber as gasket releases



Gasket removal. Insert tip of a thin bladed spatula or similar tool under gasket at one corner. Without stretching or tearing the gasket, smoothly lift it away from the slide



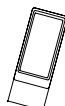
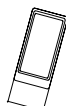
### Literature:

Bulletin No: 13  
Tech Note Nos: 15, 20, 25, Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

### Lab-Tek™ Chamber Slides

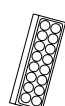
CE marked. Sterile



Cat. No.	177372	177410	177380	177429	177399	177437
Number of wells	1	1	2	2	4	4
Slide material	Glass	Permanox™	Glass	Permanox™	Glass	Permanox™
Suggested working vol. ml	2.5 - 4.5	2.5 - 4.5	1.2 - 2.0	1.2 - 2.0	0.5 - 0.9	0.5 - 0.9
Culture area, cm <sup>2</sup> /well	9.4	9.4	4.2	4.2	1.8	1.8
Units per pack/carton/case	8/16/96	8/16/96	8/16/96	8/16/96	8/16/96	8/16/96

### Lab-Tek™ Chamber Slides

CE marked. Sterile



Cat. No.	177402	177445	178599
Number of wells	8	8	16
Slide material	Glass	Permanox™	Glass
Suggested working vol., ml	0.2 - 0.4	0.2 - 0.4	0.1 - 0.2
Culture area, cm <sup>2</sup> /well	0.8	0.8	0.4
Units per pack/carton/case	8/16/96	8/16/96	8/16/96

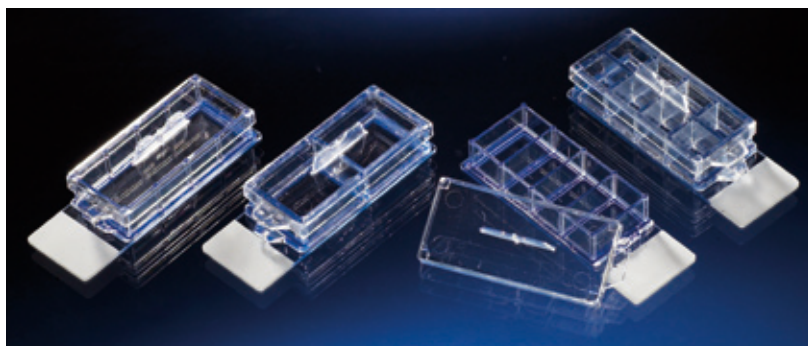
### Accessories

for 178599

Cat. No.	171080
Description	Coverglass
Dimensions, mm	22 x 74
Units per pack	55 g



## Lab-Tek™ II Chamber Slide™ System



- Removable, polystyrene medium chamber of 1, 2, 4 or 8-well configuration
- Non-fluorescent microscope slide, glass (25 x 75 x 1.2 mm) with rounded corners
- Biocompatible adhesive
- Polystyrene cover
- Inert hydrophobic well border printed on slide
- Superfrost™ printed white writing area
- Treated for excellent attachment and growth of cells
- Slide separator included in each pack
- CE marked

*Superfrost™ is a registered trademark of Erie Scientific*

### Literature:

Bulletin No: 13

Tech Note Nos: 20, 25, Vol. 4: 34, 35, 36, 37

*See Pages 195-196 for full reference list with titles and links*

### Lab-Tek™ II Chamber Slide™

CE marked. Sterile



Cat. No.	154453	154461	154526	154534
Number of wells	1	2	4	8
Medium chamber	Polystyrene	Polystyrene	Polystyrene	Polystyrene
Slide material	Glass	Glass	Glass	Glass
Suggested working vol., ml	2.0 - 4.5	1.0 - 2.0	0.5 - 1.0	0.2 - 0.5
Culture area, cm <sup>2</sup> /well	8.6	4.0	1.7	0.7
Units per tray/pack/case	8/16/96	8/16/96	8/16/96	8/16/96

## Lab-Tek™ II - CC<sup>2</sup>™ Chamber Slide™ System



- Chemically coated growth surface on glass slide that mimics polylysine
- Provides binding sites optimal for fastidious cells (e.g. neurons)
- Growth surface remains stable without refrigeration
- Light blue frosted writing area
- Slide separator included in each pack
- CE marked

### Literature:

Bulletin: No: 13

Tech Note Nos: 20, 25, Vol. 4: 34, 35, 36, 37

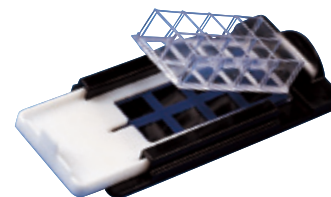
*See Pages 195-196 for full reference list with titles and links*

### Lab-Tek™ II - CC<sup>2</sup>™ Chamber Slide™

CE marked. Sterile

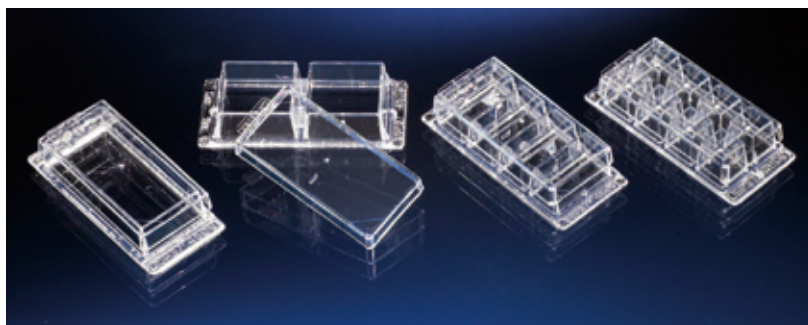


Cat. No.	154739	154852	154917	154941
Number of wells	1	2	4	8
Medium chamber	Polystyrene	Polystyrene	Polystyrene	Polystyrene
Suggested working vol., ml	2.0 - 4.5	1.0 - 2.0	0.5 - 1.0	0.2 - 0.5
Culture area, cm <sup>2</sup> /well	8.6	4.0	1.7	0.7
Units per tray/pack/case	8/16/96	8/16/96	8/16/96	8/16/96



Slide Separator lifts medium chamber from slide

## Lab-Tek™ Chambered Coverglass



- Excellent for confocal image analysis
- Optimal for high power inverted microscopic viewing
- Chambered coverglass
- Medium chamber is **not** removable
- CE marked

### Lab-Tek™ Chambered Coverglass

CE marked. Sterile.  
1.0 Borosilicate coverglass.



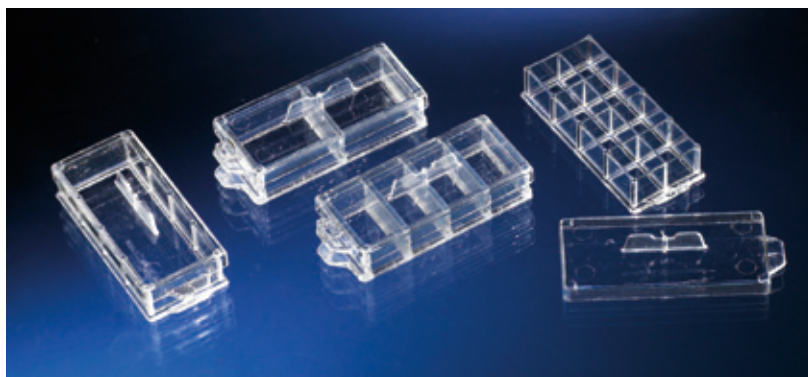
Cat. No.	155361	155380	155383	155411
Number of wells	1	2	4	8
Medium chamber	Polystyrene	Polystyrene	Polystyrene	Polystyrene
Slide material	Glass	Glass	Glass	Glass
Suggested working vol., ml	2.5 - 4.5	1.2 - 2.0	0.5 - 0.9	0.2 - 0.4
Culture area, cm <sup>2</sup> /well	9.4	4.2	1.8	0.8
Units per pack/carton/case	8/16/96	8/16/96	8/16/96	8/16/96

#### Literature:

Bulletin No: 13  
Tech Note Nos: 25, Vol. 4: 34, 35, 36, 37

*See Pages 195-196 for full reference list with titles and links*

## Lab-Tek™ II Chambered Coverglass



- Excellent for confocal image analysis
- Optimal for high power inverted microscopic viewing
- Chambered coverglass
- Medium chamber is **not** removable
- CE marked

### Lab-Tek™ II Chambered Coverglass

CE marked. Sterile.  
1.5 Borosilicate coverglass.



Cat. No.	155360	155379	155382	155409
Number of wells	1	2	4	8
Medium chamber	Polystyrene	Polystyrene	Polystyrene	Polystyrene
Suggested working vol., ml	2.0 - 4.5	1.0 - 2.0	0.5 - 1.0	0.2 - 0.5
Culture area, cm <sup>2</sup> /well	8.6	4.0	1.7	0.7
Units per tray/pack/case	8/16/96	8/16/96	8/16/96	8/16/96

#### Literature:

Bulletin No: 13  
Tech Note Nos: 25, Vol. 4: 34, 35, 36, 37

*See Pages 195-196 for full reference list with titles and links*

# Comparison of Lab-Tek™ and Lab-Tek™ II

## Nunc Chamber Slide™ System

Feature	Lab-Tek™ Product	Lab-Tek™ II Product
Configurations	1, 2, 4, 8, 16 well, flask style	1, 2, 4, 8 well
Medium chamber material	Proprietary cell culture grade polystyrene	Proprietary cell culture grade polystyrene
Slide materials	Soda Lime glass Permanox™ plastic Polystyrene plastic	Soda Lime glass
Cover	Clear polystyrene, no handle, facilitates microscopic viewing	Clear polystyrene with top handle for aseptic manipulations
Sealant	Non-toxic medical grade silicone Remains on slide after detachment	Biocompatible acrylic adhesive - Remains with media chamber after detachment
Reagent "dam"	Created by removable silicone gasket	Created by hydrophobic border
Component separation	No separation tools required	Requires separation tools
Growth surface	For adherent cell culture: Glass slides - Six stage high purity water wash Permanox™ Plastic - Cell culture treated Polystyrene - Cell culture treated	For adherent cell culture: RS treated glass slides - Proprietary wash CC <sup>2</sup> - chemically modified growth surface
Biological testing	BHK-21, HEp-2 cells	BHK-21, HEp-2 cells
Leak tested	Yes	Yes
Slide background fluorescence	Glass: No endogenous fluorescence Permanox: Minimal fluorescence Polystyrene: Autofluorescence < 485 nm	Glass: No endogenous fluorescence
Coverslip compatibility	Yes, following gasket removable	Yes
Writing surface	"Sand blasted" frosted end	Superfrost™ with printed end

## Chambered Coverglass System

Feature	Lab-Tek™ Product	Lab-Tek™ II Product
Configurations	1, 2, 4, 8 well	1, 2, 4, 8 well
Medium chamber material	Proprietary cell culture grade polystyrene Non-removable	Proprietary cell culture grade polystyrene - Non-removable
Coverglass materials	Borosilicate glass No. 1 thickness (0.13 - 0.17 mm)	Borosilicate glass No. 1.5 thickness (0.16 - 0.19 mm)
Cover	Clear polystyrene, no handle facilitates stacking	Clear polystyrene with handle for aseptic manipulations
Sealant	Non-toxic medical grade silicone	Biocompatible acrylic adhesive
Growth surface	For adherent cell culture	For adherent cell culture
Biological testing	BHK-21, HEp-2 cells	BHK-21, HEp-2 cells
Leak tested	Yes	Yes
Slide background fluorescence	Glass: No endogenous fluorescence	Glass: No endogenous fluorescence
Writing surface	None	None
Packaging	8 tray, 16 pack, 96 case	8 tray, 16 pack, 96 case

SuperFrost™ is an Erie Scientific registered trademark.

## Flask on Slide



- Ideal for:
  - Single cell autoradiography
  - Single cell immunofluorescence
- Cell culture directly on a microscopy slide
- The flask on slide is ultrasonically welded and individually leak tested

### Literature:

Tech Note Nos: 15, 20, 25, Vol. 4: 34, 35, 36, 37  
 Slide Flask Procedures  
[www.nuncbrand.com/go/slideslask](http://www.nuncbrand.com/go/slideslask)

See Pages 195-196 for full reference list with titles and links

### Flask on Slide

Sterile



Cat. No.	177453*	170920**
Description	Flaskette	SlideFlask
Slide material	Glass	Polystyrene
Suggested working vol., ml	2.5 - 5.0	2.5 - 5.0
Culture area, cm <sup>2</sup> /well	10	9.0
Units per pack/case	8/96	5/50

\* CE marked

\*\* Nunclon<sup>™</sup>Δ certified

### Accessories

for 170920

Cat. No.	171862
Description	Coverglass
Dimensions, mm	18 x 50
Units per pack	100/1000



# *The Art of Cell Culture*



*Quality in Research – Research in Quality*

For additional information on Nunc™ cell culture products, literature and applications, visit our website: [www.nuncbrand.com](http://www.nuncbrand.com) - always with updated information.





## Cryogenics Introduction

In 1962 the founder of Nunc teleaxed home from a meeting in Geneva. He asked the production manager to make a 2 ml tube for WHO, which could be used in the liquid phase of nitrogen. This was the forerunner of today's CryoTubes™.

We have come a long way since then, most recently meeting the IATA requirements for the transport of biological samples. This means that the tubes can withstand evacuation to 95 kPascal without leaking.

All CryoTubes™ carry the CE marking required for containers of samples of human origin.

The certificate that accompanies each box indicates that the tubes are also thoroughly tested. They are non-toxic as indicated by the USP biological reactivity class VI – 50°C test (7 days implant), which is performed on the raw materials used in the production of all CryoTubes™.

The tubes are certified non-pyrogenic, meeting the international criteria.

All tubes with internal and external threads are packed 50 per reclosable laminated zippered bag. The stronger bags ensure sterility of the contents (As one of only very few cryo vial suppliers, we can certify sterility at the level SAL 10<sup>-6</sup>). All bags are marked with catalog and lot numbers.

Nunc CryoTubes™ exhibit low binding characteristics both in terms of cellular adhesion and protein binding when compared with competitive tubes.

### L929 Cell Adsorption to CryoTubes™ (3 days incubation)



Nunc™

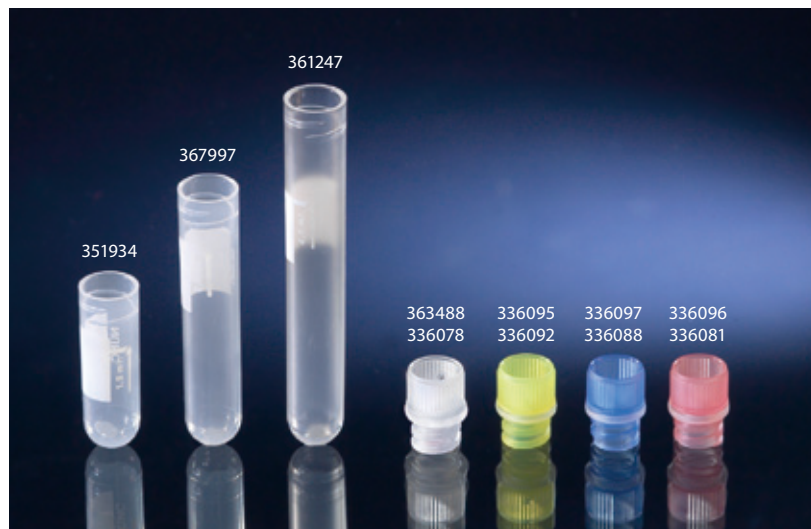
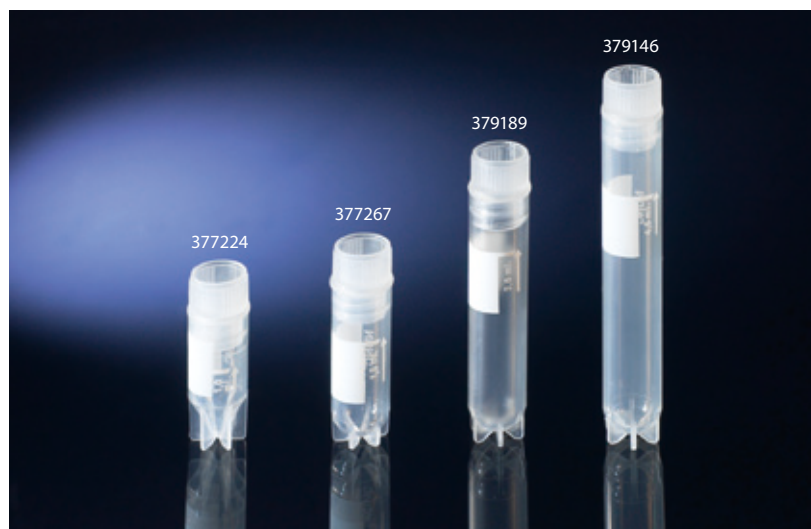
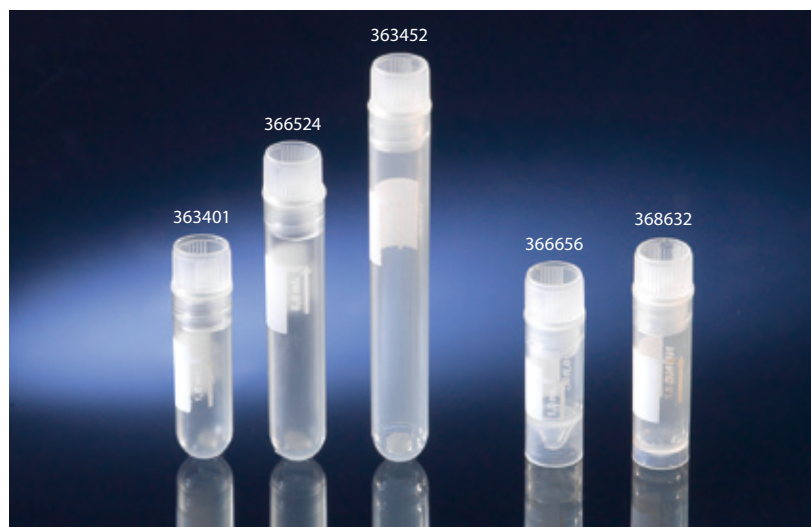
Various competitors

Nunc Brand has comprehensive barcoding capabilities. We can supply coded tubes printed with Interleaved 2 of 5 or labeled with Code 128. Both code types withstand all reagents and conditions normally used in cryo-storage.

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## CryoTubes™ Internal Thread



- Intended for cryogenic transportation and storage of biological material
- CE marked for IVD
- Conform to IATA requirements for the transport of diagnostic specimens
- Perform well in mechanical freezers, and in nitrogen (gas and liquid\* phase)
- One hand operation with starfoot tubes in CryoTube™ Rack (Cat. No. 376589)
- Non-toxic, USP, Class VI
- Non-pyrogenic
- Non-mutagenic
- Sterile (SAL 10<sup>-6</sup>) according to ISO 11137
- Re-closable zippered bags
- Internal thread with a silicone gasket provides the best possible seal
- Catalog No. and Lot No. are printed on the bags
- For extreme storage conditions like liquid phase of nitrogen CryoFlex™ must be used\*



Starfoot tube fits into grooves of the CryoTube Rack (Cat. No: 376589) - Page 47 - which allows one-hand operation.

### \*Warning

Do not use CryoTubes in the liquid phase of liquid nitrogen unless correctly sealed in Nunc CryoFlex Tubing (Cat. No. 343958). Improper use may cause liquified nitrogen to be trapped inside the vial and lead to pressure build-up, resulting in possible explosion or biohazard release. Use appropriate safety procedures as outlined in the Nunc CryoPreservation Manual when handling and disposing of the CryoTubes.

### Literature:

Tech Note No: 14

See Pages 195-196 for full reference list with titles and links

About barcoding:  
[www.nuncbrand.com/go/barcoding](http://www.nuncbrand.com/go/barcoding)

CryoPreservation Manual:  
[www.nuncbrand.com/go/cryopresmanual](http://www.nuncbrand.com/go/cryopresmanual)

Instruction guide enclosed in each case

### Accessories:

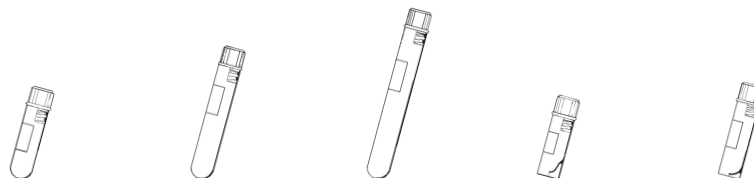
CryoTubes accessories

Page 48



### Nunc CryoTubes™

Internal thread.  
Polypropylene (PP) tubes  
and screw cap.  
Sterile with writing area.



Cap for  
tubes with  
internal  
thread

Cat. No.	363401	366524	363452	366656	368632
Bottom shape	Round	Round	Round	Conical	Round
Suggested working volume, ml	1.8	3.6	4.5	1.0	1.8
Free standing	-	-	-	+	+
Starfoot	-	-	-	-	-
Total length, mm	48	70	92	42	49
Total diameter, mm	12.5	12.5	12.5	12.5	12.5
Units per pack/carton/case	50/500/2000	50/400/1600	50/300/1200	50/500/2000	50/450/1800

### Nunc CryoTubes™

Internal thread.  
Polypropylene (PP) tubes  
and screw cap.  
Sterile with writing area.

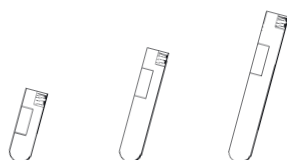


Cat. No.	377224	377267	379189	379146
Bottom shape	Conical	Round	Round	Round
Suggested working volume, ml	1.0	1.8	3.6	4.5
Free standing	+	+	+	+
Starfoot	+	+	+	+
Total length, mm	42	49	72	92
Total diameter, mm	12.5	12.5	12.5	12.5
Units per pack/carton/case	50/500/2000	50/450/1800	50/400/1600	50/300/1200

### Nunc CryoTubes™

without caps

Non-Sterile



Cat. No.	351934	367997	361247
Bottom shape	Round	Round	Round
Suggested working volume, ml	1.8	3.6	4.5
Free standing	-	-	-
Total length, mm	48	70	92
Total diameter, mm	12.5	12.5	12.5
Writing area	+	+	+
Units per pack/case	500/2500	250/1500	250/1500

### Nunc Replacement Screw Caps

Non-Sterile

Cat. No.	363436	336096 ‡	336097 ‡	336095 ‡
Color	Clear	Red	Blue	Yellow
Units per pack/case	500/2500	250/2500	250/2500	250/2500

‡ Not available in Americas

### Nunc Replacement Screw Caps

Irradiated

Cat. No.	336078	336081	336088	336092	336094
Color	Clear	Red	Blue	Yellow	Assorted
Units per pack/case	500/2500	250/2500	250/2500	250/2500	250/2500

## CryoQuot<sup>™</sup>



- CryoQuot<sup>™</sup> allows a 250-300 µl aliquot to be stored in the cap
- The aliquot is trapped by surface tension
- CryoQuot<sup>™</sup> is filled by turning the tube upside down and gently tapping the tube with a finger
- Main sample and aliquot are stored under the same conditions
- The aliquot can be retrieved by taking the cap off the frozen tube and mounting it on an empty tube. The cap from the empty tube is mounted on the main sample, which can be stored again in the freezer without being thawed
- Barcoding available on request

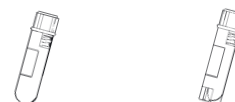
### Nunc CryoQuot<sup>™</sup>

Cat. No.	377272	377274
Bottom shape	Round	Round
Suggested working volume, ml	1.8	4.5
Free standing	+	+
Starfoot	+	+
Total length, mm	49	92
Total diameter, mm	12.5	12.5
Units per pack/carton/case	50/450/1800	50/300/1200

## CryoTubes<sup>™</sup> Internal Thread, Barcoded



**Nunc CryoTubes<sup>™</sup>**  
Internal thread.  
Polypropylene (PP) tubes  
and screw cap. Barcoded.



Cat. No.	373514	373530*
Bottom shape	Round	Round
Suggested working vol., ml	1.8	1.8
Free standing	-	+
Sterile	+	-
Starfoot	-	+
Barcode	Label	Inkjet
Barcode type	Code 128	Code Interleaved 2 of 5
Total length, mm	48	48
Total diameter, mm	12.5	12.5
Units per pack/carton/case	50/500/2000	50/450/1800

See Pages 184 and 185 for further information on barcoded CryoTubes

\* Caps included, unassembled

## Custom Barcoded CryoTubes™



**Pad-print/Ink Jet** is done by printing directly on the tube

- Withstand temperature changes, like freezing in liquid nitrogen and the subsequent thawing
- Code Interleaved 2 of 5
- Available from 1.8 to 4.5 ml, internal thread

**Label** - the unique Nunc label withstands many chemicals e.g. toluene, acetone and DMSO

- Withstand temperature changes like freezing and thawing
- Resistant to autoclaving
- Available as external and internal thread and from 1.0 - 4.5 ml
- Available with Code 128 or Interleaved 2 of 5 or Code 39 (see Page 184)

## Barcode Scanners



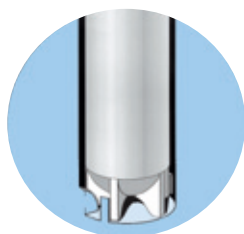
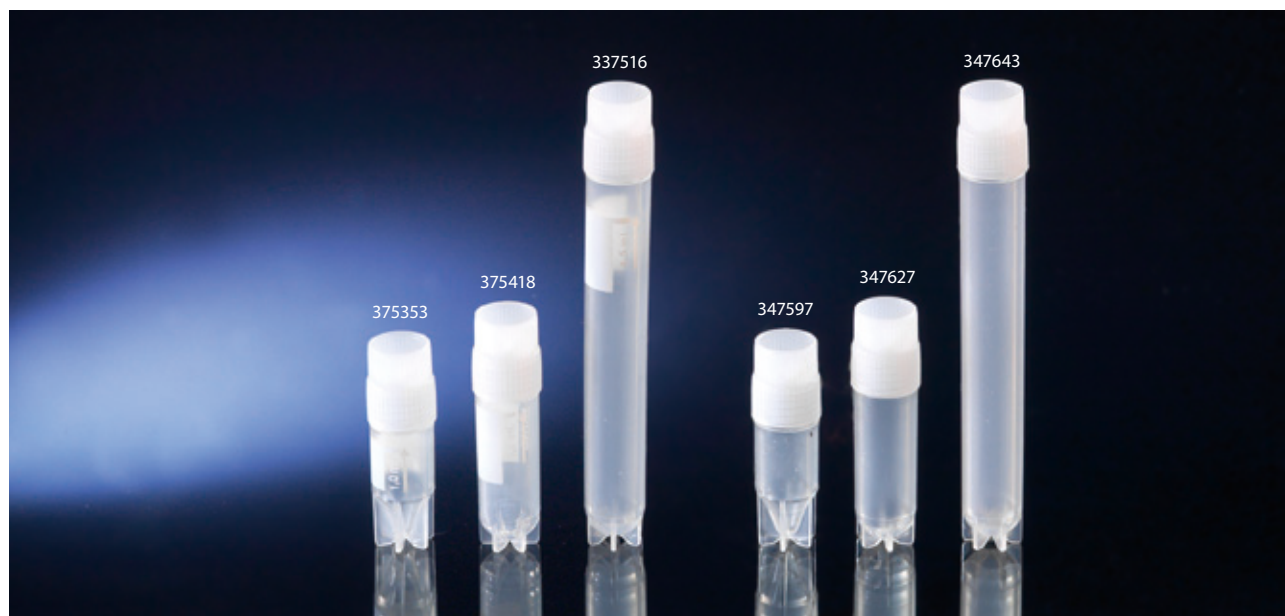
- "Plug and Play" scanner for use with USB slot
- The scanners automatically switch between Code 128, Code 39, Interleaved 2 of 5 and several other barcodes
- Durable and low-cost
- A contact scanner (it must be in contact with the barcode to read)

### Nunc Barcode Scanners

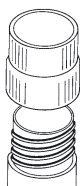
Cat. No.	330040 ‡	330050
Description	Scanner for keyboard slot	Scanner for USB

‡ Not available in Americas

# CryoTubes<sup>™</sup> External Thread



Starfoot tube fits into grooves of the CryoTube Rack (Cat. No: 376589) - Page 47 - which allows one-hand operation



Screw cap for tubes with external thread

## Literature:

Tech Note No: 14

See Pages 195-196 for full reference list with titles and links

CryoPreservation Manual:  
[www.nuncbrand.com/go/cryopresmanual](http://www.nuncbrand.com/go/cryopresmanual)  
Instruction guide enclosed in each case

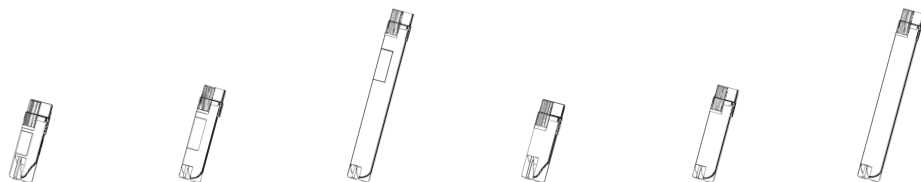
## Accessories:

Cryoline accessories

Page 48

## Nunc CryoTubes<sup>™</sup>

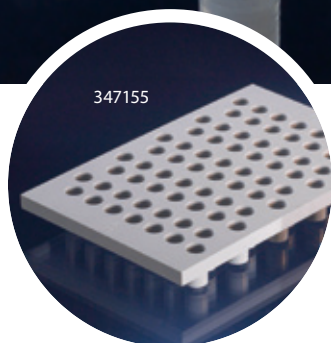
External thread.  
Polypropylene tubes.  
Polyethylene screw caps.  
Sterile.



Cat. No.	375353	375418	337516	347597	347627	347643
Bottom shape	Conical	Round	Round	Conical	Round	Round
Suggested working volume, ml	1.0	1.8	4.5	1.0	1.8	4.5
Starfoot	+	+	+	+	+	+
Total length, mm	41	48	91	41	48	91
Total diameter, mm	12.5	12.5	12.5	12.5	12.5	12.5
Writing area	+	+	+	-	-	-
Units per pack/carton/case	50/500/2000	50/450/1800	50/300/1200	50/500/2000	50/450/1800	50/300/1200



# CryoTubes™ External Thread



- Designed for cryogenic storage of all types of cells or other specimens
- Conform to the IATA requirements for the transport of diagnostic specimens
- Non-pyrogenic according to the LAL test
- Non-toxic USP Class VI
- Sterile (SAL 10<sup>-6</sup>) according to ISO 11137
- External thread recommended for mechanical freezers\*
- Not recommended for use in the liquid phase of nitrogen
- CE marked
- Reclosable zippered bags
- Catalog No. and Lot No. printed on the bags

## \*Warning

*Do not use CryoTubes in the liquid phase of liquid nitrogen unless correctly sealed in Nunc CryoFlex™ Tubing (Cat. No. 343958). Improper use may cause liquified nitrogen to be trapped inside the vial and lead to pressure build-up, resulting in possible explosion or biohazard release. Use appropriate safety procedures as outlined in the Nunc Cryopreservation Manual when handling and disposing of the CryoTubes.*

## Nunc CryoTubes™

External thread, neck design.

Polypropylene tubes.

Polyethylene screw caps\*\*.

Sterile. CE Marked



Cat. No.	375299	340711
Bottom shape	Round	Round
Suggested working volume, ml	1.0	1.8
Free standing	-	-
Total length, mm	30	44
Total diameter, mm	12.4	12.4
Writing area	+	+
Units per pack/carton/case	50/500/2000	50/500/2000

\*\* Closure design does not permit the use of CryoColorCode

## CryoRacks for CryoTubes™ 67 cm Aluminum



- Adjustable shelves to fit many box sizes
- Accommodates 12 MAX-100 boxes for 1.8 ml tubes ( Cat. No. 374187) or 8 MegaMAX-100 boxes for 3.6 ml tubes (Cat. No. 341483) or a combination of these
- Color coded tops for easy identification
- Alignment rods secure boxes in position
- Easy-to-clean
- Fits most chest freezers
- Aluminum light weight material

### Nunc 67 cm Aluminum CryoRacks

11 adjustable shelves /12 compartments. Dimensions, mm: H:670 - W:143.2 - D:140.4

Cat. No.	367000	367005	367006	367007
Top plate color	Natural	Blue	Yellow	Red
Units per pack/case	1	1	1	1

## -20°C Labtop Cooler

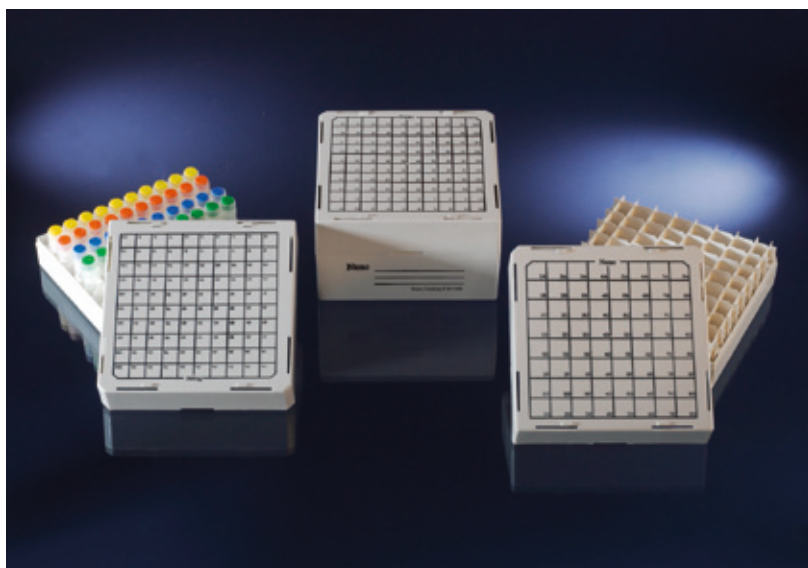


- Holds 20 CryoTubes™ (1.0 and 1.8 ml)
- Inserts are included to accommodate 0.2 to 0.5 ml microcentrifuge tubes
- Protects enzymes, cells, reagents and solutions by maintaining freezer temperatures while on the laboratory bench ( $T^{\circ} < -20^{\circ}\text{C}$  maintained up to 1 hour)
- Maintains freezer temperature during the frost free cycle, power failure and accidental door opening
- Printed grid on one way keyed lid for proper orientation and sample identification
- Molded of impact resistant polycarbonate; stackable, with locking handle

### Nunc -20°C Labtop Cooler

Cat. No.	355501
Description	Labtop Cooler
Material	Polycarbonate
Units per case	1

## MAX-100 CryoStore™ Boxes



- MAX-100 fits 1.0 and 1.8 ml tubes
- MegaMAX-100 fits 3.6 ml tubes
- MicroMAX-100 fits 1.5 ml microcentrifuge tubes
- Use 10 x 10 dividers for internally threaded tubes in gas phase of nitrogen
- Use 9 x 9 dividers for externally threaded tubes or tubes fitted with CryoFlex™

### Nunc MAX-100 CryoStore™ Boxes

Cat. No.	374187	341483	330821
Description	MAX-100 w/10 x 10 Divider	MegaMAX-100 w/10 x 10 Divider	MicroMAX-100 w/8 x 8 Divider
For vial size, ml	1.0 - 1.8	3.6	1.5 - Microcentrifuge tubes
Material	Polycarbonate	Polycarbonate	Polycarbonate
External dimensions, mm	132 x 132 x 52	132 x 132 x 78	132 x 132 x 52
Accessories - dividers	342080/374357	340529/330856	335505
Units per pack/case	4/24	4/24	4/24

### Accessories for Nunc MAX-100 CryoStore™ Boxes

Cat. No.	342080	374357*	340529	330856*	335505
Description	10 x 10 Divider for MAX-100	9 x 9 Divider for MAX-100	10 x 10 Divider for Mega MAX-100	9 x 9 Divider for tubes in CryoFlex for MegaMAX-100	8 x 8 Divider for MicroMAX-100
Material	PECCB	PECCB	PECCB	PECCB	PECCB
Units per pack/case	4/24	4/24	4/24	4/24	4/24

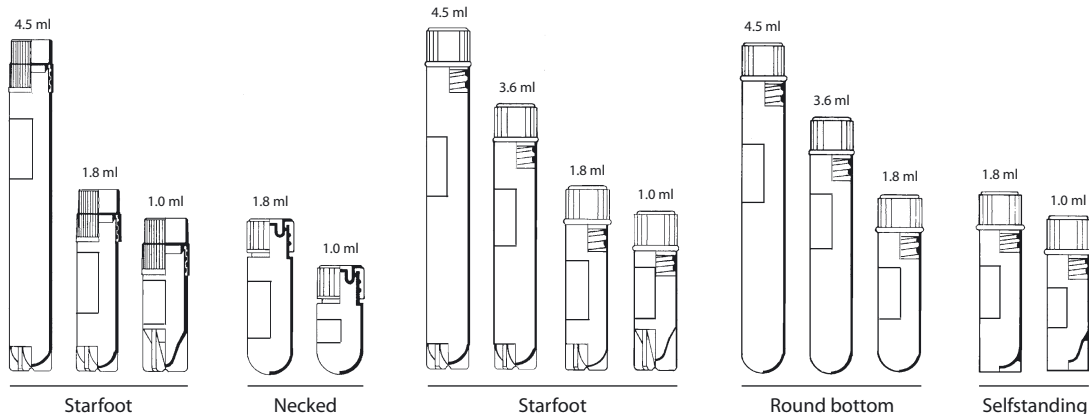
PECCB = Polyethylene Coated Cardboard

\* Suitable for externally threaded tubes

## Storage Boxes for CryoTubes™



- Cardboard boxes in brown or white
- Fit tubes from 1.0 - 4.5 ml



### Nunc Storage Boxes for Nunc CryoTubes™

Cat. No.	378247	378220	369639	369647	340053	340061
Description	Storage box holding 25 tubes	Storage box holding 81 tubes	Storage box holding 81 tubes	Storage box holding 81 tubes	Storage box holding 100 tubes	Storage box holding 100 tubes
Color	Brown	Brown	White	White	White	White
Material	Cardboard	Cardboard	Cardboard	Cardboard	Cardboard	Cardboard
For tubes, ml	1.0 - 1.8	1.0 - 1.8	1.0 - 1.8	3.6 and 4.5*	1.0 - 1.8	3.6 and 4.5*
Dimensions, incl. lid, mm	75 x 75 x 51	132 x 132 x 51	132 x 132 x 51	132 x 132 x 75	145 x 145 x 51	145 x 145 x 75
Units per pack/case	24/24	6/6	48/48	30/30	42/42	30/30

\* 4.5 ml vials may be stored in the boxes; however, the lid will rest on the tubes



## Miniboxes for CryoTubes™



- Keep special samples separate
- Ideal for transport of CryoTubes™

### Nunc MiniBoxes for Nunc CryoTubes™

Cat. No.	534479	534592
Description	Can hold 5 CryoTubes, 1.0 - 1.8 ml	Can hold 10 CryoTubes, 1.0 - 1.8 ml
Material	HIPS	HIPS
Units per pack/case	350/350	200/200

Symbols: HIPS= High Impact Polystyrene

## CryoTube™ Rack



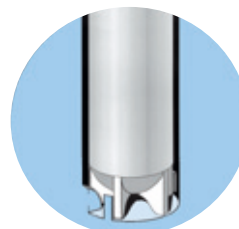
- Autoclavable
- No. 376589 allows one hand operation when used with starfoot tubes

### Nunc CryoTube™ Rack



Cat. No.	347155	376589*
Description	Nunc CryoTube Rack for 70 tubes	Nunc CryoTube Rack for 40 tubes
Material	Polycarbonate	Polyphenyleneoxide
External dimensions, mm	233 x 150	202 x 102
Units per pack/case	30/30	1/15

\* One hand operation with starfoot tubes



Starfoot tube fits into grooves of the CryoTube Rack (Cat. No: 376589) which allows one-hand operation

## Accessories for Nunc CryoTubes<sup>™</sup>



- Use Nunc Cryo Color Coders and CryoPens as part of a versatile and comprehensive filing system
- Cryo Color Coders fit all CryoTubes<sup>™</sup> (except 375299 and 340711)
- Canes can be marked with CryoStore Tabs

### Literature:

Tech Note No: 14

See Pages 195-196 for full reference list with titles and links

CryoPreservation Manual:

[www.nuncbrand.com/go/cryopresmanual](http://www.nuncbrand.com/go/cryopresmanual)

### Nunc Cane and Pens



Cat. No.	378441	339993 ‡	343850	343869 †
Description	Storage Cane	CryoPens, 4 color in pack	CryoPens	CryoPens
Color	-	Black, red, blue, green	Black	Red
Material	Aluminum	-	-	-
Units per pack/case	50/50	4/100	1/10	1/10

‡ Not available in Americas

† Available only in Americas

### Nunc Tabs for Storage Cane



Cat. No.	378484	378492	378476	378468	378506
Color	Orange	Yellow	Green	Blue	Red
Units per pack/case	1/100	1/100	1/100	1/100	1/100



### Nunc Cryo Color Coders



Cat. No.	354968	355158	375868	354755	354879	355018
Color	Red	Orange	Brown	White	Blue	Green
Units per pack/case	500/2000	500/2000	500/2000	500/2000	500/2000	500/2000

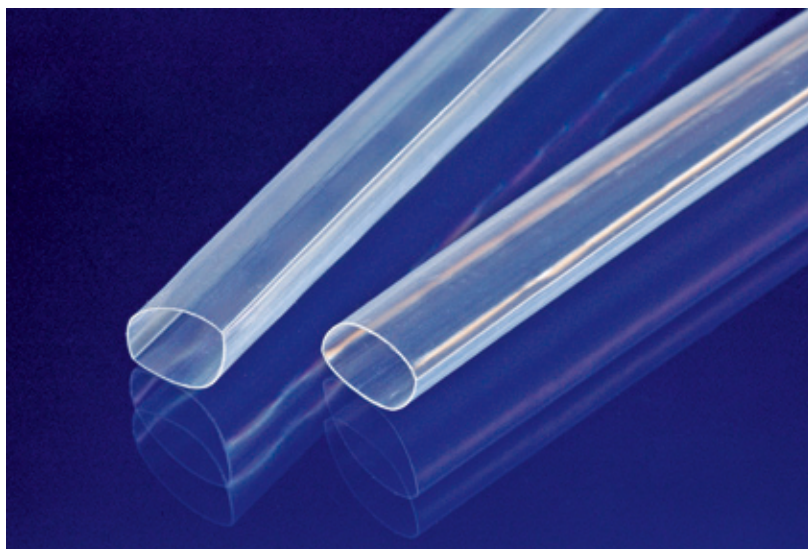
### Nunc Cryo Color Coders



Cat. No.	375884	355077	375922	375906	375930
Color	Magenta	Yellow	Purple	Grey	Assorted
Units per pack/case	500/2000	500/2000	500/2000	500/2000	500/2000



# CryoFlex™



- Nunc CryoFlex™ provides extra safety when freezing hazardous samples or storing in liquid nitrogen

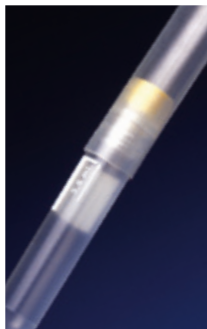
## Literature:

CryoPreservation Manual:  
[www.nuncbrand.com/go/cryopresmanual](http://www.nuncbrand.com/go/cryopresmanual)

## Guide to use Nunc CryoFlex™



*Cut to leave sufficient Nunc CryoFlex at each end of the tube*



*Place sample in CryoTube™, tighten screw cap, cool tube on ice bath, insert the CryoTube into the Nunc CryoFlex*



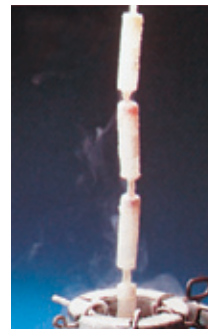
*Shrink the Nunc CryoFlex by gentle heating with a heat gun filled with a shrink tube attachment*



*Crimp or squeeze the heated ends. Trim excess tubing and, if desired, melt the crimped ends*



*Remove the Nunc CryoFlex by cutting around the screw cap*



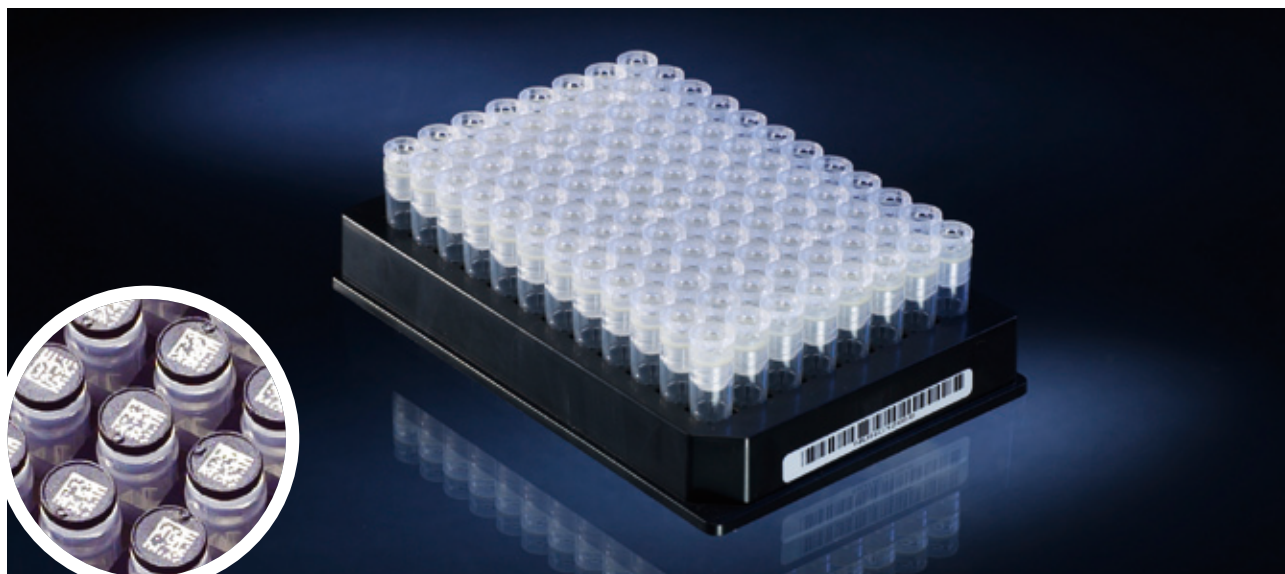
*Use Nunc CryoFlex as a cane for liquid nitrogen*

## Nunc CryoFlex™



Cat. No.	343958
Description	Nunc CryoFlex™
Material	Polyethylene
External dimensions, mm	500 x 14
Units per pack/case	15/300

# Cryobank vials and Bank-It™ Tube System



## Automation friendly design

The new generation CryoTubes™ have been developed for automated use, and will fit into freezer storage units from different manufacturers. The systems can be used in the complete scale up from manual storage to a completely automated system.

## Manual system:

- Vials can be labeled with a cryopen and stored in normal cryoboxes with 13 x 13 inserts, thereby increasing storage density and freezer capacity

## Semi-Automated system:

- Use with a 96 place decapper as a stand-alone
- Use with integrated 8 channel decapper on liquid handling platform
- Fully-automated systems from companies such as The Automation Partnership, RTS Thurnall, TekCel, etc.

For updated information on compatibility with storage systems and liquid handling platforms, contact us at [cryo.nunc@thermofisher.com](mailto:cryo.nunc@thermofisher.com)

Very little initial investment is needed to start up with this CryoTube™ system. It has the ability to take the user to

a fully automated system, and it will allow the user to store DNA and proteins/cells in different volumes using the same automation.

## Dense storage format for optimized freezer utilization

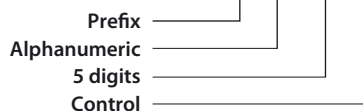
- 96 individual CryoTubes™ in a 96 well format frame (SBS footprint)
- Working volume of 0.5 or 1.0 ml
- Designed for use in the gas phase of liquid nitrogen
- The densest 1.0 ml cryo storage system on the market

## Unique 14 x 14 array 2D Code

The Nunc cryobank/Bank-it™ vials are available with laser-etched unique 2D codes. The 96 2D codes can be read in one pass by the Nunc scanner. 2D codes are more error proof and denser than normal linear codes.

- The open Datamatrix ECC 200 code allows for safe sample identification and reading of whole racks in one process
- 14 x 14 array 2D codes

Example: NU XX 11111 C



## Certifications

- CE marked for diagnostic use
- Sterility assurance level 10<sup>-6</sup> on the cryobank vials
- DNase/RNase free
- Non-pyrogenic (LAL-test) (only valid for cryobank vials)
- Non-toxic (USP class VI test)
- Conform to IATA requirements for the transport of diagnostic specimens, UN packing instructions 602 and 650

## Nunc CryoTube™ with unique low binding surface

- High sample recovery with low concentration samples
- Cryobank vials for cells and proteins (black racks)
- Bank-It™ for DNA (white racks)



# Example of low volume usage

## Storage



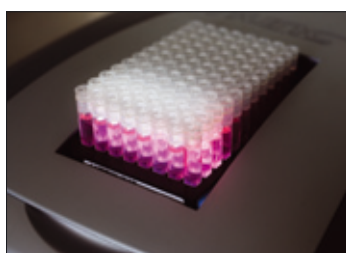
Removal of caps can be easily automated using a socket that snaps into the cap. Our partners offer 96 head decappers using this technique.



The cryobank vials are arrayed in a microwell format that allows for the use of multi-channel pipettors or liquid handling robots. This facilitates sterile work and minimizes handling time.



Caps are replaced using the single or multiple head screwdrivers. Vials are locked into the rack, which ensures that they do not fall out during transport in the lab or storage. The snap in the rack also retains the vial in the rack when the cap is mounted and the screwdriver is removed.



We guarantee verified unique barcodes on the racks and on the cryobank vials. 2D codes are laser etched into the bottom of the vial. The 2D codes are robust and offer the ability to read multiple codes at the same time using the Nunc scanner. The scanner software reads the codes and sends vial coordinate information to a database program.



The database program uses the location of the vials in the rack, the location of the rack in the freezer, and the associated sample data to keep track of the position of every sample and combine it with the data used for selecting samples at retrieval.



Nunc racks are available for both dewars and freezers that optimize the storage density. Racks are made in aluminum and can be color coded. Formats are both for microplate format racks and standard cryobox formats.

## Retrieval



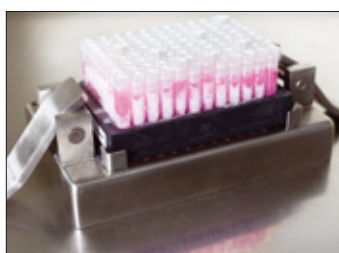
With the information stored in the database, it is possible for a technician to select a number of vials for retrieval. The database program lists the racks, their location in the freezers and the individual positions of the vials. Fast retrieval avoids prolonged thaw cycles that limit the viability of cells and can also ruin other biological samples.



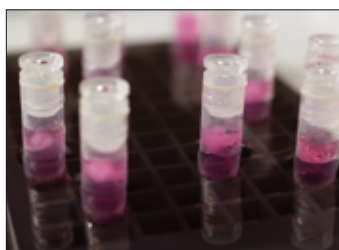
The racks are selected in the database program. Each rack can contain more vials than are required to be picked. The Nunc tube selection tool is intended for picking several vials out of a rack. While still at room temperature, the bits are placed in the positions listed in the database selection list. After verifying the bit position, the rack is ready to be taken out of the cold.



The cryobank rack position is listed in the database output and can be verified by scanning the barcode on the cryobank rack.



The Nunc tube selection tool has a cut-off corner that ensures that the rack and tube selection tool orientation is always aligned when the levers are pressed out of the rack and lifted up for easy retrieval. The rest of the rack is rapidly returned to the freezer to avoid significant thawing.



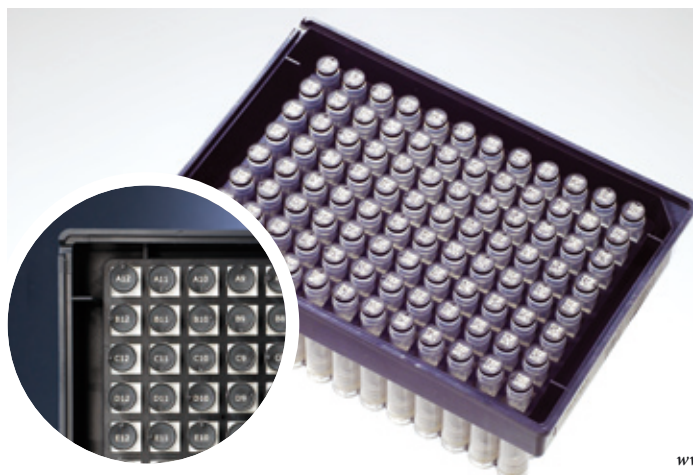
Codes can be verified either prior to or after thaw. If the database is used properly, the user avoids problems with condensation or frosting during the reading process, as the tubes can thaw prior to checking the codes. Condensation and frost are problems that can be overcome by wiping the codes, having them covered during storage or using dehumidified air.



Vials should always be checked to make sure that actually the correct samples have been retrieved.

# Cryobank Vials and Bank-It™ Tube System

**NEW**



Please contact your local distributor or sales rep. for a brochure or go to [www.nuncbrand.com/go/innovativestorage](http://www.nuncbrand.com/go/innovativestorage)



## Nunc Cryobank Vials

Cat. No.	374110	374120	374130	374027	374026	374025	374099	374100
Description	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked
Volume	1.0 ml	1.0 ml	1.0 ml	0.5 ml	0.5 ml	0.5 ml	0.5 ml	0.5 ml
2D coded	+	+	+	+	+	+	-	-
Cap color	Green cap	Red cap	Blue cap	Green cap	Red cap	Blue cap	Red cap	Blue cap
Units per pack/case	96/960	96/960	96/960	96/960	96/960	96/960	96/960	96/960

## Nunc Cryobank Vials

Sterile

Cat. No.	374082*	374083*	374086	374087	374080	374097	374084*	374085*	374088	374089	374081	374094
Description	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, loose pack	Cryobank vials, racked, Alphacode	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, racked	Cryobank vials, SI loose pack	Cryobank vials, racked, Alphacode
Volume	0.5 ml	0.5 ml	0.5 ml	0.5 ml	0.5 ml	0.5 ml	1.0 ml	1.0 ml	1.0 ml	1.0 ml	1.0 ml	1.0 ml
2D coded	+	-	+	-	-	-	+	-	+	-	-	-
Alphacode	-	-	-	-	-	+	-	-	-	-	-	+
Units per pack/case	96/192	96/192	96/960	96/960	96/960	96/960	96/192	96/192	96/960	96/960	96/960	96/960

\* Vial cases include black manual screwdriver Cat. No. 369643

## Nunc Bank-It™

Cat. No.	374066*	374067*	374074	374075	374070*	374090*	374078	374079
Description	Bank-It, racked	Bank-It, racked	Bank-It, racked	Bank-It, racked	Bank-It, racked	Bank-It, racked	Bank-It, racked	Bank-It, racked
Volume	0.5 ml	0.5 ml	0.5 ml	0.5 ml	1.0 ml	1.0 ml	1.0 ml	1.0 ml
2D coded	+	-	+	-	+	-	+	-
Units per pack/case	96/192	96/192	96/960	96/960	96/192	96/192	96/960	96/960

\* Vial cases include black manual screwdriver Cat. No. 369643

## Nunc Cryobank Vials and Bank-It™ caps

Cat. No.	374017	374018	374019	374021
Description	Cryobank/Bank-It caps in racks, irradiated	Cryobank/Bank-It caps in racks - Green	Cryobank/Bank-It caps in racks - Red	Cryobank/Bank-It caps in racks - Blue
Units per pack/case	96/960	96/960	96/960	96/960

# Cryobank Vials and Bank-It™ Accessories



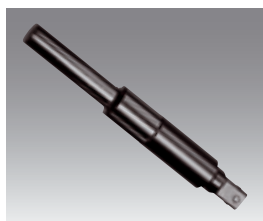
## Handheld electric screwdriver

The cap is retained by the socket, allowing one handed manipulation of the cap.



## MicroPlate rack

Nunc MicroPlate Storage Racks or storage of cryobank vials or Bank-It™ racks. (See Page 174)



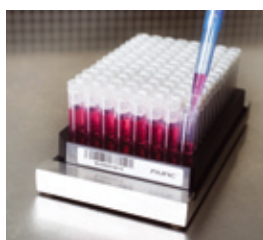
## Manual screwdriver

For manual unscrewing and fastening of the caps.



## 74 cm Cryobank rack

74 cm rack is suitable for 19 0.5 ml cryobank racks or 13 1.0 ml cryobank racks.



## Benchtop rack holder

Benchtop rack holder is used for fixing the plate while manipulating or filling/emptying the vials.



## Storage box

White cardboard box for 169 vials (13x13). Standard cryobox size. For use with loose vials Cat. Nos. 374081 and 374080.



## Tube selection tool

The Nunc tube selection tool is intended for quickly picking multiple vials out of the rack. This action avoids the thawing of the remaining vials. The Nunc tube selection tool has a cut-off corner that ensures the rack and press out tool orientation are always aligned. The vials selected are released by pressing the levers and can be easily harvested.



## Scanner and software

The scanner software reads the codes and sends position information of the different codes to a database program.

## Accessories for Nunc Cryobank vials and Bank-It™

Cat. No.	369640	367014	374009	374011	374028	374001
Description	Cardboard Cryo box, 13x13 divider	74 cm MicroPlate Rack	Tube selection tool	Benchtop rack holder	Barcoded loose rack	13 x 13 inserts for Nalgene® Storage Box 550-0001
Units per pack/case	1/48	1/1	1/1	1/1	10/10	50/50

## Accessories for Nunc Cryobank vials and Bank-It™

### Scanners and software

Cat. No.	330041	330042 ‡	330043 ‡
Description	Scanner and software, US plug	Scanner and software, European plug	Scanner and software, UK plug
Units per pack/case	1/1	1/1	1/1

## Accessories for Nunc Cryobank vials and Bank-It™

### Screwdrivers

Cat. No.	369643	369641	369644 ‡	369658 ‡
Description	Small black manual screwdriver	Electric screwdriver, US plug	Electric screwdriver, European plug	Electric screwdriver, UK plug
Units per pack/case	1/1	1/1	1/1	1/1

‡ Not available in Americas







# Immuno Assay Introduction

## Quality - from start to finish

Nunc Brand uses virgin polymer resins for all immunology products and never compromise on purity or optical grade. Parameter settings on machines and injection molding tools are based on data gathered and analyzed in close cooperation between our research, quality control and production departments. To ensure optimal use of this information all production lines are checked at regular intervals.

## Quality control tests

Quality starts with the choice of the best resin, which can give the surface those characteristics needed to fulfill the unique requirements for passive adsorption of bio-molecules. The resin is the base upon which both optical quality and uniformity of the surface rely.

The resin is thoroughly inspected and approved before it is introduced into the production facility. During production, samples are taken at regular intervals for visual inspection to ensure that the requirements for optical quality and the dimension standards are met.

After the molding steps are completed, the products undergo the necessary surface modification to give the desired characteristics. The surface properties are tested in our laboratory to ensure that the properties conform to the required standard. The products are held in quarantine until the laboratory results confirm their compliance. Products which fail to meet the standard are scrapped.

## Surface matters

Immuno assay technique is an extremely sensitive and specific method with a detection limit in the region of 10-15 fmoles. It is essential to have the appropriate surface and optimized conditions in order to give a stable and reliable assay. We are experts in surface technology, resulting in a broad range of products making assay optimization easy.

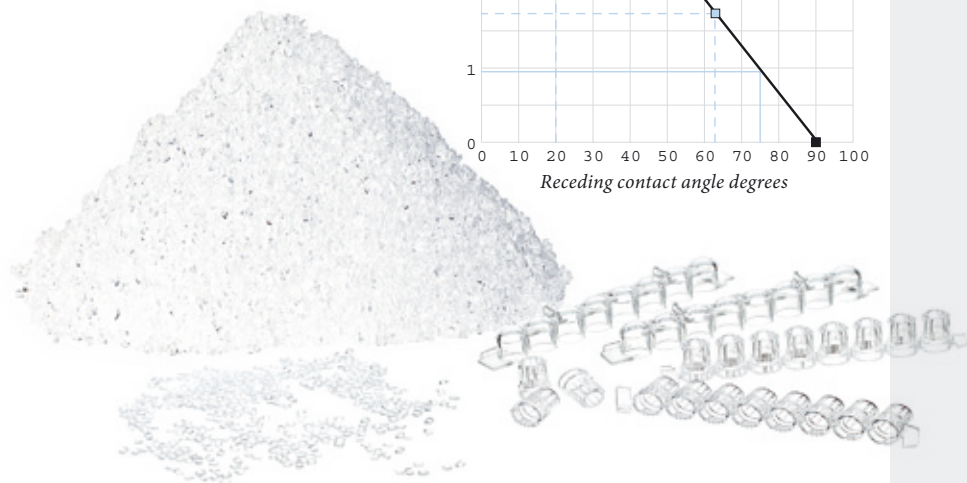
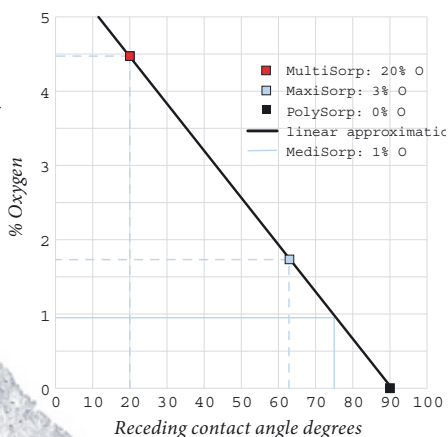
## Certified clean room facility

The production environment is monitored regularly for airborne particles. All production lines employ automation to ensure that from resin to finished product there is only minimum contact with dust and other foreign bodies, which may affect assay performance.

All Nunc-Immuno™ modules are produced in clean room facility (according to Federal Standard 209e).

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# Immuno Surfaces

## Surfaces for ELISA

The choice of the optimal surface for the binding or adsorption of the first layer in a sandwich ELISA is critical for the success of the procedure. While high binding is clearly important, the most important parameter is the detection limit which depends on the signal to noise ratio. Use the Nunc triangle (for passive adsorption surfaces) or the hexagon (for active binding) as a guide when selecting the surface for a new assay. To achieve the best possible results always optimize the incubation conditions and concentrations of the assay components.

### MaxiSorp<sup>™</sup>

Nunc MaxiSorp is treated to give a mixture of hydrophobic and hydrophilic areas for the adsorption of proteins. It is particularly optimized for the adsorption of IgG in a sandwich ELISA.

### MediSorp<sup>™</sup>

When high ELISA background readings are a problem, MediSorp may be the solution. MediSorp's lower total adsorption capacity can, in many cases, reduce non-specific adsorption of serum proteins giving an improved signal to noise ratio.

### PolySorp<sup>™</sup>

The PolySorp surface is ideal for the adsorption of hydrophobic molecules, including those that contain lipid moieties.

### MultiSorp<sup>™</sup>

This highly hydrophilic surface has a number of applications. Use MultiSorp for the adsorption of hydrophilic biomolecules such as highly substituted glycoproteins. Alternatively this surface could be used for the assay, in liquid phase of very hydrophobic analytes.

## Streptavidin

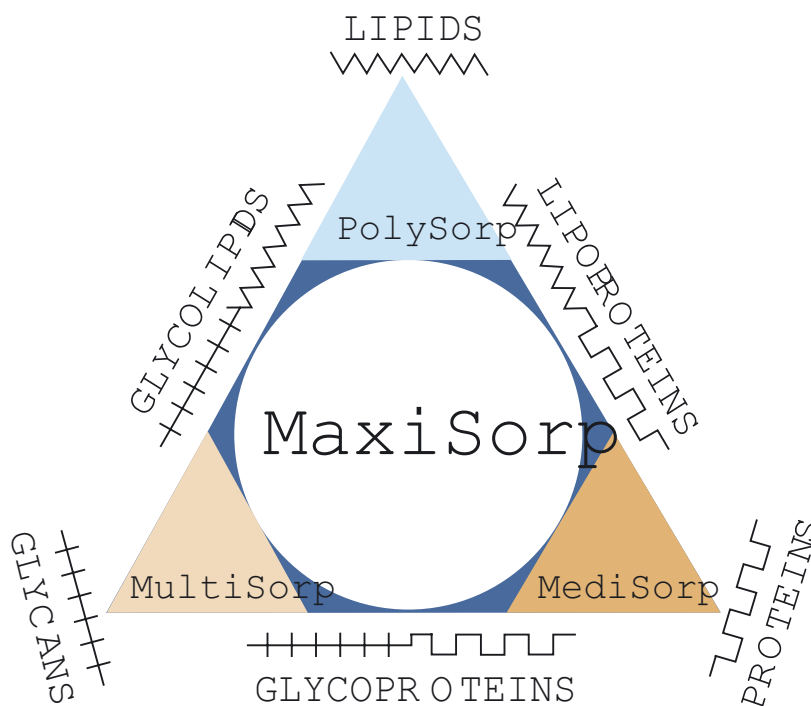
The interaction between biotin and streptavidin has been exploited in many assay applications. Nunc provides two types of streptavidin surface.

### Streptavidin Passive Attachment

The streptavidin molecule can be adsorbed directly to the polystyrene surface. For many applications this works well, particularly for relatively small biotinylated molecules where steric hindrance due to closeness to the polystyrene presents no problem.

### Immobilizer<sup>™</sup> Streptavidin

In this case the streptavidin molecules are covalently bound to the surface via spacer approx. 2 nm in length. This produces a number of advantages: reduced steric hindrance, a very stable surface and controlled spacing of the available binding sites, which is ideal for large biotinylated biomolecules.



Schematic representation of the types of biomacromolecules, which can be bound to the available modified surfaces. E.g. if a lipid is to be bound the hydrophobic surface PolySorp is most suitable. Based on the physiochemical characteristics of the biomolecule to be immobilized, a surface can be chosen, which is appropriate for robust binding. As is indicated in the diagram, MaxiSorp has the widest breadth applications as it is capable of binding the greatest range of molecules.

### Immobilizer Amino

In an ELISA, there are many advantages of covalently binding the first layer to the surface. The Amino surface can be used to covalently bind proteins (including antibodies) or peptides. With a modified protocol DNA can also be bound. Once the first layer is bound it is extremely stable allowing rigorous washing in the subsequent steps.

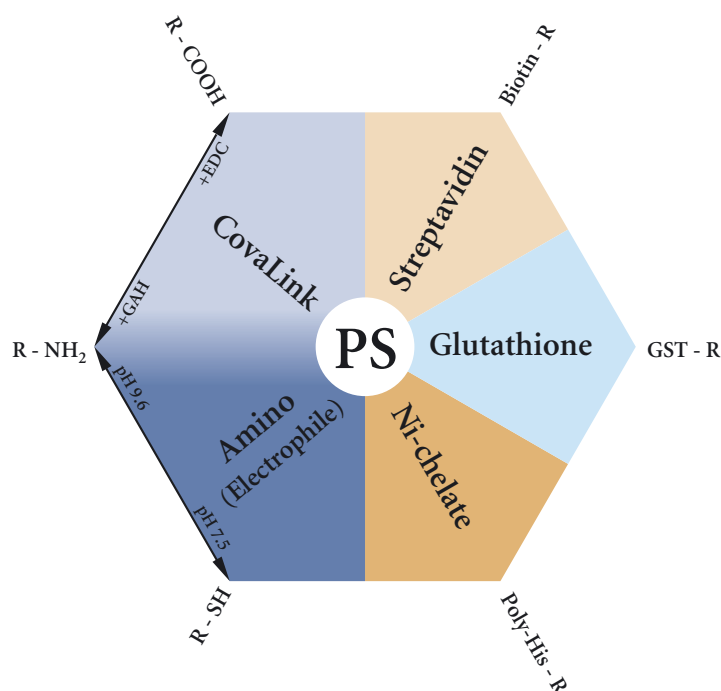
### Immobilizer Nickel-Chelate/ Immobilizer Glutathione

For determination and characterization of fusion proteins, Nunc™ Brand offers two possibilities. Nickel-Chelate for Histidine-tagged and Glutathione for GST-tagged fusion proteins. These plates can be used for purified samples, as well as crude cell lysates.

Both Immobilizer Nickel-Chelate and Glutathione have all the advantages of the Immobilizer family of products: no activation steps, low detection limit, high signal to noise ratio and low background without blocking.

### CovaLink™

The CovaLink surface chemistry often allows binding of molecules, where other methods have failed. It can be used with bifunctional linkers to bind peptides via a carboxylic acid group or DNA by the phosphorylated 5' end of the molecule DNA. Alternatively, the whole surface can be activated using glutaraldehyde.



The diagram shows the available surface modifications for active binding of target molecules. In the case of CovaLink and Immobilizer Amino the target molecule is covalently bound to the PS via a spacer group. The other surfaces firmly bind the target via ligand/receptor "like" interactions which depend on ionic/electrostatic and hydrogen bonds. The surface modifying compounds are covalently bound to the PS.

## DO'S & DON'TS in Immuno assays

### DO:

- Use the right surface treatment for your assay
- Check your protocol for reagent conflicts e.g. buffer mismatches
- Check your equipment for all possible faults
- Calibrate your pipettes, and check your precision
- Store your reagents correctly
- Time the assay steps precisely
- Avoid high background by blocking after the first coating. This leaves no uncoated areas where unwanted binding can occur
- Use a heating block or waterbath to transfer heat evenly. This minimizes edge effects
- When using white plates, store in the dark prior to reading, as exposure to strong illumination can result in phosphorescence, which can interfere with measurements

### DON'T:

- Let wells stand empty, they dry out quickly causing protein damage
- Use an automatically defrost - ing freezer for reagents
- Develop plates in the light, edge effects can be caused by differences in illumination
- Conduct assays in an incubator
- Use detergent prior to the blocking step

# About Immuno Assay Products

## Passive Adsorption Surfaces - Immuno Assay Products

Surface	Format	Base Polymer	Hydrophilicity	Binding Preference	Key Applications
PolySorp™	MicroWell™ Plate, Module Plate, Tube	Polystyrene	-	Molecules containing significant hydrophobic regions, e.g. lipids, lipoproteins, large proteins	Antigen ELISA, FIA, LIA
MediSorp™	MicroWell™ Plate, Module Plate	Polystyrene	+	Biomolecules with hydrophilic/hydrophobic properties, e.g. medium to large proteins, immunoglobulins, albumins	Antibody sandwich ELISA, Antigen ELISA
MaxiSorp™	MicroWell™ Plate, Module Plate, Tube, Omni Tray	Polystyrene	++	Biomolecules with hydrophilic/hydrophobic properties, e.g. small to large proteins, immunoglobulins, albumins, LPS, phosphoproteins, glycoproteins	Antibody sandwich ELISA, FIA, LIA
MultiSorp™	MicroWell™ Plate, Module Plate	Polystyrene	+++	Glycoproteins, polar lipids, phospholipids, cardiolipid	Antigen ELISA

## Low Binding Surfaces - Immuno Assay Products

Surface	Format	Base Polymer	Hydrophilicity	Binding Preference	Key Applications
MiniSorp™	Tube	Polyethylene	n/a	Low binding of molecules	RIA, reagent storage and dilutions

## Covalent Coupling Surfaces - Immuno Assay Products

Surface	Format	Base Polymer	Structure	Binding Preference	Key Applications
Immobilizer™ Amino	MicroWell™ Plate, Module Plate	Polystyrene	Reactive electrophile tethered to the surface by 2nm ethylene glycol spacer arm	Covalent coupling of biomolecules with free NH <sub>2</sub> , and/or SH groups, e.g. proteins, peptides, aminated oligos	Antigen ELISA, FIA, LIA, NA Hybridization assays
CovaLink™	Module Plate	Polystyrene	2nd amine tethered by 2 nm hydrocarbon spacer arm	Specificity of covalent bond is dependent on coupling agent used: EDC-COOH, PO4	Antigen ELISA, LIA, FIA

## Affinity Capture Surfaces - Immuno Assay Products

Surface	Format	Base Polymer	Structure	Binding Preference	Key Applications
Immobilizer™ Streptavidin	MicroWell™ Plate, Module Plate	Polystyrene	Streptavidin covalently coupled to polystyrene surface via 2 nm ethylene glycol spacer arm	Biotinylated biomolecules	Immunoassays, protein-protein binding assays, PCR ELISA, NA Hybridization assays
Immobilizer™ Nickel Chelate	MicroWell™ Plate, Module Plate	Polystyrene	Nickel Chelate covalently coupled to polystyrene surface via ethylene glycol spacer arm	6x His fusion proteins	Immunoassays, protein-protein and protein-nucleic acid binding assays
Immobilizer™ Glutathione	MicroWell™ Plate, Module Plate	Polystyrene	Glutathione covalently coupled to polystyrene surface via ethylene glycol spacer arm	Glutathione transferase fusion proteins	Immunoassays, protein-protein and protein-nucleic acid binding assays

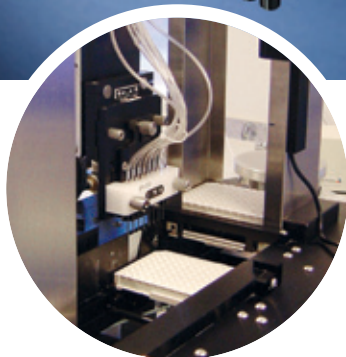
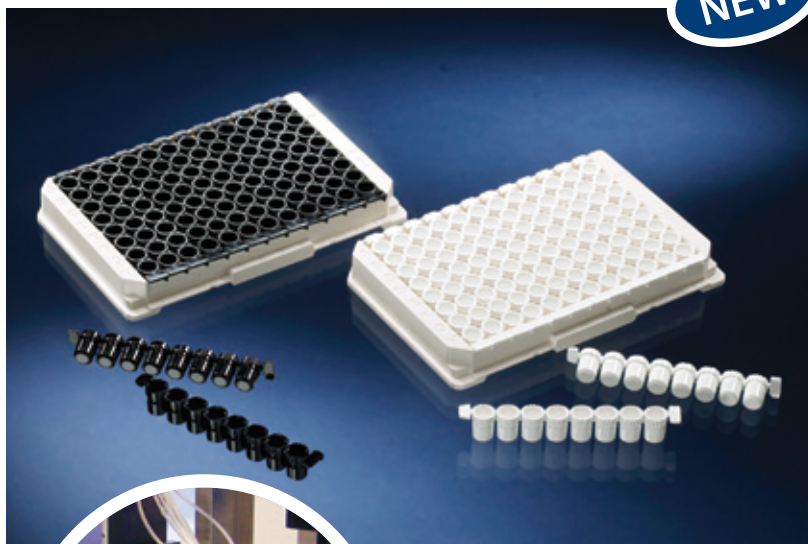
FIA - Fluorescence Immunoassay  
LIA - Luminescence Immunoassay  
NA - Nucleic Acid

Immobilizer™ is a trademark of Exiqon A/S, Vedbaek, Denmark. The product is produced under license from Exiqon A/S and covered by EP 08 20483 and foreign application and patents.



# Immuno™ LockWell™ Fluoronunc™/Luminunc™ Modules

**NEW**



- For fluorescence/luminescence-based immuno-assays and binding assays
- Designed using the standard 96 MicroWell™ LockWell™ format
- Each well locks in the frame of the same height to prevent jamming in machines
- Easy to handle: single well held as easily as strips
- Uniform washing and reading
- Certified binding homogeneity for all 4 surfaces

## White

- White opaque and reflective surface
- Low cross talk and minimal background

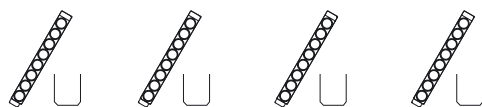
## Black

- Black opaque and light absorbing surface
- Minimum cross talk and back scattered light

**NEW**

## Immuno™ LockWell™ Fluoronunc™/Luminunc™ Modules, framed

96 wells per frame.  
Polystyrene. External  
dimensions 128 x 86 mm

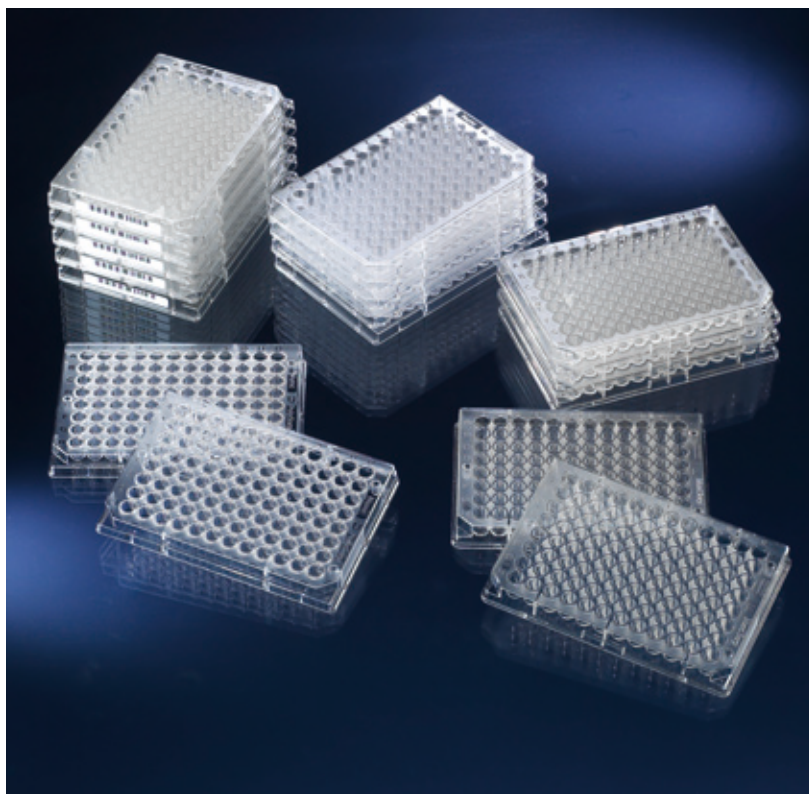


Cat. No.	463200* ‡	446473* ‡	463201* ‡	446471* ‡
Configuration	C8	C8	C8	C8
Surface	PolySorp	PolySorp	MaxiSorp	MaxiSorp
Total volume, µl/well	350	350	350	350
Color	White	Black	White	Black
Units per pack/case	10/60	10/60	10/60	10/60

\* With certificate

‡ Not available in Americas

# Immuno 96 Microwell™ Plates



- Plates intended for quantitative and qualitative solid phase immuno assays (e.g. ELISA) and binding assays
- Choice of Surface
  - PolySorp™, with high affinity to molecules of a hydrophobic nature
  - MediSorp™, has a surface chemistry between PolySorp™ and MaxiSorp™. Provides low background signal with samples containing serum.
  - MaxiSorp™, with high affinity to molecules with mixed hydrophilic/hydrophobic domains.
  - MultiSorp™, with high affinity to hydrophilic molecules
- Choice of F, C and U bottoms
- Raised rims on the wells
- Certified reproducibility of binding
- Alphanumeric orientation system
- When centrifuging MicroWell™ Plates use Spacer Plate (Cat. No. 259684) as support
- Fit standard equipment
- Barcodes available on request (see Page 184 in Custom Services section)



**F**  
Flat bottom



**C**  
Flat bottom  
with curved  
edges



**U**  
Round bottom

## Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12

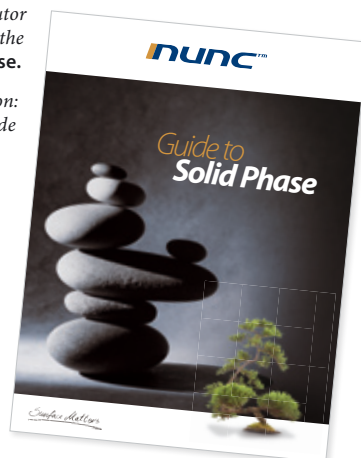
See Pages 195-196 for full reference list with titles and links

## Accessories:

Immuno Washers	Page 76
Spacer Plate	Page 107
NucleoLink	Page 106
Sealing Tapes	Page 178
Lids	Page 176

Contact your local distributor  
or sales rep. for a copy of the  
**Guide to Solid Phase.**

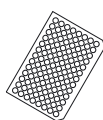
Also available on:  
[www.nuncbrand.com/go/solidphaseguide](http://www.nuncbrand.com/go/solidphaseguide)





Nunc A/S Quality System is certified\* to ISO:9001:2000 and ISO 13485:2003 and designed to comply with US current Good Manufacturing Practice for Medical Devices and In Vitro Diagnostic products, classified as such in the US and EU. Product Quality is consistently monitored and complies with the high quality standards that we have specified for Nunc products. Our quality is documented in lot specific certificates.

\* Valid for products manufactured in Denmark.

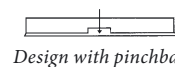


## Nunc-Immuno™ Plates

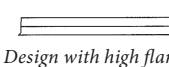
Polystyrene, without lids.

96 wells per plate.

Ext. dimensions 128 x 86 mm



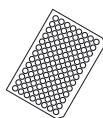
Design with pinchbar



Design with high flange

Cat. No.	475094	456529	446140	475434	467320*	467340
Configuration	F96	F96	C96	U96	F96	F96
Surface	PolySorp	PolySorp	PolySorp	PolySorp	MediSorp	MultiSorp
Design	Pinchbar	High Flange	Pinchbar	High Flange	High Flange	High Flange
Total volume, µl/well	400	400	350	300	400	400
Suggested working volume, µl/well	350	350	250	250	350	350
Total surface area, cm <sup>2</sup> /well	2.7	2.7	2.5	2.0	2.7	2.7
Barcode	-	-	-	-	-	-
Units per pack/case	5/60	10/180	5/60	5/60	5/60	5/60

\* With certificate



## Nunc-Immuno™ Plates

Polystyrene, without lids.

96 wells per plate.

Ext. dimensions 128 x 86 mm

Cat. No.	456537*	460984*	439454*	442404	430341	446612*	449824
Configuration	F96	F96	F96	F96	C96	C96	U96
Surface	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp
Design	High Flange	High Flange	Pinchbar	Pinchbar	Pinchbar	Pinchbar	High Flange
Total volume, µl/well	400	400	400	400	350	350	300
Suggested working volume, µl/well	350	350	350	350	250	250	250
Total surface area, cm <sup>2</sup> /well	2.7	2.7	2.7	2.7	2.5	2.5	2.0
Barcode	-	+	-	-	-	-	-
Units per pack/case	10/180	10/180	5/60	5/60	5/60	5/60	5/60

\* With certificate

# Immuno Modules



- Developed for ELISA techniques
- Choice of MaxiSorp™, PolySorp™, MediSorp™ and MultiSorp™ surfaces
- Alphanumeric orientation systems
- Fit standard equipment
- High optical quality
- With Nunc StarWell™ Modules incubation time can be reduced by more than 50% or the sensitivity similarly increased
- Frames and modules available separately
- Modules remain in frame when inverted
- Sealing tape and strip caps are available
- Certified reproducibility of binding
- Free-standing modules
- Uniform reading and washing
- Color coded modules are available on request (see Page 67)

## Literature:

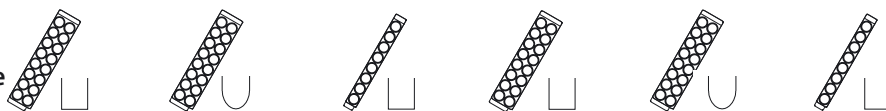
Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12  
Tech Note No: 10

See Pages 195-196 for full reference list with titles and links

## Accessories:

Sealing Tapes	Page 178
Strip Caps	Page 46
Immuno Washers	Page 76

## Nunc-Immuno™ Modules, Loose Polystyrene



Cat. No.	469922	469329 ‡	469957	469914*	469264*	469949*
Configuration	F16	U16	F8	F16	U16	F8
Surface	PolySorp	PolySorp	PolySorp	MaxiSorp	MaxiSorp	MaxiSorp
Total surface area, cm <sup>2</sup> /well	2.7	2.0	2.7	2.7	2.0	2.7
Total volume, µl/well	400	300	400	400	300	400
Suggested working volume, µl/well	350	250	350	350	250	350
Units per pack/case	80/320	80/320	160/640	80/320	80/320	160/640

\* With certificate

‡ Not available in Americas

## Nunc Frame

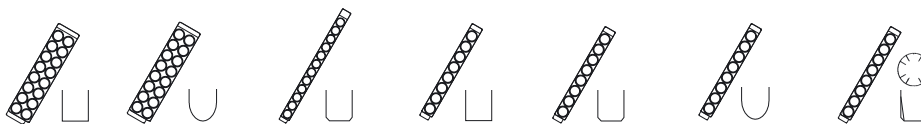
Cat. No.	460348
Material	Acrylonitrile-Butadiene-Styrene (ABS)
Units per pack/case	5/60



### Immuno™ Modules, framed

96 wells per frame. PolySorp surface.

Polystyrene. External dim.: 128 x 86 mm



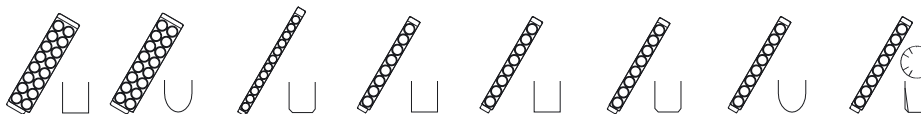
Cat. No.	467679 ‡	466966	473717	469078	444865	475086	441254
Configuration	F16	U16	C12	F8	C8	U8	C8 StarWell
Surface	PolySorp	PolySorp	PolySorp	PolySorp	PolySorp	PolySorp	PolySorp
Total surface area, cm <sup>2</sup> /well	2.7	2.0	2.5	2.7	2.5	2.0	3.0
Total volume, µl/well	400	300	350	400	350	300	380
Suggested working volume, µl/well	350	250	250	350	250	250	250
Units per pack/case	10/60	10/60	10/60	10/60	10/60	10/60	10/60

‡ Not available in Americas

### Immuno™ Modules, framed

96 wells per frame. MaxiSorp surface.

Polystyrene. External dim.: 128 x 86 mm



Cat. No.	467466*	464394* ‡	473709*	468667*	434797*	445101*	475078*	441653*
Configuration	F16	U16	C12	F8	F8	C8	U8	C8 StarWell
Surface	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp	MaxiSorp
Total surface area, cm <sup>2</sup> /well	2.7	2.0	2.5	2.7	2.7	2.5	2.0	3.0
Total volume, µl/well	400	300	350	400	400	350	300	380
Suggested working volume, µl/well	350	250	250	350	350	250	250	250
Units per pack/case	10/60	10/60	10/60	10/60	20/120	10/60	10/60	10/60

\* With certificate.

‡ Not available in Americas

### Immuno™ Modules, framed

96 wells per frame. Medi- and MultiSorp surfaces.

Polystyrene. External dimensions: 128 x 86 mm



Cat. No.	467120*	467140
Configuration	F8	F8
Surface	MediSorp	MultiSorp
Total surface area, cm <sup>2</sup> /well	2.7	2.7
Total volume, µl/well	400	400
Suggested working volume, µl/well	350	350
Units per pack/case	10/60	10/60

\* With certificate.



F  
Flat bottom



C  
Flat bottom  
with curved  
edges



U  
Round bottom



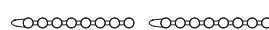
C Starwell  
Flat bottom  
with curved  
edges and  
8 ribs



C8 Starwell  
Showing the  
orientation of  
the 8 ribs

### Accessories

Nunc-Immuno™ Modules



Cat. No.	236366	236370 †	236269 ‡	430805	430082
Description	Sealing tape	Sealing tape	Sealing tape	8 Well strip cap	8 Well strip cap
Material	Polyester	Polyester	Polyester	Polyethylene	Polyethylene
Sterile	+	-	-	+	-
Units per pack/case	200/800	100/100	200/800	12/120	60/180

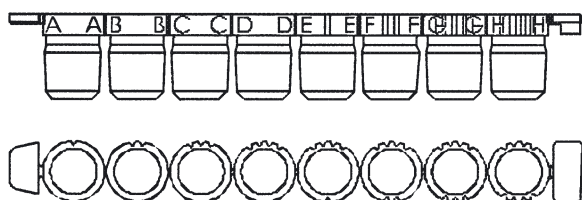
† Available only in Americas

‡ Not available in Americas

# Immuno™ LockWell™ Modules



- Facilitates flexible diagnostic assays that require any number of wells; 96 to 1
- Choice of MaxiSorp™, PolySorp™, MediSorp™ and MultiSorp™ surfaces
- Standard 96 MicroWell™ format
- Each well locks in the frame at the same height to prevent jamming in machines
- Easy to handle: single well held as easily as strips
- Strips or single wells are easy to take in and out of the frame without use of any special tools
- 8 well strips available with U or C bottoms as well as C-StarWells
- Marked for easy identification of each well
- Uniform washing and reading
- Certified binding homogeneity
- Color coded modules are available on request (see Page 67)



Letters and notches on wells allow easy recognition of a single well



The LockWell™ frame has a unique spring lock. It locks each individual well in the frame through an undercut in the well. The spring lock does not touch the strip or well when inserted in the frame

## Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12  
Tech Note No. 10

See Pages 195-196 for full reference list with titles and links

## Accessories:

Immuno Washers	Page 76
Sealing Tapes	Page 178
Lids	Page 176

## Nunc LockWell™ Frame

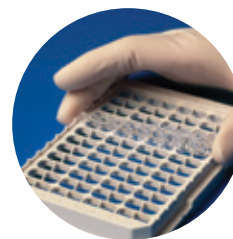
External dimensions 128 x 86 mm



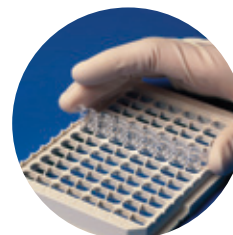
Cat. No.	465404
Description	Frame
Material	Acrylonitrile-Butadiene-Styrene (ABS)
Units per pack/case	10/60

US Patent No. 5.514.343  
Eur. Patent Appl. No. 2113/0688602.

## Easy handling



Release a strip



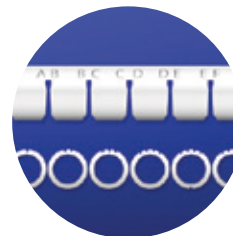
Lift a strip



How to detach a well



Insert a strip



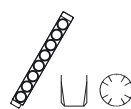
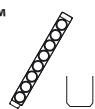
Identifiable individual wells



Tapping

### Nunc-Immuno™ LockWell™ Modules, framed

96 wells per frame. Polystyrene.  
External dimensions 128 x 86 mm

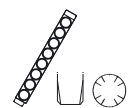
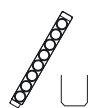


Cat. No.	446442	446477 ‡	448496 ‡
Configuration	C8	U8	C8 StarWell
Surface	PolySorp	PolySorp	PolySorp
Total surface area, cm <sup>2</sup> /well	2.5	2.0	3.1
Total volume, µl/well	350	320	330
Suggested working volume, µl/well	250	250	200
Units per pack/case	10/60	10/60	10/60

‡ Not available in Americas

### Nunc-Immuno™ LockWell™ Modules, framed

96 wells per frame. Polystyrene.  
External dimensions 128 x 86 mm



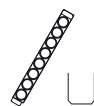
Cat. No.	446469*	446639* ‡	448526* ‡
Configuration	C8	U8	C8 StarWell
Surface	MaxiSorp	MaxiSorp	MaxiSorp
Total surface area, cm <sup>2</sup> /well	2.5	2.0	3.1
Total volume, µl/well	350	320	330
Suggested working volume, µl/well	250	250	200
Units per pack/case	10/60	10/60	10/60

\* With certificate

‡ Not available in Americas

### Nunc-Immuno™ LockWell™ Modules, framed

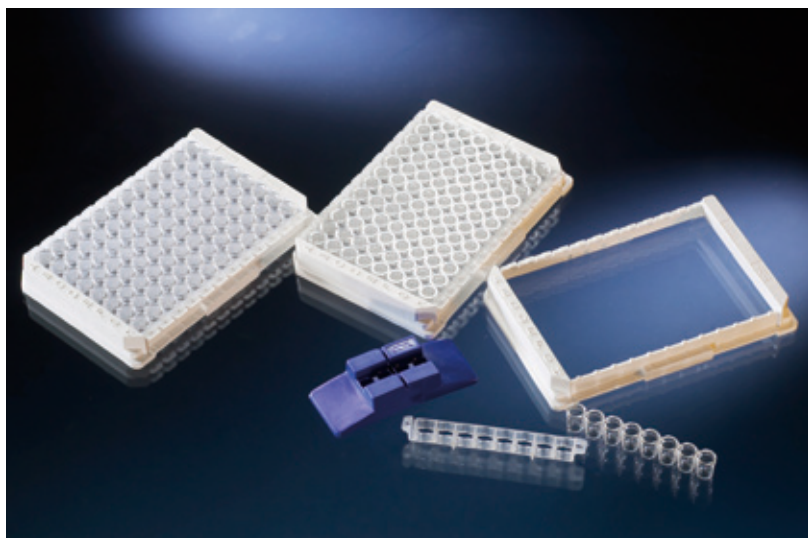
96 wells per frame. Polystyrene.  
External dimensions 128 x 86 mm



Cat. No.	446470*	446490
Configuration	C8	C8
Surface	MediSorp	MultiSorp
Total surface area, cm <sup>2</sup> /well	2.5	2.5
Total volume, µl/well	350	350
Suggested working volume, µl/well	250	250
Units per pack/case	10/60	10/60

\* With certificate

# Immuno™ BreakApart™ Modules



- For solid phase immuno assays, e.g. ELISA
- MaxiSorp™ or PolySorp™ surfaces available
- Consists of a frame with 12 firmly seated carriers, each holding a breakable strip of 8 wells.
- Push-out tools are supplied in every case of 60 modules
- Free standing modules
- Alphanumeric orientation system
- Fit standard equipment
- High optical quality
- Uniform reading and washing
- Certified binding homogeneity
- Color coded modules are available on request (see Page 67)

## Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12

See Pages 195-196 for full reference list with titles and links

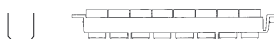
## Accessories:

Immuno Washers  
Sealing Tapes  
Lids

Page 76  
Page 178  
Page 176

## Nunc-Immuno™ BreakApart™ framed

96 well per frame. Polystyrene.  
Ext. dimensions 128 x 86 mm

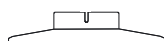


Cat. No.	473539	473768*
Well shape	C8	C8
Surface	PolySorp	MaxiSorp
Total surface area, cm <sup>2</sup>	2.5	2.5
Total volume, µl	350	350
Suggested working volume, µl	250	250
Units per pack/case	10/60	10/60

\* With certificate

## Accessories

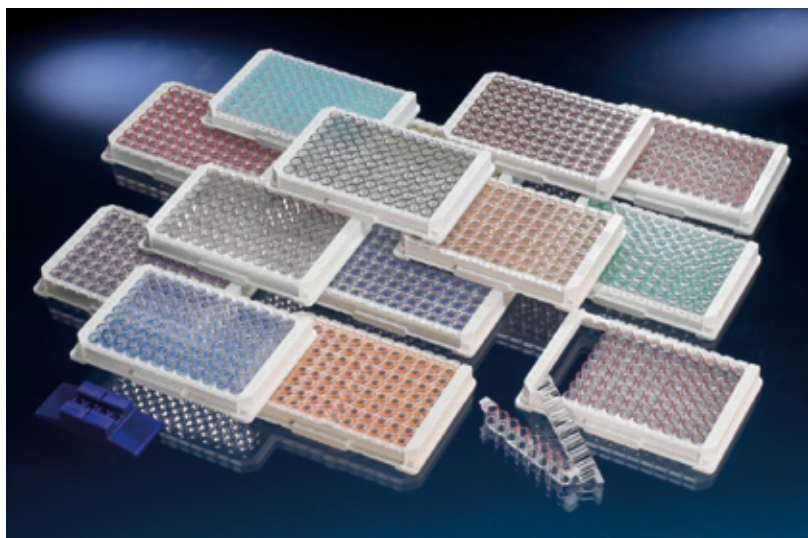
Nunc-Immuno™ BreakApart™.  
Polyethylene



Cat. No.	430414	431615
Description	Push-out tool	C8 BreakApart Frame
Units per pack/case	240/240	5/60



# Color Coded Modules



- Available as PolySorp™ or MaxiSorp™ in different configurations and 15 colors
- Standardized to facilitate easy identification of your assays
- High reliability when working with individual wells
- Post-molding process where a layer of pigment is applied to the plastic rim by heat stamping
- Only one color per plate is available
- Pre-batch approval is possible
- Minimum order of 2 cases (5 cases in US)

## Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12

See Pages 195-196 for full reference list with titles and links

## Accessories:

Immuno Washers  
Sealing Tapes  
Lids

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## Nunc Color Coded Modules

The colors are available in following formats

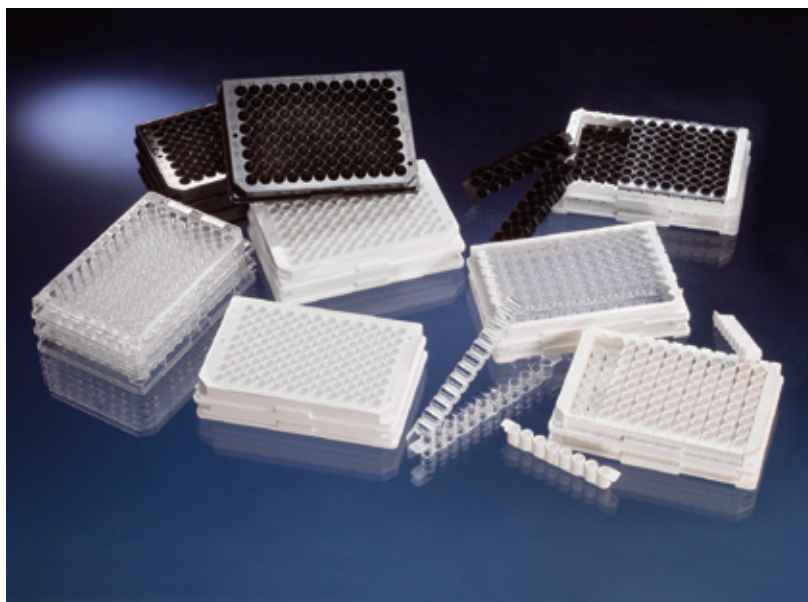
BA = BreakApart, LW = LockWell

Color	C8 BA PolySorp	C8 LW PolySorp	U8 PolySorp	C8 MaxiSorp	C8 BA MaxiSorp	C8 LW MaxiSorp	U8 MaxiSorp	F8 MaxiSorp
Ref. Prod.	473539	446442	475086	445101	473768	446469	475078	468667
Green	465005	475443	478191	445120	459048	475000	478178	462456
Yellow	464912	475444	478192	445113	463630	473237	478176	459990
Blue	460799	475001	478193	445110	460798	474691	478179	462455
Red	464904	475445	478194	445117	460801	475426	475540	463975
Dark Blue	465006	475446	478195	445121	463649	476422	478180	465560
White	465013	475447	478196	445114	463657	475442	478189	462465
Black	465007	475454	478202	445118	465919	475957	478181	462475
Orange	464920	475448	478197	445115	465020	475967	478177	465552
Burgundy	465008	475449	478198	445119	459049	477089	478183	462485
Grey	465009	475451	478199	445112	463622	478174	478184	462495
Brown	465010	475452	478200	445111	465188	478123	478185	462445
Purple	465011	475453	478201	445116	465021	475965	478175	468993
Turquoise	465012	475455	478205	445122	465189	476423	478186	462457
Maroon	465014	475456	478206	445123	465190	476424	478187	462458
Pink	465015	475457	478207	445124	463469	476425	478188	462459

Minimum order of two cases; all products are packed 10/60.

Other modules can be color coded - Please ask for a quote at your local Nunc Brand distributor or at [info.nunc@thermofisher.com](mailto:info.nunc@thermofisher.com)

# Fluoronunc™/Luminunc™ Modules/Plates



- For fluorescence/luminescence-based immuno-assays and binding assays
- MaxiSorp™ surface with high affinity to molecules with mixed hydrophilic/hydrophobic domains
- PolySorp™, less hydrophilic than MaxiSorp™ and with affinity to molecules of a more hydrophobic nature
- Certified binding homogeneity
- Fits standard equipment
- Compatible with lids for MicroWell™ plates and sealing tape and breathable membrane

## White

- Gives maximum reflection
- Minimum autofluorescence and autoluminescence

## Black

- Minimizes background in fluorescence reading
- Minimizes back scattered light
- Minimizes cross-talk

## Clear

- Time resolved fluorescence

## FAQ

### Why does Nunc Brand produce black or white wells?

In order to enable the most sensitive reading of assay results. This means selecting and testing the best possible resins and colorants for specific applications.

## Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12  
Tech Note Nos: 6, 12

*See Pages 195-196 for full reference list with titles and links*

## Accessories:

Immuno Washers	Page 76
Sealing Tapes	Page 178
Lids	Page 176

## Nunc Modules for Fluorescence, framed

96 wells per plate. Polystyrene.  
External dimensions 128 x 86 mm



Cat. No.	475523	437877 ‡	437702	475515*	437915*	437591*
Configuration	F16	C12	C8	F16	C12	C8
Surface	PolySorp	PolySorp	PolySorp	MaxiSorp	MaxiSorp	MaxiSorp
Total volume, µl/well	400	350	350	400	350	350
Suggested working volume, µl/well	350	250	250	350	250	250
Total surface area, cm <sup>2</sup> /well	2.7	2.5	2.5	2.7	2.5	2.5
Color	Black	Clear**	White	Black	Clear**	White
Units per pack/case	10/60	10/60	10/60	10/60	10/60	10/60

\* With certificate

\*\* For time resolved fluorescence

‡ Not available in Americas

## Nunc 96 Well Plates for Fluorescence

96 wells per plate. Polystyrene.  
External dimensions 128 x 86 mm



Cat. No.	437112	437842	437869 ‡	437111*	437796*	437958*
Configuration	F96	C96	C96	F96	C96	C96
Surface	PolySorp	PolySorp	PolySorp	MaxiSorp	MaxiSorp	MaxiSorp
Total volume, µl/well	400	350	350	400	350	350
Suggested working volume, µl/well	350	250	250	350	250	250
Total surface area, cm <sup>2</sup> /well	2.7	2.5	2.5	2.7	2.5	2.5
Color	Black	White	Clear**	Black	White	Clear**
Units per pack/case	10/80	5/60	5/60	10/80	5/60	5/60

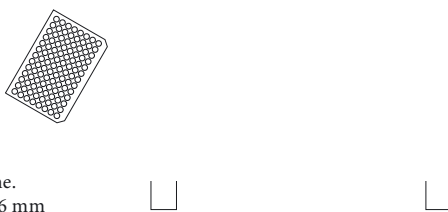
\* With certificate.

\*\* For time resolved fluorescence

‡ Not available in Americas

## Nunc 96 Well Plates for Fluorescence and Luminescence

96 wells per plate. Polystyrene.  
External dimensions 128 x 86 mm



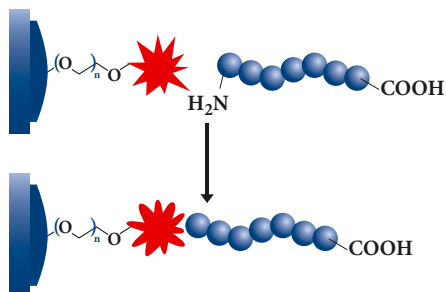
Cat. No.	436111	436110*
Configuration	F96	F96
Surface	PolySorp	MaxiSorp
Total volume, µl/well	400	400
Suggested working volume, µl/well	350	350
Total surface area, cm <sup>2</sup> /well	2.7	2.7
Color	White	White
Units per pack/case	10/80	10/80

\* With certificate

## Immobilizer™ - Amino Modules/Plates



- Rapid covalent coupling of peptides, nucleotides, proteins, enzymes and antibodies
- Ready to use - no activation steps or blocking steps
- Low reagent consumption
- High signal to noise ratio
- Long term stability at room temperature (up to 2 years)
- Surface optimized to minimize steric hindrance and optimize binding interactions
- 384 well plates available (see Page 162)
- Form covalent bond with nucleophilic groups, e.g. amines
- Immobilize molecules that bind poorly to passive surfaces



Covalent coupling of a peptide to the Immobilizer Amino Plate. During a short incubation step, the peptide will bind to the electrophilic group

**NEW**

Now also for binding  
aminated nucleotides  
See Tech Note 56

### Literature:

Bulletin No: 1  
Tech Note Nos.: 43, 56

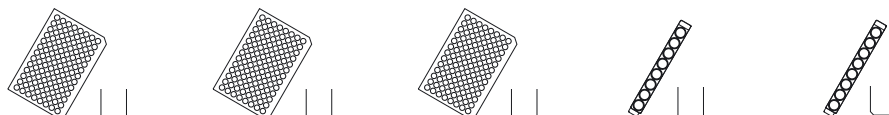
See Pages 195-196 for full reference list with titles and links

### Accessories:

Immuno Washers	Page 76
Sealing Tapes	Page 178
Lids	Page 176

Immobilizer™ is a trademark of Exiqon A/S, Vedbaek, Denmark. The product is produced under license from Exiqon A/S and covered by EP 08 20483 and foreign application and patents.

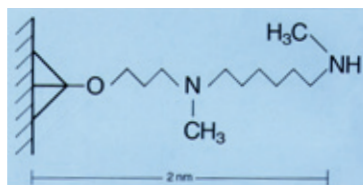
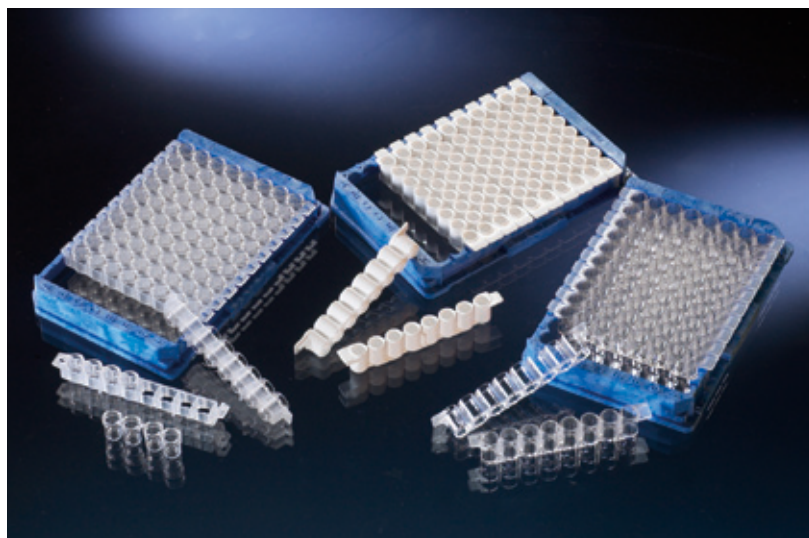
### Nunc Immobilizer™, Amino Modules/Plates



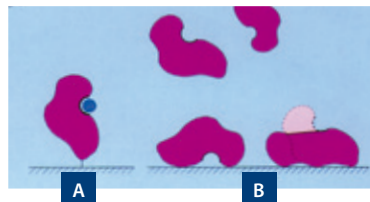
Cat. No.	436006	436007	436008	436013	436023
Configuration	F96	F96	F96	F8	C8 LockWell
Color	Clear	White	Black	Clear	Clear
Total volume, µl/well	400	400	400	400	350
Suggested coupling volume, µl	100	100	100	100	100
Units per pack/case	5/30	5/30	5/30	5/30	5/30



# CovaLink™ NH Modules



Schematic chemical and physical configuration of the CovaLink NH surface. The NH groups are spaced from the polystyrene surface by approx. 2 nm long, chemically defined spacer arms, and are covalently anchored to the surface.



Schematic illustration of the advantage of orientated covalent immobilization contrary to physical adsorption of molecules. A: Covalent coupling may be directed to a group away from the molecule's active site to secure an orientation of the molecule, which makes its active site accessible for the target molecules (O) added in the liquid phase. B: Physical adsorption involves the risk of hiding of the active site against the surface (left), or destruction of the active site due to distortion of the molecule (right) by adsorption.

- Developed to bind compounds covalently to the surfaces
- For use with molecules, which are not easily adsorbed to a passive surface
- Aggressive washing possible using high ionic strength solutions
- Low non-specific binding
- Reaction site easily accessible
- Allows site-specific binding via a carboxylic group of a peptide or the phosphate group in the 5' end of nucleic acid
- Alphanumeric orientation system
- Fit all standard equipment
- Free-standing modules
- White modules for fluorescence and luminescence applications

## Literature:

Bulletin Nos: 1, 4, 7, 10, 11  
Tech Note Nos: 9, 11, 17

See Pages 195-196 for full reference list with titles and links

CovaLink Manual  
[www.nuncbrand.com/go/covalinkmanual](http://www.nuncbrand.com/go/covalinkmanual)

## Accessories:

Immuno Washers	Page 76
Sealing Tapes	Page 178
Lids	Page 176

Contact your local distributor or sales rep. for a copy of the Covalent Binding Brochure.

Also available on:  
[www.nuncbrand.com/go/covalentbinding](http://www.nuncbrand.com/go/covalentbinding)

## Nunc CovaLink™ NH Modules, framed

96 wells per frame. Polystyrene.  
External dimensions 128 x 86 mm

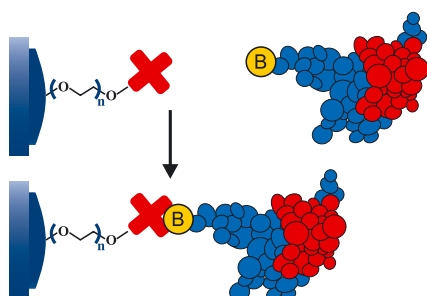


Cat. No.	478042	244105 ‡	453690 ‡
Configuration	F8	C8 Break Apart	C8
Plate color	Clear	Clear	White
Total volume, µl/well	400	330	350
Suggested working volume, µl/well	100	100	100
Total surface area, cm <sup>2</sup> /well	2.7	2.5	2.5
Units per pack/case	5/30	5/30	5/30

NH = secondary amino group  
‡ Not available in Americas



# Immobilizer™ - Streptavidin Modules/Plates



Coupling of a biotinylated protein to the covalently bound streptavidin. After a pre-wash, simply add the biotinylated target molecule in an appropriate buffer. In a short incubation step, the biotinylated molecule will bind to the streptavidin molecule.

- Rapid coupling of biotinylated bio-molecules
- Streptavidin is covalently bound to the surface
- Ready to use - no blocking steps
- Excellent binding capacity (e.g. F96 clear 20 pmol/well\*)
- Minimal leaching of coupled biomolecules from the surface
- Binding site easily accessible
- Low non-specific binding
- High signal to noise ratio
- Stable at room temperature
- Low reagent consumption
- White and black plates for luminescence or fluorescence applications
- 384 well plates available (see Page 162)

\* Depending on size or sterical properties of a given biomolecule the actual molar binding capacity might be different

## Literature:

Bulletin Nos: 1, 4  
Tech Note Nos: 41, 42

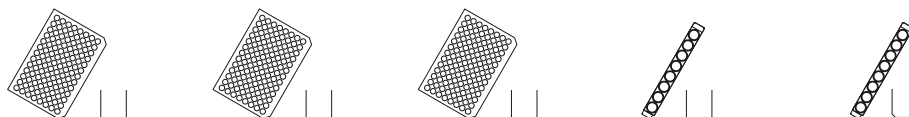
See Pages 195-196 for full reference list with titles and links

## Accessories:

Immuno Washers Page 76  
Sealing Tapes Page 178  
Lids Page 176

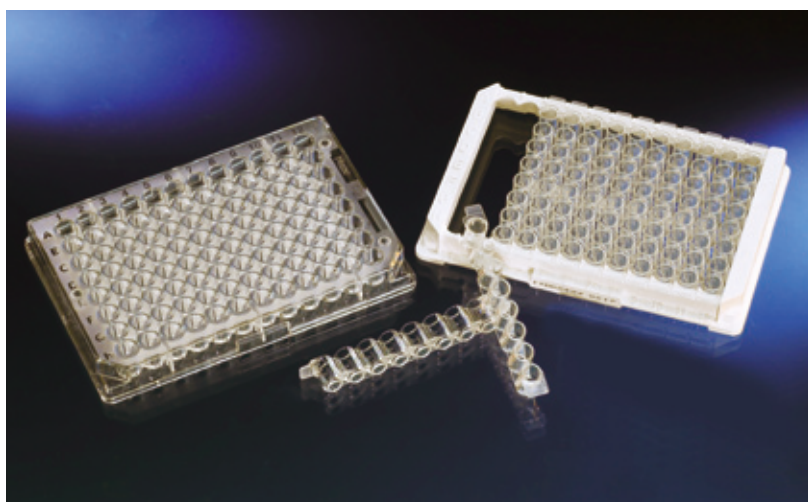
Immobilizer is a trademark of Exiqon A/S, Vedbaek, Denmark. The product is produced under license from Exiqon A/S and covered by EP 08 20483 and foreign application and patents.

## Nunc Immobilizer™, Streptavidin Plates and Modules



Cat.No.	436014	436015	436016	436020	436022
Configuration	F96	F96	F96	F8	C8 LockWell™
Color	Clear	White	Black	Clear	Clear
Total volume, µl	400	400	400	400	350
Suggested coupling volume ul/well	100	100	100	100	100
Units per pack/case	1/15	1/15	1/15	1/15	1/15

# Streptavidin Passively Coated Modules/Plates



- Ideal for binding of biotinylated biomolecules, such as peptides, antibodies, oligonucleotides or haptens
- Streptavidin is passively coated on an area of 154 mm<sup>2</sup> (area covered by a volume of 200 µl)
- Binding capacity for biotin of at least 13 pmol/well\*
- Stable at room temperature
- General assay protocol available on request
- Available in C96 plates or C8 well strips

\* Depending on size or sterical properties of a given biomolecule the actual molar binding capacity might be different.

Application	Description	Graphic
ELISA	Biotinylated antibodies are immobilized on a surface. Capture of antigen followed by detection with labeled second antibody	
PCR-ELISA	Amplify using DIG-dUTP and a biotinylated primer. Capture on a streptavidin plate. Detection by enzyme labeled anti-DIG.	
DNA hybridization assays	Capture of DNA in sample by biotinylated probe. Collection on a streptavidin coated plate. Detection by labeled detection probe.	
Analysis of DNA binding proteins	Immobilize biotinylated DNA on a streptavidin coated plate. Incubate with DNA-binding protein. Detect with antibody.	

The examples given above do not constitute a full list and each application can be performed in several ways



## Nunc Streptavidin Passively Coated Modules/Plates

96 wells per frame. Polystyrene.  
External dimensions 128 x 86 mm



Cat. No.	236001 ‡	236004 ‡
Configuration	C96	C8
Color	Clear	Clear
Total volume, µl/well	350	350
Coated well volume, µl	200	200
Units per pack/case	1/15	1/15

‡ Not available in Americas

### Literature:

Bulletin Nos: 1, 4

See Pages 195-196 for full reference list with titles and links

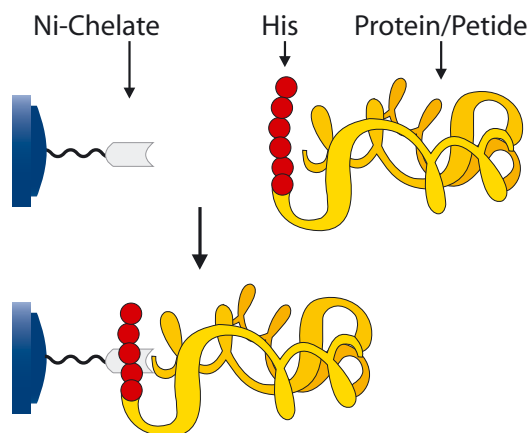
### Accessories:

8 well strips	Page 24
8 well strips caps	Page 63
Immuno Washers	Page 76
Sealing Tapes	Page 178
Tape 12 and 48	Page 179
Lids	Page 176

# Immobilizer<sup>™</sup> - Nickel-Chelate Plates



- Rapid coupling of 6x Histidine-tagged fusion proteins
- Covalently coupled Nickel-Chelate on the surface
- No blocking steps
- For detection and quantification of 6x Histidine-tagged fusion proteins
- Low detection limit
- Low background
- High signal to noise ratio
- Stable at room temperature
- Low reagent consumption
- Binding site easily accessible
- White and black plates for luminescence and fluorescence assays
- 384 well plates available (see Page 162)



Coupling of a 6x Histidine-tagged protein/peptide to the Nunc Immobilizer Nickel-Chelate plate.  
His = Histidine

## Literature:

Bulletin Nos: 1, 4  
Tech Note Nos: 46, 47

See Pages 195-196 for full reference list with titles and links

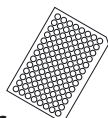
## Accessories:

Immuno Washers  
Sealing Tapes  
Lids

Page 76  
Page 178  
Page 176

## Nunc Immobilizer<sup>™</sup>, Nickel-Chelate Plates

96 wells. External dim. 128 x 86 mm



Cat. No.	436024	436026	436027
Configuration	F96	F96	F96
Color	Clear	White	Black
Total volume, µl/well	400	400	400
Suggested coupling volume, µl/well	100	100	100
Units per pack/case	1/15	1/15	1/15

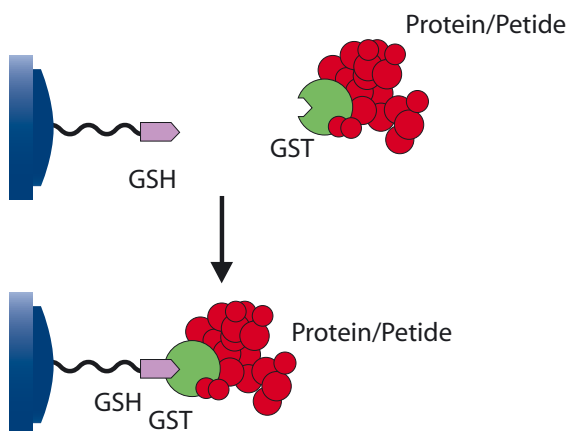
Immobilizer is a trademark of Exiqon A/S, Vedbaek, Denmark. The product is produced under license from Exiqon A/S and covered by EP 08 20483 and foreign application and patents.



# Immobilizer™ - Glutathione Plates



- Coupling of GST-tagged fusion proteins
- Covalently coupled glutathione on the surface
- For detection and quantification of GST-tagged fusion proteins
- Ready to use - no activation steps or blocking steps
- Low detection limit
- Low background noise
- High signal to noise ratio
- Stable at room temperature (1 year)
- Low reagent consumption
- Reaction site easily accessible
- White and black plates for luminescence and fluorescence applications
- 384 well plates available (see Page 162)



Coupling of a GST-tagged protein/peptide to the Nunc Immobilizer™, Glutathione plates.

GSH = Glutathione

GST= Glutathione-S-transferase

## Literature:

Bulletin Nos: 1, 4

Tech Note Nos: 2, 44, 45

See Pages 195-196 for full reference list with titles and links

## Accessories:

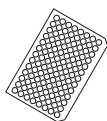
Immuno Washers  
Sealing Tapes  
Lids

Page 76  
Page 178  
Page 176

## Nunc Immobilizer™, Glutathione Plates

96 wells.

External dimensions 128 x 86 mm



Cat.No.	436032	436033	436034
Configuration	F96	F96	F96
Color	Clear	White	Black
Total volume, µl/well	400	400	400
Suggested coupling volume, µl/wel	100	100	100
Units per pack/case	1/15	1/15	1/15

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# Immuno™ Washers



- Easy-to-use
- Allow for a flexible washing procedure
- Uniform and efficient washing
- Very robust and reliable
- Rack included (not autoclavable)
- Adjustable to all well shapes
- Autoclavable at 121°C
- No electrical connections



## Nunc-Immuno™ Washers

Cat. No.	470174	470175
Description	Nunc-Immuno Wash 8	Nunc-Immuno Wash 12
Units per case	1	1

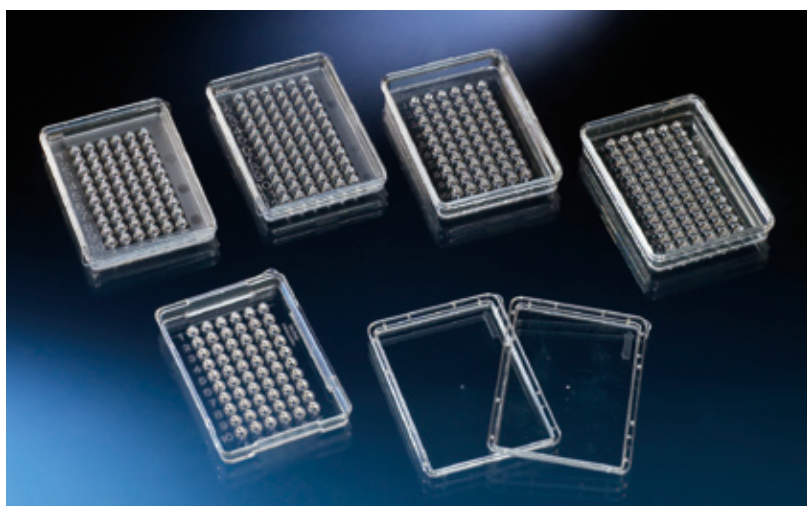
The Nunc-Immuno Wash is available in 8 and 12 channel versions to fit the 96 well Immuno plate or module format. Adjustable to all well shapes. The 8 channel version is not suitable for BreakApart modules.

## Accessories for Nunc-Immuno™ Washers

Cat. No.	554569 ‡	455493
Description	Tubing Kit for Nunc-Immuno Washers	Spare Part Kit
Contains	5 m silicone tubing (10 mm diameter, 6 mm bore), 1 m silicone tubing (5 mm diameter, 3 mm bore), 3 clamps, 1 Y connector.	5 different O-rings 1 spring
Units per case	1	1

‡ Not available in Americas

# MicroWell™ MiniTrays



- Used in serotyping, microcytotoxicity and cell cloning studies
- Optical clarity allows use with inverted microscopes
- Occupy minimal freezer and incubator space
- Lids have keyed tabs for proper orientation
- Large raised alpha-numeric coordinates
- Unique surface treatment to enhance sample and reagent mixing

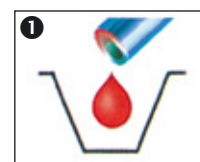
## Nunc MicroWell™ MiniTrays for Serological Applications

Polystyrene. With lid

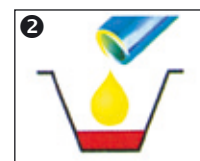


Cat. No.	439225	438733	448698
Number of wells	60	72	72
Well dimensions, mm	Top: 3.71 Bottom: 1.27 Depth: 1.91	Top: 3.71 Bottom: 1.27 Depth: 1.91	Top: 3.71 Bottom: 1.27 Depth: 1.91
Sterile	-	-	+
External dimensions, mm	84 x 59 w/lid	84 x 59 w/lid	84 x 59 w/lid
Profile	Low	Low	Low
Total surface area, cm <sup>2</sup>	0.2	0.2	0.2
Total volume, µl	10	10	10
Units per pack/case	10/100	10/100	10/100

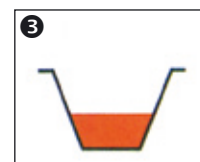
Add reagent



and sample



Reagent and sample will merge due to the special surface treatment of the wells



## Nunc MiniTrays

Polystyrene



Cat. No.	452256	470378	472400
Description	MiniTray with lid	MiniTray with lid	MiniTray with S-Plate
Number of wells	60	72	60
Well dimensions, mm	Top: 3.82 Bottom: 1.34 Depth: 1.92	Top: 3.82 Bottom: 1.35 Depth: 1.92	Top: 3.72 Bottom: 1.30 Depth: 2.10
External dimensions, mm	81 x 56 without lid 84 x 59 with lid	81 x 56 without lid 84 x 59 with lid	81 x 56 without lid
Profile	Low	Low	High
Total surface area, cm <sup>2</sup>	0.2	0.2	0.2
Total volume, µl	10	10	10
Units per pack/case	120/480	120/480	100/400 + 16 lids

## Nunc Glass Coverslips for MiniTrays

Cat. No.	448701
External dimensions, mm	50 x 75
Units per pack/case	100/500

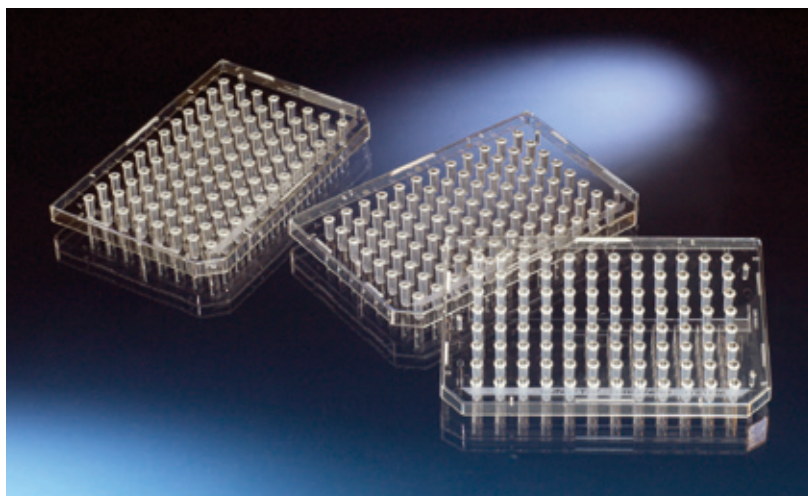
## Nunc Lid for MiniTray S-plates

Polystyrene

Cat. No.	472419
External dimensions, mm	83 x 59
Units per pack/case	100/400



## Immuno™ TSP



- Facilitates the testing of analytes simultaneously, using the ELISA technique
- Ideal for screening of hybridoma cultures for antibody production
- Available in MaxiSorp™ or PolySorp™ surfaces
- Uniform adsorption properties

### Literature:

Bulletin Nos: 6, 7, 8, 9, 10, 11, 12  
Tech Note No: 24

See Pages 195-196 for full reference list with titles and links

### Nunc-Immuno™ TSP

Polystyrene

Cat. No.	473245	476635 ‡
Surface	PolySorp	MaxiSorp
Total surface area, mm <sup>2</sup>	95	95
Units per pack/case	10/210	10/210

‡ Not available in Americas

### Nunc-Immuno™ TSP

For Hybridoma screening mounted in the tray  
Polystyrene. Sterile

Cat. No.	445497
Total surface area, mm <sup>2</sup>	95
Units per pack/case	1/50

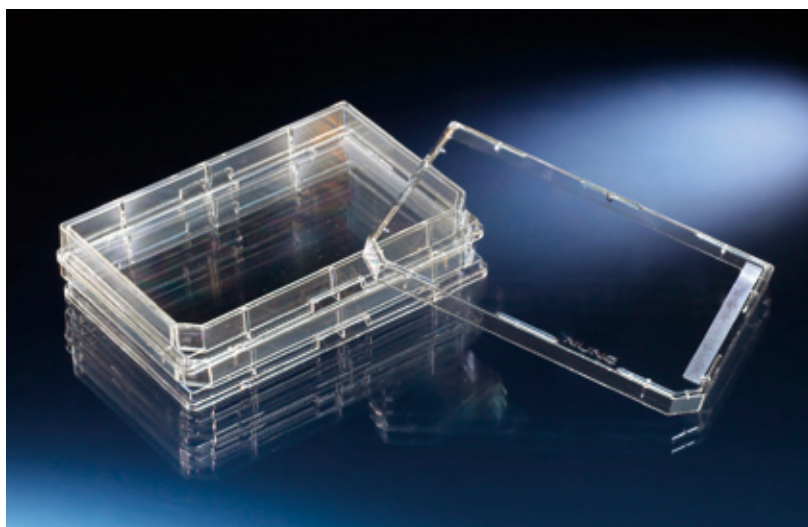
### Washing Tray for Nunc-Immuno™ TSP

Polystyrene

Cat. No.	476619 ‡
Units per case	210

‡ Not available in Americas

## Immuno OmniTray



- MaxiSorp™ surface for binding of IgG and hydrophilic molecules
- Can be used for dotting arrays directly from MicroWell™ Plates
- Same external dimensions as a 96 MicroWell™ Plate

### Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 11

See Pages 195-196 for full reference list with titles and links

### Nunc-Immuno™ OmniTray, MaxiSorp™ Surface

Polystyrene

Cat. No.	465219
External dimensions, mm	128 x 86
Suggested working volume, ml	35
Units per pack/case	10/60



# Immuno™ Stick



- Developed for ELISA and RIA tests away from the laboratory environment
- Gives reliable semi-quantitative results with built-in negative control
- Application literature available
- Choice of MaxiSorp™ or PolySorp™ surfaces
- The test system consists of a tube and stick with a paddle
- Polypropylene tube for minimal adsorption of assay components

## Literature:

Bulletin Nos: 6, 7, 8, 9

See Pages 195-196 for full reference list with titles and links

## A typical procedure with the Nunc-Immuno Stick



## Nunc-Immuno™ Stick

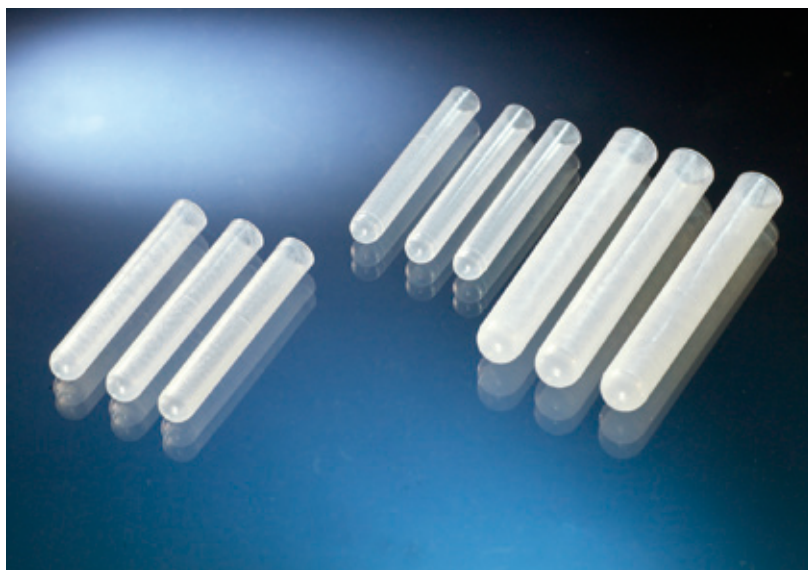
Polypropylene tubes. Polystyrene paddle



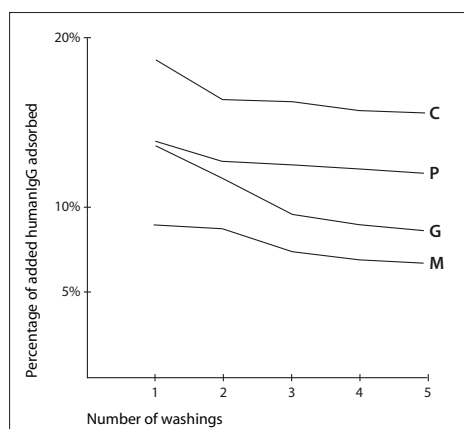
Cat. No.	475574 ‡	472230 ‡
External dimensions incl. lid, mm	49 x 12	49 x 12
Paddle surface	PolySorp	MaxiSorp
Surface area of the paddle approx., cm <sup>2</sup>	5.2	5.2
Units per pack/carton/case	50/450/1800	50/450/1800

‡ Not available in Americas

# Immuno™ Tubes MiniSorp™



- Ideal for liquid phase immuno assays, including RIA
- The tubes are molded from a special polyethylene formulation
- MiniSorp™ surface has proven lower avidity for proteins than glass and other plastics
- No blocking is required
- Three tube sizes with stoppers available
- Fit standard equipment



**Adsorption of human IgG on:**  
MiniSorp (M),  
Polystyrene (P),  
Glass (G), and  
Cellulose nitrate (C)  
versus number of washings.

Additions of 10 ug radiolabeled  
Human IgG to 50 µl saline prior to  
washing.

Incubated 1 hour at 37°C followed by  
repeated washing with 2 ml saline.

## Nunc-Immuno™ Tubes MiniSorp. Polyethylene



Cat. No.	466982 ‡	443990	468608
External dimensions, mm	70 x 11	75 x 12	100 x 15
Total volume, ml	4.0	5.0	12.0
Graduation marking at ml	2.5	2.5	5 + 10
Units per pack/case	150/3600	100/3000	150/1200

‡ Not available in Americas

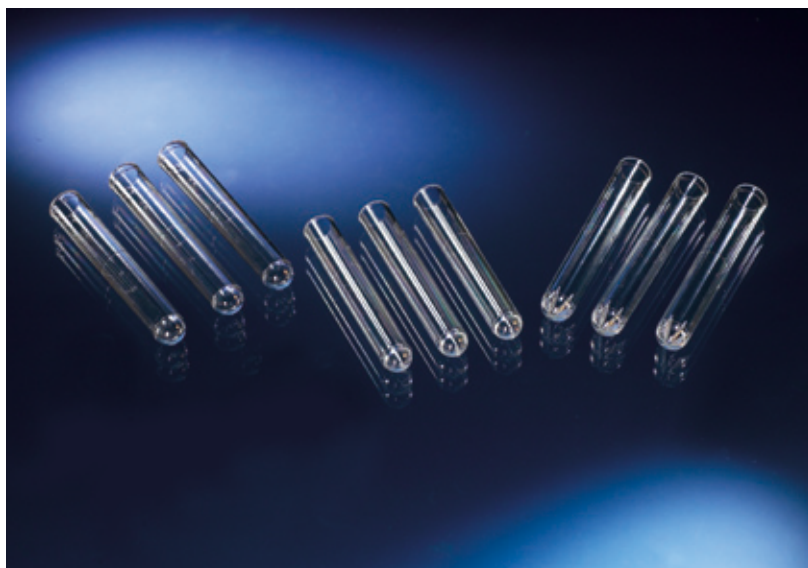
## Stoppers for Nunc-Immuno™ Tubes Polyethylene



Cat. No.	341866 ‡	348801	343036
Fits tubes with external diameter, mm	11	12	15
Units per pack/case	600/ 3600	500/ 3000	300/ 2400

‡ Not available in Americas

# Immuno™ Tubes PolySorp™ and MaxiSorp™

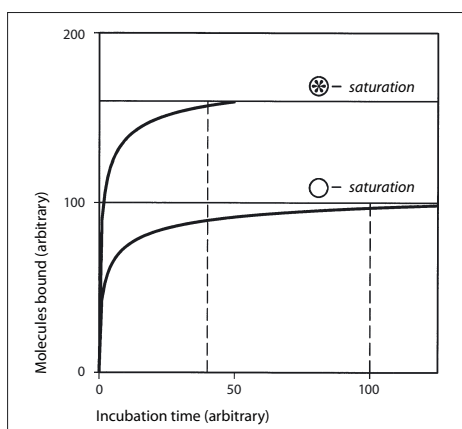


- Used for solid phase immuno techniques, e.g. IRMA, ELISA and ILMA
- Available in MaxiSorp™ (hydrophilic) or PolySorp™ (hydrophobic) forms
- Certified binding homogeneity
- Nunc StarTubes with increased inner surface area give higher sensitivity and faster assay times
- High optical quality
- Fits standard equipment

## Literature:

Bulletin Nos.: 1, 4, 6, 7, 8, 9, 10, 11, 12

See Pages 195-196 for full reference list with titles and links



Average adsorption curves showing the increase in number of bound molecules and the decrease in incubation time obtainable with 350 µl reactant volume by use of the 75 x 12 mm StarTube (⊗), compared to the ordinary 75 x 12 mm Tube (○). The mutual relationship between these curves holds for the binding of every successive layer in the immuno assay sandwich.

## Nunc-Immuno™ Tubes

Polystyrene



Cat. No.	475477 ‡	476503	444474* ‡	444202*	470319*
Surface	PolySorp	PolySorp	MaxiSorp	MaxiSorp	MaxiSorp
Configuration	Standard tube	StarTube	Standard tube	Standard tube	StarTube
External dimensions, mm	75 x 12	75 x 12	70 x 11	75 x 12	75 x 12
Total volume, ml	5.0	5.0	4.0	5.0	5.0
Units per pack/case	100/3000	100/3000	150/1800	100/3000	100/3000

\* With certificate

‡ Not available in Americas

CE Marked Products for  
*Assisted  
Reproductive  
Technologies*





# ART/IVF Introduction

## Certification

Quality in IVF means that our products are manufactured according to the ISO 13485:2003 standard by methods documented in writing using validated production equipment. In this way we can ensure reproducibility within and between production lots.

In order to be used for IVF, a product needs regulatory approval (CE marking in Europe and 510(k) market clearance in the US). An independent approval of the procedure, as well as the product used for any application, is required.

Lloyds is among a few companies that are certified by the EU commission to approve a CE medical device marking. Such a company is called a notifying body. Lloyds is represented by the number 0088 and which appears with the CE mark on Nunc products. The notifying body verifies that both the development and the production of the product are in compliance with the relevant directive and fulfil the essential requirements. Important issues are "intended use of the product" and risk analyses for both the production and the usage of the product.

The vital criteria for an IVF product are that it is sterile and non-toxic.

The directive recommends performing an appropriate test. Due to the importance of the cytotoxicity and the assumed small tolerances, it is necessary to have full batch control of the raw material.

This is to ensure that no variation in cytotoxicity in the batch of polystyrene will be transmitted. Several physical performance tests are carried out on incoming raw materials, but there is a risk of cytotoxicity resulting from mixing batches of raw materials. There is a similar issue with the irradiation process.

A complete batch is irradiated simultaneously in order to minimize the variation in the irradiation dose. Without full batch control there could be a potential risk that the test results achieved may not represent the cytotoxicity for all the products in the production lot.

Each case of products contains a certificate with batch number printed on the back and the statements below:

## Material

Material is crystalline virgin polystyrene, which has successfully passed the USP biological reactivity class VI-50° C test (7 days implant) and ISO 10993 standards for cytotoxicity.

## Sterility

Sterility is obtained through irradiation according to ISO 11137 (sterilization of health care products - requirements for validation and routine control - radiation sterilization).

## Non-pyrogenic

Batches are tested according to the principles of the LAL-test described in the FDA guidelines and certified non-pyrogenic with a documented endotoxin level of less than 20 endotoxin units/device (0.5 endotoxin units/ml) as stated in the USP.

## Contents

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<b>NEW</b>	IVF 4 Well Dishes.....	85
<b>NEW</b>	IVF Petri Dishes Non-treated .....	85

# 1-cell Stage Embryo Toxicity Testing

Mouse Embryo Assay (MEA) test: Blastocyst formation ratio larger than 80% for fully expanded blastocysts both in test and control. The embryotoxicity test is a release test and the product will only be sold if it has passed the test.

Description of the embryo toxicity test for the 4 well dish 1-cell embryo toxicity testing.

Indirect test: Extraction is done using 0.5 ml "embryo-tested" (meaning previously tested) culture medium per well for 48 hours at 37° C and 5% CO<sub>2</sub>. The samples for 3 plates are pooled. Twenty-one 1-cell (B6C3F1xB6D2F1, i.e. a cross between strain B6C3F1

female mice mated with B6D2F1 male mice) embryos were cultured in triplicate in 12 µl drops of the resulting extract (previously embryo-tested medium) supplemented with 0.4% BSA. Direct test: The embryos are cultured directly in the dish with 21 embryos in triplicate. Three of the 4 wells receive seven 1-cell stage embryos in 0.5 ml of medium. All incubation is done at 37° C and 5% CO<sub>2</sub>. Performance is observed at 24 and 96 hours. During the test, after 24 hours, the preliminary result is obtained (the number of embryos that have developed to the 2-cell stage is recorded). After approximately 96 hours from the time when the 1-cell state

embryos were added, the 4 Well Dish is removed from the incubator and the embryos are observed in a microscope. Only those embryos that are determined to have reached the expanded blastocyst stage are scored as being viable. The requirement for Nunc IVF products is that at least 80% of the 1-cell test embryos must develop to the expanded blastocyst stage within 96 hours.

The embryo toxicity test for the other products is a slight modification of the test described above.



## IVF 4 Well Dishes



### Nunc IVF 4 Well Dishes

Sterile

Cat. No.	144444	179830
Description	4 Well Dish	4 Well Dish
Number of wells	4	4
Surface	Nuncclon™Δ	Non-treated
Culture area, cm <sup>2</sup> /well	1.9	1.9
External dimensions, mm	66 x 66	66 x 66
Units per pack/case	4/120	4/120

- Intended use is *in vitro* fertilization
- CE marked according to Medical Devices Directive 93/42/EEC
- Produced and marketed in compliance with the FDA demands for IVF products
- Full batch control of all components in the final product for full traceability
- Unique certification based on a 1-cell stage mouse embryo toxicity test; the certificate confirms:
  - Sterility (SAL 10<sup>-6</sup>)
  - Non-pyrogenicity
  - USP Class VI test
- For MEA tested centrifuge tubes (see Page 84)

#### Accessories:

Centrifuge Tubes	Page	88
CryoQuot™	Page	40
EasyFlasks™	Page	11

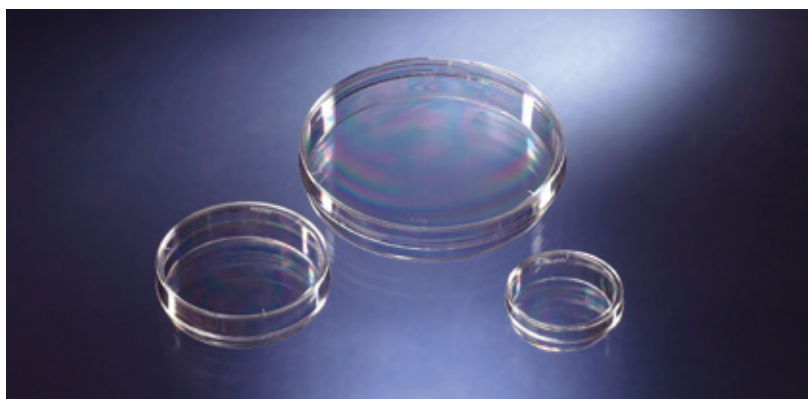
#### Literature:

Tech Note No: 60

See Pages 195-196 for full reference list with titles and links

For further information visit: [www.nuncart.com](http://www.nuncart.com)

## IVF Petri Dishes Non-treated



### Nunc IVF Petri Dish

Sterile

Cat. No.	150255	150270	150360
Description	Dish 35 x 10	Dish 60 x 15	Dish 90 x 17
Number of wells	1	1	1
Surface	Non-treated	Non-treated	Non-treated
Airvent	+	+	+
Culture area, cm <sup>2</sup> /well	8.8	21.5	56.7
External dimensions, mm	40 x 12	60 x 15	92 x 17
Units per pack/case	10/500	10/400	10/150







## Storage & Handling *Introduction*

Safe handling of biological samples is very important both for the personnel and for the integrity of the samples themselves.

The Nunc storage and handling range includes a series of single and double containers which comply with the IATA regulations for transport of diagnostic and bio-hazardous samples. This means that the tubes can withstand evacuation to 95 kPascal without leaking. It is a requirement that at least one of the transport containers fulfills this criterion. There are a number of different types of seal designs represented in this range.

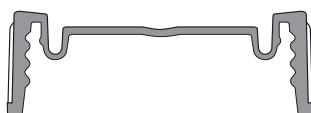
In keeping with our policy of making storage and transport containers for all modern applications, we have extended the range of CE marked items. The 11 ml polystyrene centrifuge tube now joins the CryoTubes™ and universal containers.

The sputum container has been redesigned. The new closure has been improved to make it much more user friendly, especially efficient and easy to use in routine laboratories.

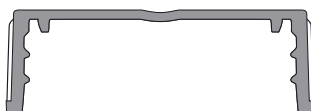
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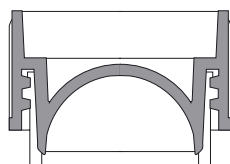
### Closure types:



*Plug Seal Screw Cap*



*Rim Seal Screw Cap*

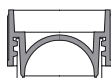


*Dome Seal Screw Cap*

# Centrifuge Tubes 15 ml



- Available in polybutadiene styrene and polypropylene
- Printed volume graduations along length of tube with molded graduations at conical section
- Meets USP Class VI
- Flat cap and frosted area on tube provides writing surface for sample identification
- Tube and cap suitable for freezing
- Leak-proof closure
- Polybutadiene styrene (PBS) tube has excellent optical clarity
- PBS tube rated at 3,000 x g relative centrifugal force (RCF), withstands temperatures to 90°C
- PBS tubes are non-pyrogenic
- Polypropylene (PP) tube has excellent chemical resistance
- PP tube rated at 7,800 x g RCF, withstands temperatures up to 125°C
- PP tubes are RNase/DNase free



Dome Seal Screw Cap

## Nunc Centrifuge Tubes

Sterile



Cat. No.	366052	366036	366079	366060
Material tube/cap	PBS/HDPE	PP/HDPE	PBS/HDPE	PP/HDPE
Cap type	Dome	Dome	Dome	Dome
Total volume, ml	15	15	15	15
Volume graduations	Molded/ printed	Molded/ printed	Molded/ printed	Molded/ printed
External dimensions, mm	120 x 17	120 x 17	120 x 17	120 x 17
Max. RCF tested	3000	7800	3000	7800
Autoclavable	-	+	-	+
Packing	Racked	Racked	Loose	Loose
Units per pack/case	50/500	50/500	50/500	50/500

Caps are not autoclavable. Symbols: PBS = Polybutadiene styrene, PP = Polypropylene, HDPE = High Density Polyethylene, PE = Polyethylene

# Centrifuge Tubes 50/200 ml



- Fit most centrifuges
- Tightness tested
- Meet USP Class VI

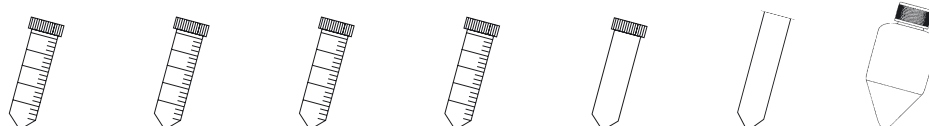
Storage & Handling



Rim Seal Screw Cap



Plug Seal Screw Cap



## Nunc Centrifuge Tubes

Cat. No.	334959 †	334940 †	373660 ‡	373687 ‡	339497 ‡	342110 ‡	376813*
Cap type	Rim	Rim	Rim	Rim	Plug	-	Plug
Total volume, ml	50	50	50	50	50	50	200
Volume graduations	Printed	Printed	Printed	Printed	Molded	Molded	Molded
External dimensions, mm	115 x 30	115 x 30	115 x 30	115 x 30	115 x 30	115 x 30	130 x 60
Max. RCF tested	5000	5000	5000	5000	5000	5000	7000
Sterile	+	+	+	+	+	-	+
Material tube/cap	PP/HDPE	PP/HDPE	PP/HDPE	PP/HDPE	PP/HDPE	PP/-	PP/PE
Packing	Racked	Bulk	Racked	Loose	Loose	Loose	Loose
Units per pack/case	25/300	25/300	20/320	20/400	20/400	360/360	4/48

Symbols: PBS = Polybutadiene styrene, PP = Polypropylene, HDPE = High Density Polyethylene, PE = Polyethylene.

\* RCF tested with adaptor 377585.

‡ Not available in Americas / † Available only in Americas

## Accessories for Nunc Centrifuge Tubes

Cat. No.	342129 ‡	377585	374179	347325 ‡
Description	Plug seal screw cap for Cat.No. 342110	Nylon cushion adaptor for 200 ml tubes	Epoxy/steel rack for 6 pcs. 200 ml tubes	Expanded polystyrene foam rack for 20 pcs. 50 ml tubes
Units per pack/case	720/720	2/2	1/1	4/36

Symbols: HDPE = High Density Polyethylene

‡ Not available in Americas

# EZ Flip<sup>™</sup> Conical Centrifuge Tubes



- Hinged-cap system
- Ergonomic design for one-handed opening and closing
- Integrated leakproof cap prevents cross contamination and lost closures
- Clarified polypropylene combines chemical resistance and high speed tolerance
- White writing area and flat caps for sample identification
- Printed graduations
- Standard dimensions compatible with centrifuge rotors



## Nunc EZ Flip<sup>™</sup> Conical Centrifuge Tubes

Polypropylene

Cat. No.	362694	362695	362696	362697
Volume, ml	15	15	50	50
Packing	Loose	Racked	Loose	Racked
Max. RCF tested	8500*	8500*	9500*	9500*
Sterile	+	+	+	+
Units per pack/case	50/500	50/500	25/500	25/500

\* When fully supported by conical rotor cavity or conical adaptor



# Centrifuge Tubes 10/11 ml



- Made in a variety of materials and formats for greater flexibility
- Different cap types and bottom shapes to meet all needs
- Fit most standard centrifuges
- Relative centrifugal force tested (RCF)
- Tightness tested
- Polystyrene tubes are CE-Marked
- See Pages 92-93 for transport containers



Rim Seal Screw Cap

## Nunc Centrifuge Tubes

Polycarbonate tubes  
Polypropylene caps (rim seal)



Cat. No.	348097 ‡	347759 ‡	347708
Bottom shape	Round	Conical	Conical
Total volume, ml	10	11	11
External dimensions, mm	110 x 16	110 x 16	110 x 16
Max. RCF tested	6000	6000	6000
Autoclavable, tube/cap	+/-	+/-	+/-
Sterile	+	+	+
Writing area	+	-	+
Units per pack/case	80/480	80/480	80/480

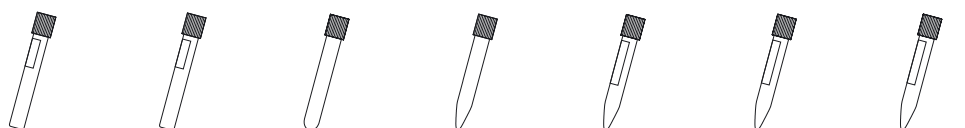
‡ Not available in Americas



Plug Seal Screw Cap

## Nunc Centrifuge Tubes

Polystyrene tubes  
Polyethylene caps (plug seal)  
CE-Marked



Cat. No.	362308 ‡	362707 ‡	348224 ‡	347856 ‡	347880 ‡	347885 ‡	337846* ‡
Bottom shape	Flat	Flat	Round	Conical	Conical	Conical	Conical
Total volume, ml	10	10	10	11	11	11	11
External dimensions, mm	100 x 16	100 x 16	110 x 16	110 x 16	110 x 16	110 x 16	110 x 16
Max. RCF tested	3000	3000	3000	3000	3000	3000	3000
Volume graduations	-	-	-	-	-	+	+
Sterile	-	+	+	+	+	+	+
Writing area	+	+	-	-	+	+	+
Units per pack/case	80/480	80/480	80/480	80/480	80/480	80/480	80/480

\* Non-pyrogenic and 1-cell stage mouse embryo toxicity tested

‡ Not available in Americas

# Urine Sample Kits

Storage & Handling



- Easy-to-use
- Can be used by the patient at home
- EAN barcode on the bag of product (Cat. No. 537745)
- Transport and universal containers comply with 95 kPascal test described in UN Packaging Instructions 602/650 for transport of infectious substances and diagnostic specimens (except Cat. Nos. 333510, 333511 and 369740)
- CE-marked

## Accessories:

Transport containers

Page 93

Supersorp is a registered trademark of Huvec Klimaathbeheersing

## Nunc Urine Sample Kits

CE-marked. Sterile

**NEW**

Cat. No.	551314 ‡	537745* ‡	538318 ‡	369738 ‡
Description	1 pc. 11 ml specimen tube with conical bottom, writing area and screw cap; 1 pc. 100 ml sterile cup; 2 pcs. sterile moistened napkins	1 pc. 11 ml specimen tube with conical bottom, writing area and screw cap; 2 pcs. 100 ml containers; 6 pcs. cotton tampons; 10 ml physiological salt water	Sampling Kit: 11 ml specimen tube with screw cap in bag	Supersorp® absorbent material for 10-12 ml fluid 40 x 35 x 2 mm
Material	Test tube: polystyrene Urine container: polyethylene	Test tube: polystyrene Urine container: polyethylene	Polystyrene	Supersorp
Units per pack/case	1/60	1/60	1/300	500/500

\* With instructions for home use (in Danish, English, German and Swedish)

‡ Not available in Americas

## Nunc Transport Containers and Accessories

For 10-11 ml centrifuge tubes

**NEW**

**NEW**

**NEW**

Cat. No.	361883 ‡	362820 ‡	333510 ‡	333511 ‡	369740 ‡	369738 ‡
Description	Grey transport container with foam insert	Transparent transport container with foam insert	Transparent transport container, centrifuge tube held by the stopper	333510 with cap and container separated	333510 with Supersorp® absorbent material in container	Supersorp® absorbent material 10-12 ml 40 x 35 x 2 mm
Material container/cap	HIPS/PE	PP/PE	PP/PE	PP/PE	PP/PE	-
Units per case	400	400	400	400	400	500

HIPS = High Impact Polystyrene, PE = Polyethylene, PP = Polypropylene

‡ Not available in Americas

# Sampling and Transport System



- Transport and universal containers have passed the 95 kPascal test described in UN packaging instructions 602/650 for transport of infectious substances and diagnostic specimens
- Safe handling and transport of blood, urine and fecal specimens
- Inner and outer containers of high mechanical strength
- Outer case available in transparent or opaque material
- Universal containers are maximum relative centrifugal force (RCF) tested
- Caps designed to avoid droplets adhering to the surface, reducing risk of aerosols
- Inner containers available with a spoon for handling of solid and semi-solid samples



## Nunc Transport Containers for 25 ml Containers and Adsorbent Material



NEW

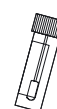
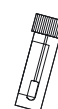
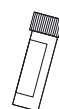
Cat. No.	364882 ‡	365048	369738 ‡
Color/Description	Grey	Transparent	Supersorp® material for 10-12 ml fluid 40 x 35 x 2 mm
Material container/cap	HIPS/PE	PP/PE	-
Units per pack/case	30/300	30/300	500/500

PS = Polystyrene, PE = Polyethylene, PP = Polypropylene, HIPS = High Impact Polystyrene, LDPE = Low Density Polyethylene

‡ Not available in Americas

## Nunc Universal Containers

CE-Marked



Cat. No.	364211	363282	364238	364246	360585	360577 ‡	356790 †
Spoon	-	-	-	-	+	+	+
Sterile	-	-	+	+	+	-	-
Working volume, ml	25	25	25	25	25	25	25
Material container/cap	PS/PE	PS/PE	PS/PE	PS/PE	PS/PE	PS/PE	PS/PE
Max. RCF tested	4000	4000	4000	4000	4000	4000	4000
Writing area	-	+	-	+	+	+	-
Units per pack/case	50/300	50/300	50/300	50/300	50/300	50/300	50/300

PS = Polystyrene, PE = Polyethylene, HIPS = High Impact Polystyrene, LDPE = Low Density Polyethylene

‡ Not available in Americas

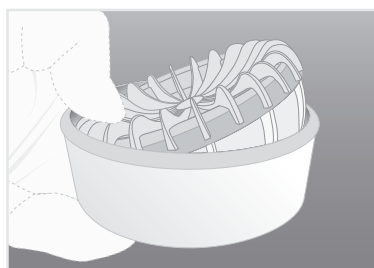
† Only available in Americas

# Sputum Containers

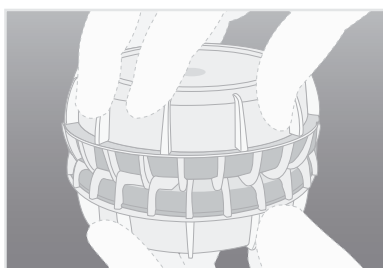
**NEW**



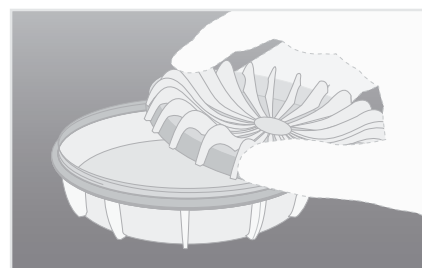
- Low profile container can be shipped by normal mail
- Containers comply with 95 kPascal test described in UN Packaging Instructions 602/650 for transport of infectious substances and diagnostic specimens
- Large opening facilitates secure sample placement
- Lowered center of lid facilitates scraping off samples when the lid is removed
- The contents are well-protected from damage during transportation
- Ribs on lid and container for easy grip. One container turned upside down can work as an opening tool in analytic labs opening many containers
- Special construction for removal of the sputum container from the transport container



A light pressure on the lid causes the sputum container to tilt allowing it to be easily removed from the transport container



One container turned upside down can work as an opening tool



Concave lid can be used to scrape sample if stuck to the lid after the transport

## Nunc Sputum Containers

**NEW**

**NEW**

**NEW**

Cat. No.	560623 ‡	561077 ‡	569746 ‡	549263 ‡
Description	Sputum container with screw lid	Sputum container kit: Sputum container with screw cap plus grey transport container with snap cap	Sputum container kit: Sputum container with screw cap plus grey transport container with snap cap and adsorbent material	Transport container with snap cap
External dimensions, mm	71 (dia.) x 23.5	80 (dia.) x 28.5	80 (dia.) x 28.5	80 (dia.) x 28.5
Total volume, ml	24	-	-	-
Material	Container: Polystyrene Screw cap: Polyethylene	Transport container for shipment: High impact polystyrene Snap cap: Polyethylene	Transport Container: High impact polystyrene Snap cap: Polyethylene	Container: High impact polystyrene Snap cap: Polyethylene
Sterile	+	+	+	-
Units per pack/case	8/192	5/100	5/100	150

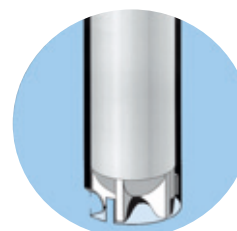
‡ Not available in Americas



## Stor-It™ Tubes



- Free-standing tubes with starfoot for easy handling
- Caps and vials packed separately to save handling time
- One hand operation with starfoot tubes in Nunc CryoTube™ Rack (Cat. No. 376589)
- Not recommended for use in the liquid phase of nitrogen



*Starfoot tube fits into grooves of the CryoTube Rack (Cat. No: 376589) - Page 47 - which allows one-hand operation.*

### Nunc Stor-It™ Tubes

External thread

Polypropylene tubes with polyethylene caps.

Non-sterile



Cat. No.	347651	347783	347791	347910	347929	348100
Bottom shape	Conical	Round	Round	Conical	Round	Round
Suggested working volume, ml	1.0	1.8	4.5	1.0	1.8	4.5
Total diameter, mm	12.5	12.5	12.5	12.5	12.5	12.5
Total length, mm	41	48	91	41	48	91
Writing Area	+	+	+	-	-	-
Starfoot	+	+	+	+	+	+
Units per pack/case	500/2000	450/1800	300/1200	500/2000	450/1800	300/1200

# Storage Vials - Rack and Box



## Storage Vials

- Excellent for centrifugation and storage of PCR reagents, restriction enzymes and other diagnostic and biochemical reagents or samples
- Available in 0.5 ml and 2.0 ml sizes with frosted writing area; 2.0 ml sizes have graduations at 0.5 and 1.0 ml
- Made of a High-Purity Polypropylene Copolymer (PPCO) with excellent chemical resistance
- The High Density Polyethylene (HDPE) screw closure is leakproof
- Can be centrifuged to a maximum of 13,000 x g
- Can be used from -40°C to 95°C
- One full turn removes the ergonomic closure - giving easy access to contents

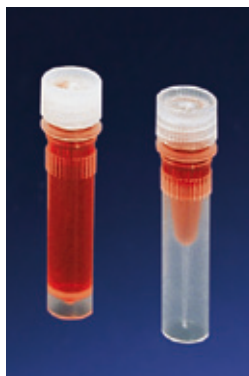
## Nunc Storage Vials

Vial with closure. Sterile  
PPCO Vials. Polyethylene screw cap

Cat. No.	264262	264300
Suggested working volume, ml	0.5	2
Total volume, ml	0.9	2.2
Neck internal diameter, mm	8.4	8.4
Height without closure	45.7	45.7
Total height, mm	49	49
Total diameter, mm	13	13
Units per case	500	500

At neck ring vial body is 10.2 mm.

PPCO = High Purity Polypropylene Copolymer



## Storage box

- (Cat. No. 264263) holds 100 of the 0.5/2.0 ml vials in a 10 x 10 array and has a clear lid

## Rack

- (Cat. No. 270972) holds 24 vials in a 4 x 6 array

## Warning

*Do not use the vials for storage in the liquid phase of liquid nitrogen. Such use may cause liquified nitrogen to be trapped inside the vial and lead to pressure build-up resulting in possible explosion or biohazard.*

## Nunc Storage Vial Box and Rack

Box/Rack for 0.5/2.0 ml Vials

Cat. No.	264263	270972
Description	Storage Vial Box	Storage Vial Rack
Material	Polycarbonate	Polyketone
Color	White	Blue
External dimensions, mm	144 x 144 x 62	146 x 92 x 55
Tube array	10 x 10	4 x 6
Units per case	12	4

## Accessories for Nunc Storage Vials - Color Coders

Polystyrene

Cat. No.	264335	264408	264416	264440	264459	264467	264491
Color	White	Yellow	Orange	Green	Red	Blue	Natural
Units per case	100	100	100	100	100	100	100

# Containers



- A versatile range of containers
- Made of high quality resins
- Safe sample storage
- Snap caps available for all containers
- Transparent

## Nunc Containers

Polystyrene. Non-sterile

**NEW**

Cat. No.	536080	536323	536455	536668	561301*	536757
External dimensions, mm	29 x 27 (dia.)	41 x 27 (dia.)	60 x 27 (dia.)	49 x 41 (dia.)	54 x 53 (dia.)	54 x 53 (dia.)
Total volume, ml	12.5	20	30	50	100	100
Color	Clear	Clear	Clear	Clear	Clear	Clear
Units per pack/case	200/1000	100/2400	30/1200	40/800	1/100	300/300

\* Sterile, with cap

## Snap Caps for Nunc Containers

Polyethylene. Non-sterile

Cat. No.	536617	536684	536889
Description	Snap Cap for 12.5, 20 and 30 ml containers	Snap Cap for 50 ml containers	Snap Cap for 100 ml containers
Color	Natural	Grey	Grey
Units per pack/case	200/4000	200/2400	150/4200

# Disposable Tubes



- Relative centrifugal force (RCF) tested
- Three different materials to suit most needs
- Polyethylene and polypropylene tubes are particularly useful in serology where the low adsorption of proteins is of great importance
- Polystyrene tubes are suitable for a broad range of applications
- Polyethylene and polypropylene tubes have good chemical resistance and high mechanical strength
- Polystyrene tubes are transparent
- For sterile work some tubes are supplied with stoppers mounted

## Accessories:

TubeRack  
Stoppers

Page 99  
Page 99

## Nunc Disposable Tubes

Cat. No.	349638 ‡	341173* ‡	361239 ‡	341661 ‡	341378 ‡
Bottom shape	Round	Round	Round	Round	Round
Total volume, ml	2	2	3	4	4
External dimensions, mm	38 x 12.5	45 x 12.5	55 x 11	70 x 11	50 x 13
Max. RCF tested	-	-	3000	3000	3000
Graduation marking at, ml	-	-	2.0	2.5	-
Material tube/stopper	PP/-	PP/PE	PS/-	PS/-	PP/-
Sterile	-	+	-	-	-
Units per pack/case	500/2500	50/2000	150/3600	150/3600	150/3000

Symbols: PP = Polypropylene, PE = Polyethylene, PS = Polystyrene.

\* Stopper mounted

‡ Not available in Americas

## Nunc Disposable Tubes

Cat. No.	343923	341440 ‡	342919	343141*	343001 ‡
Bottom shape	Round	Round	Round	Round	Round
Total volume, ml	5	7	12	12	12
External dimensions, mm	75 x 12	65 x 15	100 x 15	100 x 15	100 x 15
Max. RCF tested	3000	-	-	-	-
Graduation marking at, ml	2.5	-	5 and 10	5 and 10	5 and 10
Material tube/stopper	PS/-	PS/-	PS/-	PS/PE	PP/-
Sterile	-	-	-	+	-
Units per pack/case	100/3000	100/2200	150/1200	100/500	150/1200

Symbols: PP = Polypropylene, PE = Polyethylene, PS = Polystyrene.

\* Stopper mounted

‡ Not available in Americas





## Nunc Disposable Tubes

Cat. No.	355581 ‡	345608* ‡
Bottom shape	Conical	Conical
Total volume, ml	14	14
External dimensions, mm	110 x 17	110 x 17
Graduation marking at, ml	5 and 10	5 and 10
Material tube/stopper	PS/-	PS/PE
Sterile	-	+
Units per pack/case	100/1800	100/500

Symbols: PP = Polypropylene, PE = Polyethylene, PS = Polystyrene

\* Stopper mounted

‡ Not available in Americas

## Nunc Tube Rack

For Cat. Nos. 349638 and 341173



Cat. No.	347155
Description	Nunc CryoTube Rack for 70 tubes
Material	Polycarbonate
External dimensions, mm	233 x 150
Units per case	30/30

## Stoppers for Nunc Disposable Tubes



Cat. No.	341866 ‡	348801	343036	345586 ‡
Fits tubes with external diameter, mm	11	12	15	17
Material	PE	PE	PE	PE
Units per pack/case	600/3600	500/3000	300/2400	300/ 1800

Symbols: PE = Polyethylene.

‡ Not available in Americas

## Movettes

*New to Americas*



- For semiquantitative liquid handling
- Easy to handle
- Strong suction capacity
- Available in two sizes: 1.5 and 5 ml

### Nunc Movettes

Polyethylene

Cat. No.	540673	550970	540657	550253
Total volume, ml	5	5	1.5	1.5
Sterile	-	+	-	+
Units per pack/case	40/400	1/200	100/800	1/300

## Mortar Kit

*New to Americas*



- High impact polyethylene tolerates temperatures from -40°C to +95°C
- Sterile, single packed
- Includes scraper card, weighing paper, polyethylene sheet

### Nunc Mortar Kit

Cat. No.	533669
Description	Mortar Kit, complete with grey dish and pestle
Material	High Density Polyethylene
Sterile	+
Units per pack/case	1/50

# Visit our website www.nuncbrand.com

Always up-to-date information on Nunc Brand Products.

**Our mission is to  
achieve complete  
customer satisfaction  
through quality  
products and services.**

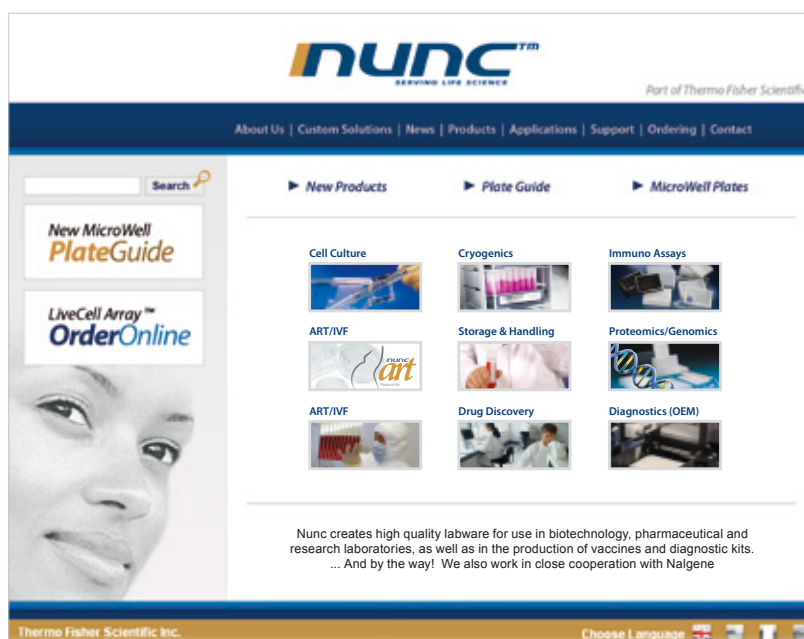
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For the latest information on Nunc Brand Products – visit our website! You will find detailed product information, our entire product catalog, tips on selecting the right Nunc Brand Product for your application and expanded technical information, including:

- **Bulletins and Tech Notes**
- **Protocols**
- **Scientific posters and other literature**
- **Specialized surfaces and resins**
- **Application assistance**

We have provided electronic access to our customer service and technical service departments, links to our distributors and “news” to keep you up-to-date with our latest product developments.

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## Proteomics & Genomics *Introduction*

This section includes products for Proteomic & Genomic applications such as microbiology, PCR and molecular biology.

The ProPur™ range of products is advantageous for the purification of antibodies (using Protein A or G columns) or fusion proteins (using IMAC) from cell culture medium or ascites fluid.

The NucleoLink™ surface is very versatile and binds DNA oligos covalently.

The DIAPOPS technique is extremely convenient, allowing the user to perform solid phase PCR and detection by hybridization in the same well; a replacement for conventional gel electrophoresis and Southern blotting.

NucleoLink™ strips and plates are available in clear, black or white polymer and are compatible with all commonly used thermal cyclers.

For liquid phase PCR we offer a range of tubes and plates in the conventional 96 well format. We also have 384 well amplification plates.

Also included in this section are sample handling products for urine and sputum as well as a range of general laboratory containers with snap caps and serological tubes which now join the universal containers.

The Nunc inoculation loops are surface treated to hold the specified volume. A calibration certificate is available on request for any given production lot.

All products are made using only virgin raw materials. In many cases, certification and additional documentation is available.

### Accessories:

As well as a number of holders and other practical items, we offer excellent transfer systems for replication of liquid phase as well as to membranes. The systems are designed for 96 well based systems and can be adapted for conversion to and from that format to 384 wells.

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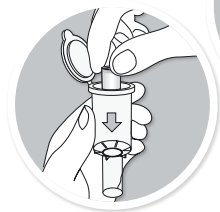
## ProPur™ Kits

NEW



- All Mini and Midi column formats are available with three different surface chemistries:
  - Recombinant Protein A for antibodies
  - Recombinant Protein G for antibodies
  - Metal chelate (IMAC) for His-tagged recombinant proteins
- The FlowGo® regulator maximizes the contact time between the target protein and the resin matrix
- ProPur™ kits have the speed of a spin column with the yield and purities of a gravity column
- ProPur™ Mini spin columns purify 0.65 ml samples in under 20 min. using a standard microfuge. ProPur™ Midi spin columns purify 20 ml samples in under 50 min. using a standard bench centrifuge
- Each ProPur™ Mini and Midi spin column is re-usable
- Large volumes of dilute sample e.g. cell culture supernatant can be processed under vacuum using ProPur™ Vac kits

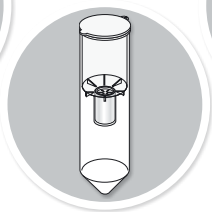
LOAD



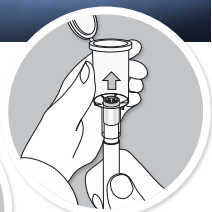
LOCK



SPIN



RE-USE



NEW

### Nunc ProPur™ Kits

Protein A Spin Columns

Cat. No.	228100	228101	228102	228103	228104
Description	ProPur Kit Mini A	ProPur Kit Mini A	ProPur Mini A Bulk Pack	ProPur Kit Midi A	ProPur Midi A Bulk Pack
UltraFiltration concentrators included	Yes	Yes	No	Yes	No
Buffers included	All	All	No	All	No
Units per case	2	16	48	4	12

Buffers: A - binding buffer, B - elution buffer, C - neutralization buffer

NEW

### Nunc ProPur™ Kits

Protein G Spin Columns

Cat. No.	228105	228106	228107	228108	228109
Description	ProPur Kit Mini G	ProPur Kit Mini G	ProPur Mini G Bulk Pack	ProPur Kit Midi G	ProPur Midi G Bulk Pack
UltraFiltration concentrators included	Yes	Yes	No	Yes	No
Buffers included	All	All	No	All	No
Units per case	2	16	48	4	12

Buffers: A - binding buffer, B1 and B2 - elution buffers, C - neutralization buffer

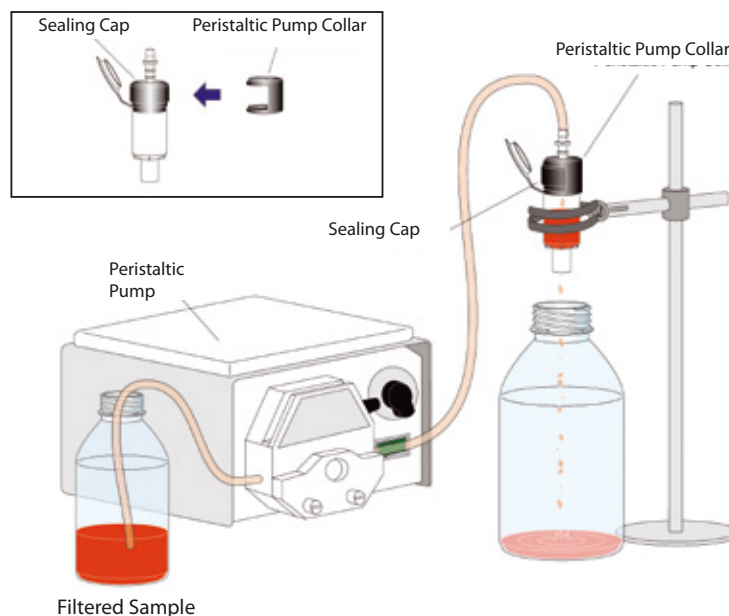
NEW

## Nunc ProPur™ Kits

Protein A&G Spin Columns

Cat. No.	228110
Description	ProPur Mini Start A&G
UltraFiltration concentrators included	No
Buffers included	No
Units per case	2A + 2G

Use of peristaltic pump collar & sealing cap for loading large volume sample onto the Midi Spin Column (Cat. No. 242002)



NEW

## Nunc ProPur™ Kits

Metal Chelate Spin Columns (IMAC)

Cat. No.	228113	228114	228115	228116	228117	228118	228119
Description	ProPur Kit Mini MC	ProPur Kit Mini MC	ProPur Mini MC	ProPur Mini MC	ProPur Kit Midi MC	ProPur Midi MC	ProPur Midi MC Bulk pack
UltraFiltration concentrators included	Yes	Yes	No	No	Yes	No	No
Buffers included	All	All	All	No	All	All	No
Units per case	4	24	24	72	8	8	24

Buffers: A - binding buffer, B - elution buffer, C - neutralization buffer

NEW

## Nunc ProPur™ Kits

Vacuum Columns

Cat. No.	228121	228122	228123	228124	228125	228126
Description	ProPur Kit Vac A Complete	ProPur Kit Vac A w/o Vac Head	ProPur Vac A Bulk Pack	ProPur Kit Vac G Complete	ProPur Kit Vac G w/o Vac Head	ProPur Vac G Bulk Pack
UltraFiltration concentrators included	Yes	Yes	No	Yes	Yes	No
Buffers included	Yes	Yes	No	Yes	Yes	No
Units per case	4	4	12	4	4	12

Buffers: A - binding buffer, B1 and B2 - elution buffers, C - neutralization buffer

NEW

## Nunc ProPur™ Kit Accessories

For Protein A, G and Metal Chelate Spin Columns

Cat. No.	228111	228112	228120	242002
Description	ProPur A Buffers A: 250 ml B1&B2: 125 ml C: 30 ml	ProPur G Buffers A: 250 ml B: 125 ml C: 30 ml	ProPur MC Buffers PBS: 250 ml* Imidazole: 125 ml*	ProPur Pump Collar, Loading Cap, PVC Tubing (120 cm (4 ft) of 3 mm (1/8 in) ID)

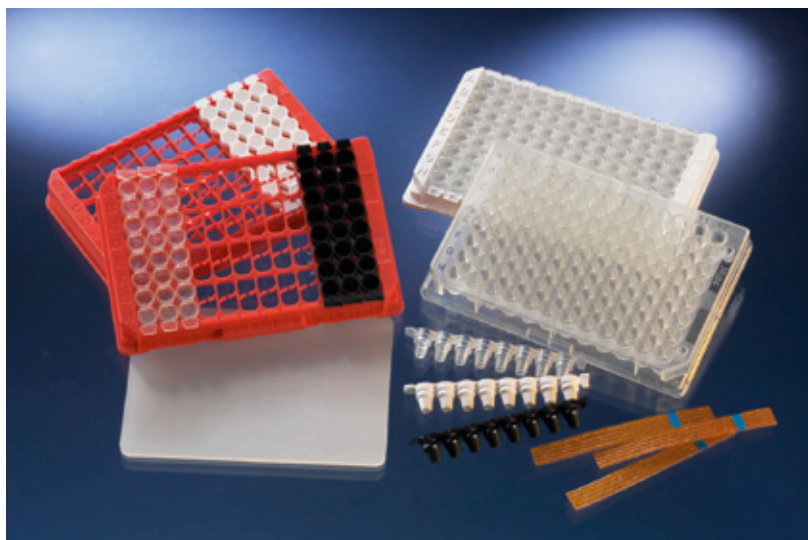
## Nunc ProPur™ Kit Accessories

For Protein A and G Vacuum Columns

Cat. No.	228127	228128	242001
Description	ProPur Vac Head, Sample Loading Cap and Tubing (120 cm (4 ft) of 3 mm (1/8 in) ID)	ProPur Vac Accessories, set of 3 replacement O-rings, connectors (6 mm, 8 mm) PVC Tubing (46 cm (1.5 ft) of 6 mm (1/4 in) ID)	ProPur Pump Collar

\* Concentrated stock solution

# Nucleolink™ Plates, Modules and Strips



- Covalent heat-stable binding of DNA

## Available in three formats:

- C96 MicroWell™ Plate
- Break Apart Modules
- 1 x 8 well Strips

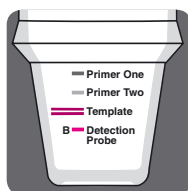
## NucleoLink Plates and Modules:

- Optimized for DNA hybridization assays
- Available in transparent only
- Break Apart format provides maximum flexibility
- All modules available with color coding on request

## NucleoLink Strips:

- Available in three colors:
  - Black for fluorescence assays
  - White for luminescence assays
  - Transparent for colorimetric assays
- Optimized for Solid Phase PCR and detection in the same well (DIAPOPS)
- Ideal for hybridization assays

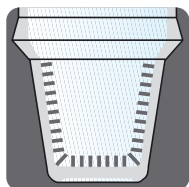
## The DIAPOPS Technique



## Detection of Immobilized Amplified Products using NucleoLink™ Strips in a One Phase System

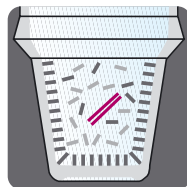
### 1) Binding

Primer "One" is bound covalently to the surface of a well. For reasons of simplicity we have named the primers "One" and "Two". In the actual assay the bound oligonucleotide can be either the "upstream" or the "downstream" primer of an amplification sequence.



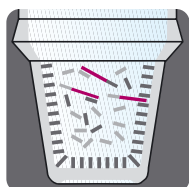
### 2) Additions of Reagents

Buffer, nucleotides, Taq polymerase, Template, primer "One" and primer "Two" are added to the liquid phase. In the liquid phase the ratio between primer "One" and primer "Two" should be 1:8.



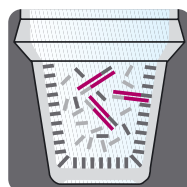
### 3) Amplification

Amplification is initiated in the liquid phase. The amplicons in the liquid phase will hybridize with the bound primer molecules. These primer molecules will be extended by the Taq polymerase.



### 4) Two types of Amplicon

After amplification the well contains two types of amplicon: Those in the liquid phase and those bound to the well.



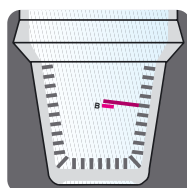
### 5) Denaturation

Amplicons in the liquid phase are removed by washing. The bound amplicons are converted to single-stranded molecules (denatured) by treatment with NaOH.



### 6) Detection

The single-stranded molecules can be detected by hybridization with a detection probe. When "Elisa-like" procedures are used for detection, the result can be read in a colorimetric or fluorometric 96 well plate reader.



## Features:

- Sealable with heat-stable Tape 8
- Thin walls (0.35 mm)
- V-shaped wells with readable flat bottoms
- Compatible with standard equipment in MicroWell plate format including most 0.2 ml thermal cycler formats
- Resists temperatures up to +121°C

## DIAPOPS:

- "ELISA-like" procedure combining solid phase PCR and detection by hybridization in the same well
- Replace conventional and time consuming detection methods such as gel electrophoresis and Southern blotting
- No transfer from amplification system to detection system is necessary, reducing the risk of contamination

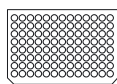
## Literature:

Tech Note Nos: 17, 18, 19 Vol. 5., 36, 37

See Pages 195-196 for full reference list with titles and links



## NucleoLink Plate 128 x 86 mm and Break Apart Modules



Cat. No.	248150 ‡	248450 ‡
Description	96 well plate with C well	Break Apart Module with 8 wells
Color	Clear	Clear
Total volume, µl/well	350	300
Suggested working volume, µl/well	150	150
Total surface area, mm <sup>2</sup>	122	127
Material	Activated heat-stable polymer	Activated heat-stable polymer
Units per pack/case	5/30	5/30

‡ Not available in Americas



### NucleoLink Application Guide

available on:  
[www.nuncbrand.com/go/nucleolinkguide](http://www.nuncbrand.com/go/nucleolinkguide)

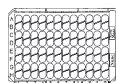
## NucleoLink Strips



Cat. No.	248259 ‡	248262 ‡	248650
Description	Strip with 8 wells	Strip with 8 wells	Strip with 8 wells
Color	Clear	White	Black
Total volume, µl/well	330	330	330
Suggested working volume, µl/well	100	100	100
Total surface area, mm <sup>2</sup>	234	234	234
Material	Activated heat-stable polymer	Activated heat-stable polymer	Activated heat-stable polymer
Units per tray/pack/case	12/120/1440	12/120/1440	12/120/1440

‡ Not available in Americas

## NucleoLink Frame for Strip



Cat. No.	249182 ‡
Description	Frame*
Color	Red
Ext. dimensions, mm	128 x 86
Material	Acrylonitrile Butadiene Styrene
Units per pack/case	6/72

\* Heat-stable to max. 90°C

‡ Not available in Americas

## NucleoLink Starter Kit

Cat. No.	249344 ‡
Description	NucleoLink Starter Kit
Contains	48 NucleoLink Strips (clear), 1 Frame, 60 Tape 8, 1 Spacer Plate and Application Literature
Units per pack/case	1/12

‡ Not available in Americas

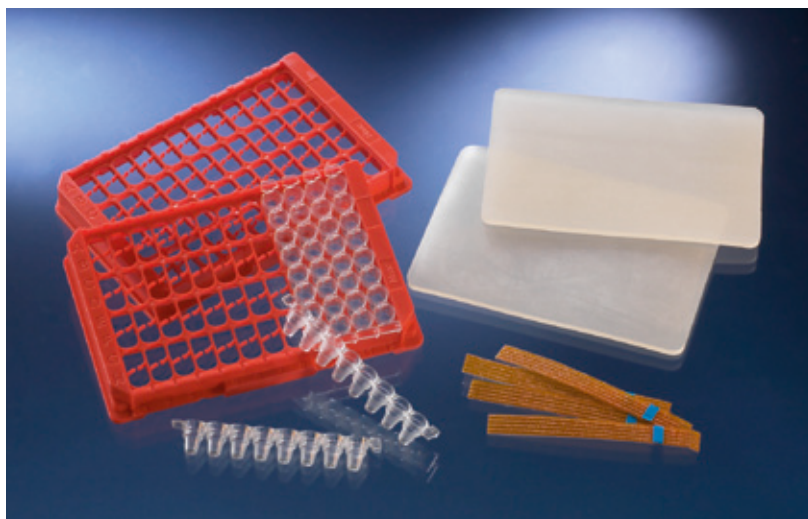
## NucleoLink Accessories

Cat. No.	250105 ‡	232702	259684*
Description	Tape 8 and Spacer Plate	Amplification Tape 96	Spacer Plate
External dimensions, mm	80 x 8.8 / 115 x 80 x 3	120 x 79	115 x 80 x 3
Material	Polyester	Polyolefin	Silicone
Adhesive	Silicone	Pressure sensitive acrylate	-
Units per pack/carton/case	Tape 8: 60/480/5760 Spacer Plate: 1/12	100/100	1/1

\* Reusable and autoclavable

‡ Not available in Americas

# TopYield™ Strips

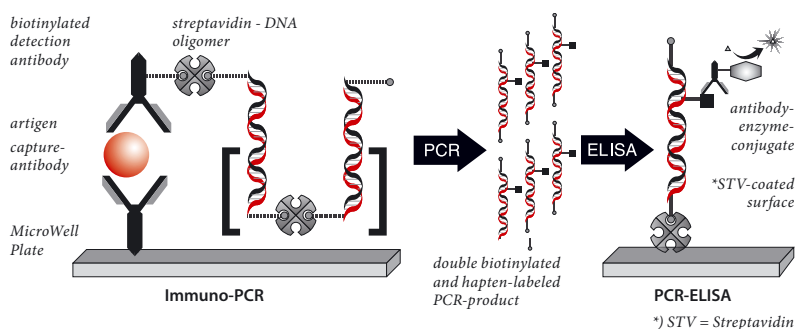


- Designed for liquid phase PCR or Immuno-PCR
- Made of polycarbonate
- Excellent protein binding
- Excellent heat transmission
- Comparable with 0.2 ml PCR tube
- Compatible with most 0.2 ml thermal cycler formats
- Sealable with heat-stable Tape 8

## Literature:

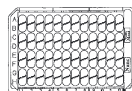
Tech Note Nos: 18, 19 Vol. 5., 35

See Pages 195-196 for full reference list with titles and links



*Immuno-PCR detection of an antigen with subsequent quantitative analysis of product yields by PCR-ELISA. Capture antibodies are immobilized on MicroWell™ plates to bind the antigen selectively. Sequential coupling of a biotinylated detection antibody, streptavidin, and a biotinylated DNA marker assemble a signal generating immuno-complex. Signal amplification by PCR using a biotinylated primer and a digoxigenin-labeled nucleotide generates doubly labeled amplificate which can be quantified in a PCR-ELISA assay. The PCR products are immobilized on streptavidin-coated plates and analyzed by anti-digoxigenin IgG-alkaline phosphatase conjugate with either chromogenic or fluorogenic substrates.*

## Nunc TopYield™ Frame



Cat. No.	249182
Description	Frame
Color	Red
External dimensions, mm	128 x 86
Heat-stable to max. °C	90
Material	Acrylonitrile Butadiene Styrene
Units per pack/case	6/72

## Nunc TopYield™ Strips



Cat. No.	248909
Description	TopYield™ Strips
Color	Clear
Total volume, µl/well	330
Suggested working volume, µl/well	100
Total surface area, mm <sup>2</sup>	234
Material	Polycarbonate
Units per tray/pack/case	12/120/1440

## Nunc TopYield™ Accessories

Cat. No.	250105 ‡	248917 ‡	232702	259684*
Description	Tape 8 and Spacer Plate	TopYield Starter Kit**	Amplification Tape 96	Spacer Plate
External dimensions, mm	80 x 8.8 / 115 x 80 x 3	-	120 x 79	115 x 80 x 3
Material	Polyester	-	Polyolefin	Silicone
Adhesive	Silicone	-	Pressure sensitive acrylate	-
Units per pack/carton/case	Tape 8: 60/480/5760 Spacer Plate: 1/12	1/12**	100/100	1/1

\* Reusable and autoclavable

\*\* Per kit: 48 TopYield Strips, 1 Frame; 60 Tape 8, 1 Spacer Plate and Application Literature

‡ Not available in Americas

# Polypropylene Modules



One white support rack is included in each case of green frames.

- Ideal for sequencing, restriction analysis, transformations, ligations and storage
- Centrifugation eliminated when mixing reagents
- Easy well identification
- Minimum binding of hydrophilic molecules
- Space saving at the bench and in the freezer
- Plastic waste is reduced
- Tape and well design reduce evaporation
- Maximizes heat transmission and sample recovery
- Standard 96 well format
- The modules are temperature resistant from -70°C to +121°C



"Shelf well" allows easy mixing and simultaneous addition of reagents and eliminate centrifugation.



## Nunc Polypropylene Modules

Non-sterile

Cat. No.	232298	232034
Well shape	Round	Round
Total volume, µl/well	20	250
Suggested working volume, µl/well	10	100
Number of wells per module	48	12
Shelf well	-	+
Color	Natural	Natural
Units per pack/case	28/168	70/420

## Nunc Frame

Cat. No.	232042
Units per pack/case	16/96

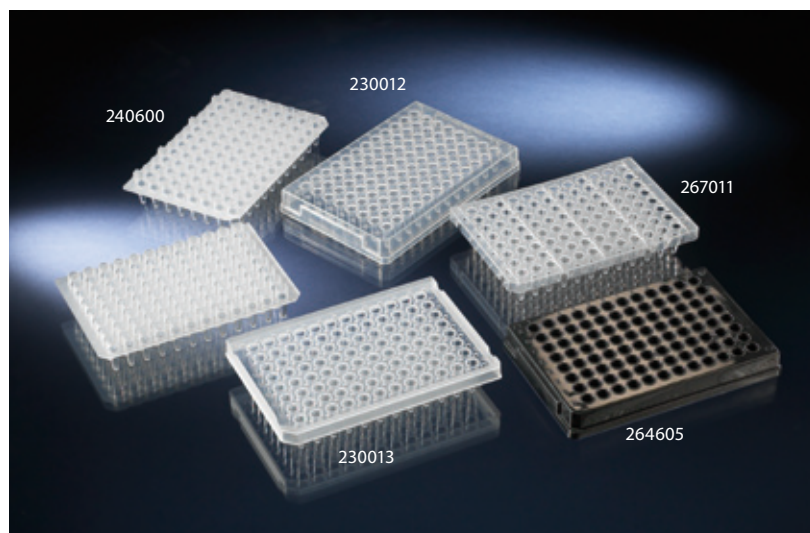
## Accessories Tape 12 and 48

Polyester with silicone adhesive

Cat. No.	232689*	232700*
Description	Tape 12	Tape 48
External dimensions, mm	120 x 9	120 x 35
Units per pack/case	100/400	100/400

\*Heat resistant from -20°C to 100°C

## 96 Well Amplification Plates



- Plate, caps and tape are certified RNase and DNase free
- Uniform thin wall construction of 0.2 ml well offers excellent heat transfer with maximum product yield
- Rigid plate design without skirt fits holder (Cat. No. 251357), allowing easy manipulation by automated handling equipment
- Conical wells of plate extend above the base to permit sealing with strip caps or Amplification Tape 96 to prevent well to well contamination
- Strip caps have dome shape to prevent condensation and eliminate use of oil overlays
- Full skirted plate available in black for fluorescent applications
- Silicone Spacer Plate ensures even heat transfer when Amplification Tape 96 is used
- Amplification Tape 96 is offered in single, precut sheets
- Compatible with 96 well format thermal cyclers that hold an aluminum block for 0.2 ml conical tubes
- Compatibility table available
- Flat, optically clear strip cap

### Nunc 96 Well Amplification Plates

Cat. No.	240600	230013*	267011**	230012	264605
Description	96 Well Amplification Plate without skirt	96 Well Amplification Plate with semi skirt	96 Well Amplification Plate with semi skirt	96 Well Amplification Plate with full skirt	96 Well Amplification Plate with full skirt, Black
Material	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polypropylene
Units per pack/case	5/50	5/50	5/50	5/50	5/50

\* Can be separated into 24 or 48 well sections

\*\* Fits the ABI-3730 and other new instruments

### Accessories for Nunc 96 Well Amplification Plates

Cat. No.	259684*	265643	269080*	232702	235307**	276014	232698
Description	Spacer Plate	1 x 8 Amplification Strip Caps	1 x 8 Amplification Strip Caps, flat and optically clear	Amplification Tape 96	Advanced Polyolefin Tape 3M adhesive technology	Aluminum Tape	Aluminum Tape
Material	Silicone rubber	Polypropylene	Polypropylene	Polyolefin***	Advanced Polyolefin***	Aluminum	Aluminum
Adhesive	-	-	-	Pressure sensitive acrylate.	Pressure sensitive silicone	Pressure sensitive acrylate	Pressure sensitive acrylate
Units per pack/carton/case	1/1	12/120	12/120	100/100	100/100	100/100	100/100

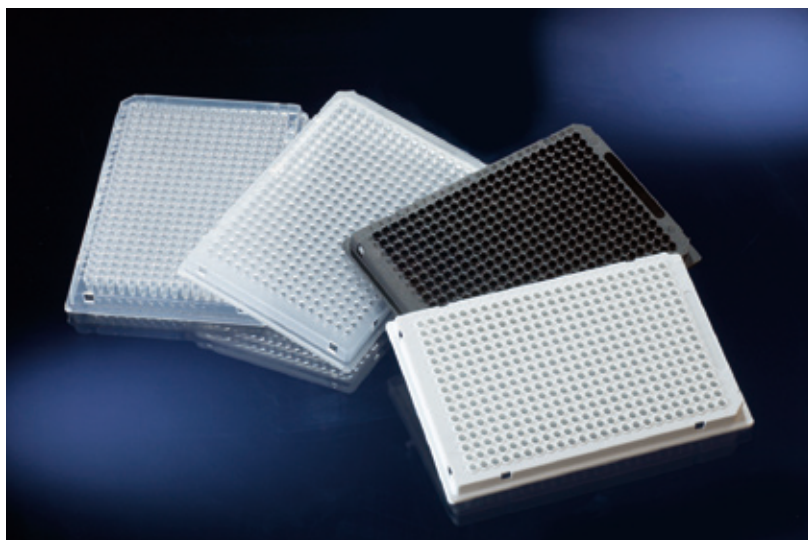
\* Reusable and autoclavable

\*\* Superior optical properties for RT-PCR

\*\*\* Resistant to temperatures from -70°C to 110°C



# 384 Well Amplification Plates



- Certified RNase and DNase free
- The design and rigidity of the plates prevent distortion during PCR, making the plate easy and safe to handle
- Raised well rims for effective sealing and reduced cross contamination risk
- Cut away corners and alphanumeric grid-referencing
- Standard footprint
- 8 holes in the skirt facilitate plate positioning and removal from the thermal cycler block
- Compatible with all leading 384 block thermal cyclers (see Page 112)
- Available in natural, black and white for colorimetric, fluorescence and luminescence based procedures

## Nunc 384 Well Amplification Plates

Cat. No.	230582	230583	230667	240187	230584	264431
Description	384 Well Amplification Plate	384 Well Amplification Plate	384 Well Amplification Plate with 1 barcode label	384 Well Amplification Plate with 2 barcode labels	384 Well Amplification Plate	384 Well Amplification Plate, Automation Compatible (ABI 3730 and others)
Color	White	Black	Natural	Natural	Natural	Natural
Material	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polypropylene
Working volume, µl	2-30	2-30	2-30	2-30	2-30	2-40
Total volume, µl	40	40	40	40	40	55
Units per pack/case	10/50	10/50	10/50	10/50	10/50	10/50

## Accessories for Nunc 384 Well Amplification Plates

Cat. No.	259684*	232702	235307**	276014
Description	Spacer Plate	Amplification Tape 96	Advanced Polyolefin Tape 3M adhesive technology	Aluminum Tape
Material	Silicone rubber	Polyolefin***	Advanced Polyolefin***	Aluminum
Adhesive	-	Pressure sensitive acrylate	Pressure sensitive silicone	Pressure sensitive acrylate
Units per pack/carton/case	1/1	100/100	100/100	100/100

\* Reusable and autoclavable

\*\* Superior optical properties for RT-PCR

\*\*\* Resistant to temperatures from -70°C to 110°C

# PCR Compatibility Chart

Cat. No.	240600	230013	267011	230012 264605	230584 230582 230583	264431
Thermal CYCLERS						
ABI						
Gene Amp 2400						
Gene Amp 2700	YES	YES	YES			
Gene Amp 9600	YES	YES	YES		YES	
Gene Amp 9700	YES	YES	YES		YES	YES
Biometra						
Uno	YES	YES		YES		
Uno II	YES	YES			YES	YES
Tpersonal Cycler						
T1 Thermocycler	YES	YES		YES	YES	YES
T3 Thermocycler						
Tgradient	YES	YES		YES		
Trobot	YES	YES		YES	YES	YES
Bio-Rad						
Gene Cycler						
iCycler	YES	YES			YES	YES
Eppendorf						
MasterCycler Gradient	YES	YES		YES		
Erincomp						
SingleBlock System	YES	YES				
TwinBlock System	YES	YES				
Deltacycler I	YES	YES				
ThermoHybaid						
PCR Sprint		YES		YES		
PCR Express and Px2	YES	YES		YES	YES	YES
multiBlock System & mbs	YES	YES		YES	YES	YES
Touchdown	YES	YES		YES	YES	
Omnigene	YES	YES		YES		
Omn-E	YES	YES		YES		
MJ Research						
PTC- 200 DNA Engine	YES	YES		YES	YES	YES
PTC-225 DNA Tetrad	YES	YES		YES	YES	YES
PTC-100 w/96 well Block	YES	YES		YES		
MWG						
Primus 96	YES	YES		YES		
Primus 384					YES	YES
Stratagene						
Robocycler	YES					
Takara						
TP 240						
TP 3000	YES	YES				
Techne						
Touchgene Gradient	YES	YES		YES	YES	YES
Flexi						
Gene	YES	YES		YES	YES	YES
Genius	YES	YES		YES		

	240600	230013	267011	230012 264605	230584 230582 230583	264431
<b>QPCR THERMAL CYCLERS</b>						
ABI						
GeneAmp 7500	YES	YES	YES			
PRISM 7000	YES	YES	YES			
PRISM 7700	YES	YES	YES			YES
PRISM 7900 HT			YES		YES	YES
Bio-Rad						
ICycler	YES	YES		YES		
Stratagene						
MX 4000			YES	YES		
<b>SEQUENCERS</b>						
ABI						
PRISM 3100 Genetic Analyser	YES	Adapter Req	YES	Adapter Req	YES	YES
PRISM 310 Genetic Analyser	YES		YES			
PRISM 3700 DNA Analyser	YES	Adapter Req	YES	Adapter Req	YES	YES
PRISM 3730			YES			YES
PRISM 3730 XL			YES			
MegaBACE						
500				YES		
1000 mark II				YES		
4000					YES	YES
MJ Research						
BaseStation				YES		
Transgenomic						
Wave nucleic acid fragmentation analysis system				YES		

Nunc Amplification Products



# Amplification Tubes and Strips



- Certified RNase and DNase free
- Optimized for liquid phase PCR
- Made of virgin polypropylene which can withstand temperatures from -20°C to +121°C
- Available in 0.2 ml strips or as 0.2 and 0.5 ml individual tubes
- V-shaped tubes with uniformly thin walls
- Offers uniform heat transmission for maximum yield
- Dome-shaped caps for good contact with heated lids of cyclers
- Flat caps for easy closure and sample labeling
- Compatible with most 0.2 ml or 0.5 ml thermal cycler formats
- Flat, optically clear strip caps for real-time PCR

## FAQ

**What is the advantage of tubes over plates for PCR applications?**

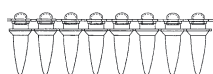
Both formats work well as has been shown in Nunc Tech Notes No. 18 and 19 (see Pages 197-198). Nunc Brand includes a variety of formats to provide enough flexibility for PCR applications on any scale.

## Accessories:

Tube Tray and Holder  
Amplification Labtop Cooler

Page 115  
Page 116

## Nunc Amplification Tubes and Strips



Cat. No.	248161	250875	230895	230971	230885
Description	0.2 ml Tube Strips (8 tubes/strip with matching cap strip)	0.2 ml individual Tubes with attached domed caps	0.2 ml individual Tubes with attached flat caps	0.5 ml individual Tubes with attached domed cap	0.5 ml individual Tubes with attached flat caps
Total volume, µl	200	200	200	500	500
Suggested working volume, µl	5 - 100	5 - 100	5 - 100	50 - 350	50 - 350
Units per pack/case	12/120	500/1000	500/1000	250/1000	250/1000

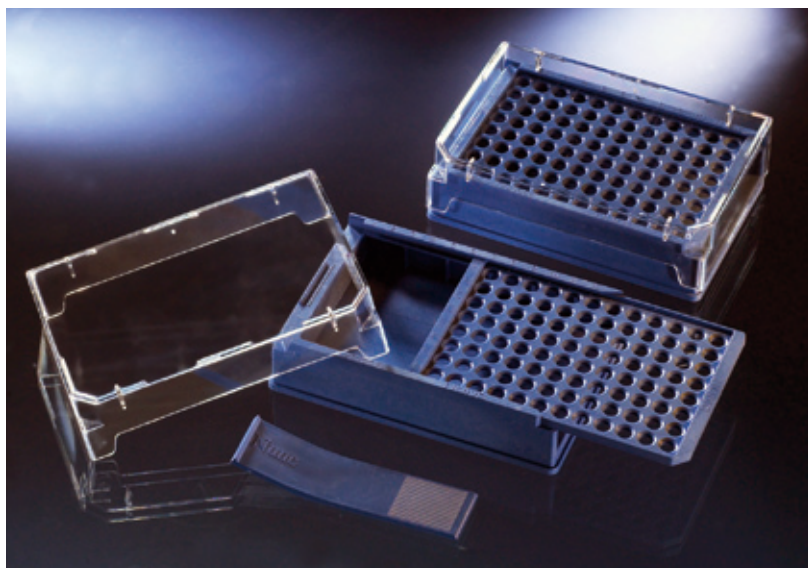
## Accessories for Nunc 0.2 ml Tube Strips

Cat. No.	269080*	265643
Description	1 x 8 Amplification Strip Caps, flat and optically clear	1 x 8 Amplification Strip Caps, round top
Material	Polypropylene	Polypropylene
Units per pack/case	12/120	12/120

\* Superior optical clarity for RT-PCR

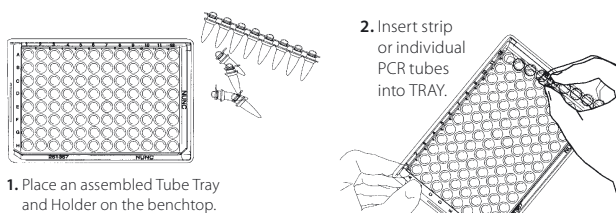


# Amplification Workstation Tube Tray and Holder

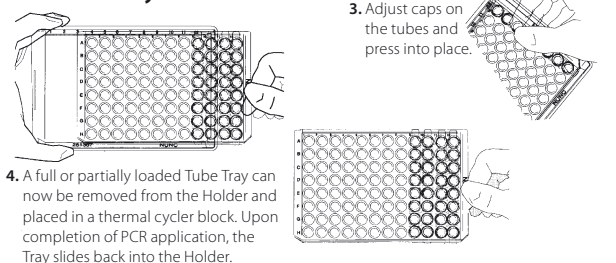


- Workstation for PCR set-up
- Easy to assemble
- Standard 96 MicroWell™ format to hold 0.2 ml PCR tubes, strips or Nunc 96 Well Amplification Plate
- Compatible with automated handling systems
- Removable tray can be fitted directly into the thermal cycler
- Compatible with V-bottom 0.2 ml tube block thermal cycler formats of major manufacturers
- Alphanumerically marked for sample identification
- Tray fits holder in only one way to make orientation easy
- Can be used as a storage system
- Stackable space saving units with lid lugs for stability during storage
- Can be used from -20°C to +110°C
- Chemically resistant to weak acids and alcohols

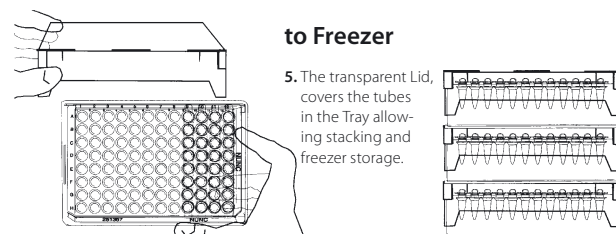
## From Benchtop



## to Thermal Cycler



## to Freezer



### Accessories:

Amplification Plates	Page 111
Amplification 0.2 ml tubes/strips	Page 114

## Nunc Tube Tray and Holder With Lid

Cat. No.	251357
Description	Tube Tray and Holder with Lid
External dimensions, mm	<b>Tube Tray:</b> 119.1 x 78.1 x 4.5 <b>Holder:</b> 127.6 x 85.6 x 28.8 <b>Lid:</b> 128.2 x 86.1 x 31.8
Material	<b>Tube Tray:</b> Polypropylene <b>Holder:</b> Polypropylene <b>Lid:</b> Polystyrene (-40°C to 70°C)
Units per case	1/5

# Amplification Labtop™ Cooler



- Amplification Labtop Cooler protects enzymes and solutions by maintaining freezer temperature
- Temperature is maintained between -20°C and -15°C during sample operation
- Protects valuable reagents in the freezer from fluctuations due to defrost cycles, open doors or power failure
- The aluminum block holds up to 96 0.2 ml tubes in an 8 x 12 array
- Compatible with 0.2 ml individual tubes and strips, 96 Well Amplification Plate, NucleoLink™ Strips and TopYield™ Strips and accommodates Nunc™ Tube Tray

## Accessories

NucleoLink Strips	Page 107
Amplification 0.2 ml Tubes/Strips	Page 114
Tube Tray/Holder	Page 115

## Nunc Amplification Labtop Cooler

Cat. No.	255500
Description	Amplification Labtop Cooler
Material	Polycarbonate / Aluminum
Units per case	1

# Visit our website www.nuncbrand.com

Always up-to-date information on Nunc Brand Products.

**Our mission is to achieve complete customer satisfaction through quality products and services.**

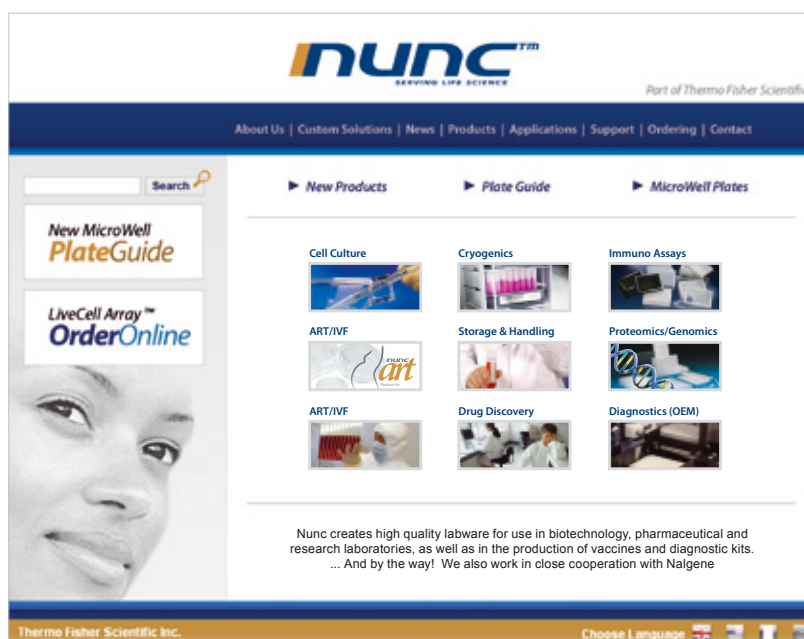
If you are looking for complete information on Nunc Brand Products, we have a great resource for you:

For the latest information on Nunc Brand Products – visit our website! You will find detailed product information, our entire product catalog, tips on selecting the right Nunc Brand Product for your application and expanded technical information, including:

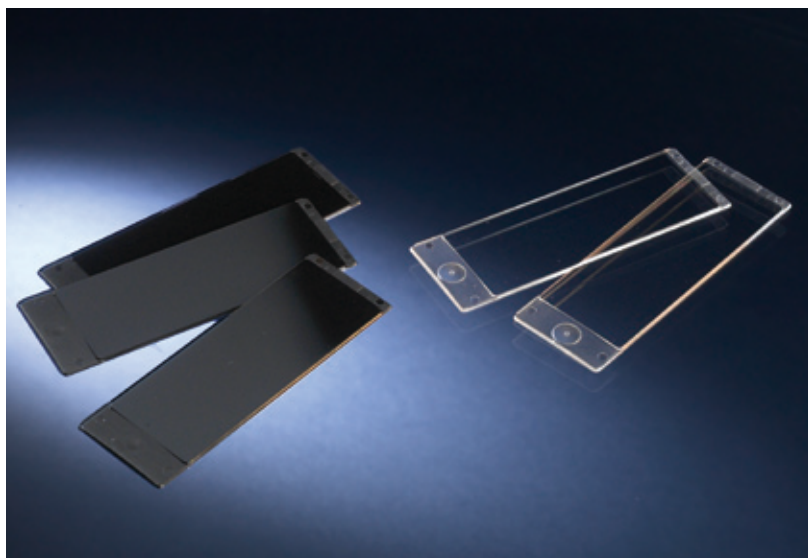
- Bulletins and Tech Notes
- Protocols
- Scientific posters and other literature
- Specialized surfaces and resins
- Application assistance

We have provided electronic access to our customer service and technical service departments, links to our distributors and “news” to keep you up-to-date with our latest product developments.

There is no better, quicker or easier way to look for information on Nunc Brand Products. Visit us at [www.nuncbrand.com](http://www.nuncbrand.com)



# MicroArray Slides MaxiSorp™ Black and Clear Polymer

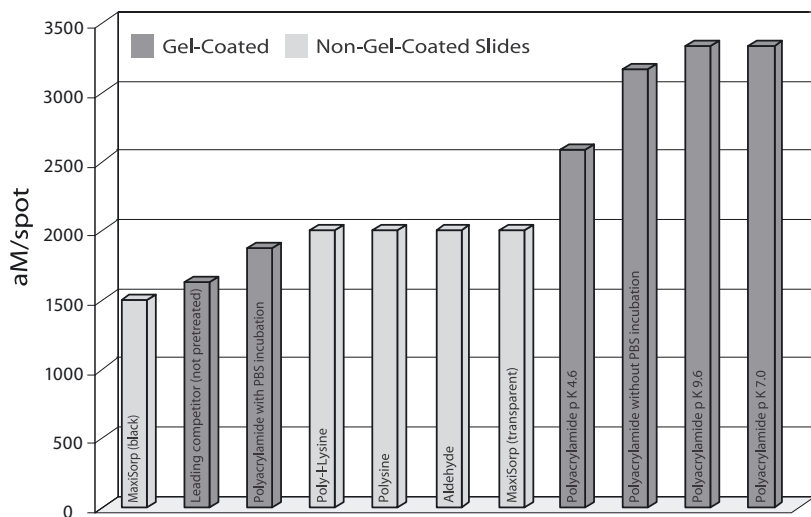


- Polymer slide for protein microarrays
- Ideal where very low concentrations are to be quantified
- Low background fluorescence
- Shelf life 5 years
- Improved signal to noise ratio versus glass slides
- Barcoded slides available on request
- Instruction manual included

## Accessories:

mSeries Lifterslips  
mBox and Handle

Page 119  
Page 121



The figure shows a comparison of 11 different protein slides. The MaxiSorp™ Slide is the best with regard to detection limits. Furthermore the MaxiSorp Slide has a very low intrafield coefficient of variation (data not shown).



## Hotline:

[microarray.nunc@thermofisher.com](mailto:microarray.nunc@thermofisher.com) or  
[microarray.nuncus@thermofisher.com](mailto:microarray.nuncus@thermofisher.com)

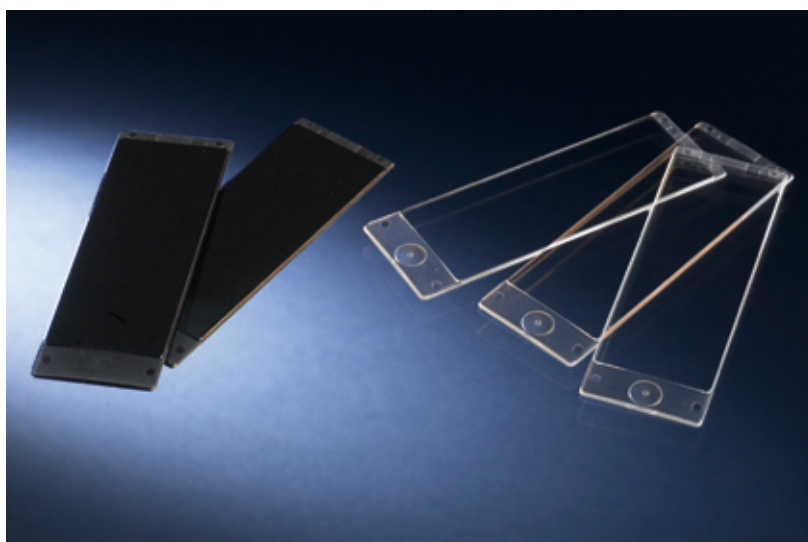
## Nunc MicroArray Slides MaxiSorp™

Black and clear polymer

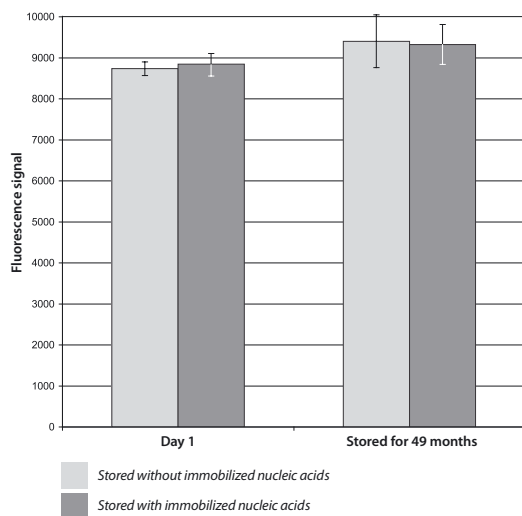
Cat. No.	230305	230302
Method of attachment	Non-specific adsorption to hydrophilic surface	Non-specific adsorption to hydrophilic surface
Key applications	Proteins	Proteins
Color	Black	Clear
Units per pack/case	5/25	5/25



# MicroArray Slides NucleoLink™ Black and Clear Polymer



- Preferred for covalent coupling of nucleic acids
- Immobilization of PCR products and cDNAs by baking
- Optimal for SNP's applications
- Preactivated surface, stable performance for 5 years
- Stripping and rehybridization
- Low background fluorescence
- Barcoded slides available upon request
- Large batch size > 10,000
- Instruction manual included



**Shelf life study on NucleoLink™ surface**  
*The graph shows that NucleoLink™ surface can be stored for at least 49 months without affecting its ability to bind nucleic acids. Furthermore, it is also shown that surfaces with immobilized nucleic acids can be stored for a similar period without affecting the subsequent hybridization.*

## Accessories:

mSeries Lifterslips  
 mBox and Handle

Page 119  
 Page 121



## Hotline:

microarray.nunc@thermofisher.com or  
 microarray.nuncus@thermofisher.com

## Nunc MicroArray Slides NucleoLink™

Black and clear polymer

Cat. No.	230381 ‡	230351 ‡
Method of attachment	1. Covalent attachment of nucleic acids, using carbodiimide (EDC) chemistry. 2. Baking for cDNAs and PCR products	1. Covalent attachment of nucleic acids, using carbodiimide (EDC) chemistry. 2. Baking for cDNAs and PCR products
Key applications	Nucleic acids, cDNAs, PCR products	Nucleic acids, cDNAs, PCR products
Color	Black	Clear
Units per pack/case	5/25	5/25

‡ Not available in Americas

## MicroArray mSeries LifterSlip<sup>™</sup>



- 1 mm thick glass
- Uniform dispersal of hybridization solution
- Reduced variation in hybridization fluid volume
- Consistent flatness
- Excellent for microarray hybridizations
- Other applications include *in-situ* hybridization and immunohistochemistry



**Hotline:**

[microarray.nunc@thermofisher.com](mailto:microarray.nunc@thermofisher.com) or  
[microarray.nuncus@thermofisher.com](mailto:microarray.nuncus@thermofisher.com)

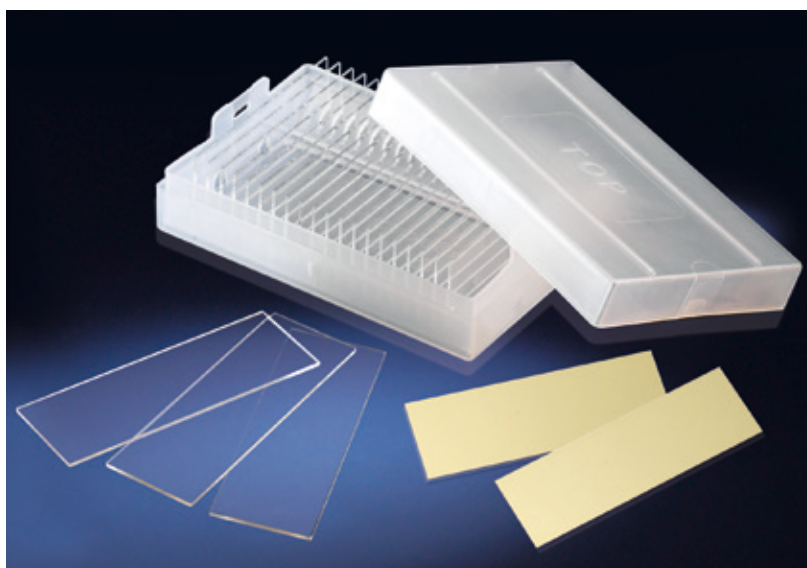
*Printed bars raise the LifterSlip slightly above the slide surface, creating an ideal, highly reproducible hybridization environment.*

### Nunc MicroArray mSeries LifterSlip<sup>™</sup>

Cat. No.	231647 ‡	231650 ‡
Material	Glass	Glass
Dimensions, mm	22 x 25 x 1	25 x 60 x 1
Approx. volume, µl	20	55
Units per pack/case	50/150	50/150

‡ Not available in Americas

# Glass MicroArray Slides



- Multiple surfaces optimized for leading microarray applications
- Available 3D enhanced surface is etched for consistent, uniform spot size
- Barcoding available for slide and data management
- Low fluorescence provides high signal-to-noise ratio
- High reproducibility due to consistent uniformity
- Standard 25 x 75 mm dimension

## Hotline:

microarray.nunc@thermofisher.com or  
microarray.nuncus@thermofisher.com

## Accessories

mSeries Lifterslips  
mBox and Handle

Page 119  
Page 121

Compatible with commercial microarray spotting and detection systems, Nunc microarray substrates offer consistent surfaces with reproducible spot size, shape and signal intensity.

## Nunc Glass MicroArray Slides

Cat No.	231632	231633 ‡	231638 ‡	231642	231643 ‡	231641 ‡
Surface coating	Aminopropylsilane	Aminopropylsilane	Aminopropylsilane	Aldehyde	Aldehyde	Epoxy
Slide material	Glass	Glass	Glass	Glass	Glass	Glass
Enhanced surface	-	-	+	-	+	+
Barcode	-	+	-	-	-	-
Method of attachment	Non-specific, electrostatic adsorption			Covalent, aminemodified DNA		
Key applications	cDNA, PCR products, proteins			Nucleic acids, SNPs, proteins		Nucleic acids, proteins
Units per pack/case	20/20	20/20	20/20	20/20	20/20	20/20

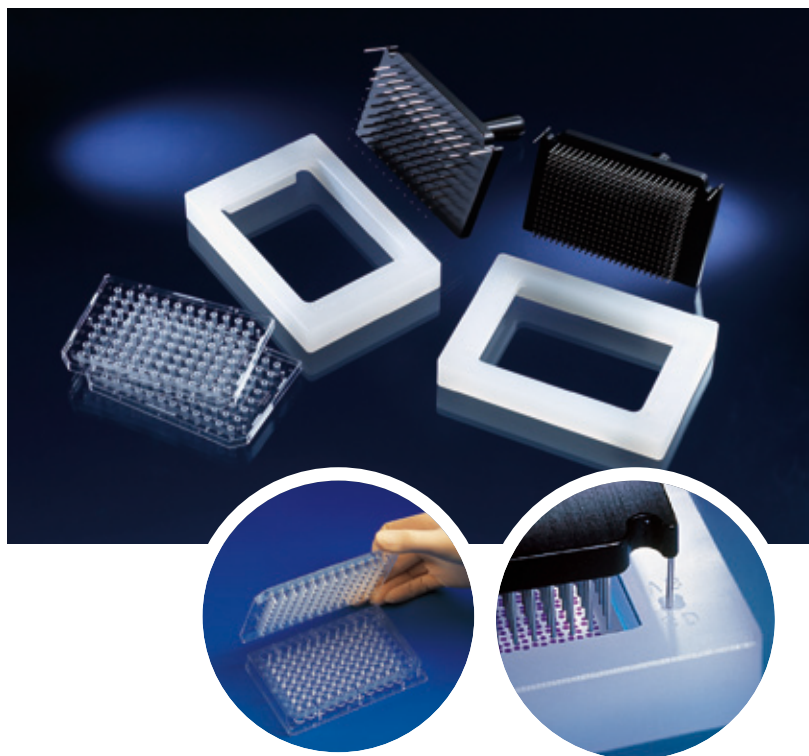
‡ Not available in Americas

## Nunc Glass MicroArray Slides

Cat No.	231639 ‡	231636 ‡	231644 ‡
Surface coating	Poly-L-Lysine	Uncoated	Gold thin film
Slide material	Glass	Glass	Glass
Enhanced Surface	+	+	-
Barcode	-	-	-
Method of attachment	Non-specific, positive charge biological coat	-	-
Key applications	Proteins, cells	Any glass coating process	
Units per pack/case	20/20	20/20	20/20

‡ Not available in Americas

# Replication System



- For use with 96 and 384 Well Plate and OmniTray
- Designed for the replication of DNA libraries
- Ideal for transferring small volumes of inoculum from plate to plate or membrane (Cat. No. 250385)
- OmniTray copier allows correct alignment of pins during replication
- Pre-cut Pall Biodyne B nylon membrane (Cat. No. 250385) available to fit OmniTray
- MicroWell™ copier alignment device simplifies conversion of 96 MicroWell™ plates to 384 well format
- Flame-proof stainless steel pins on 384 and 96 Pin Replicator
- Pins transfer 1.0 µl from liquid or 0.1 µl to solid supports
- TSP e.g. (Cat. No. 473245) is also compatible with OmniTray for making replicas or dot blotting. Transfer volume for PolySorp™ TSP is 1.0 µl/pin

## Literature:

Tech Note Nos: 21, 22, 23, 24

See Pages 195-196 for full reference list with titles and links

## Accessories:

Immuno™ TSP  
OmniTrays

Page 78  
Page 123

## Nunc Replication System

Cat. No.	250393	250520	250539	250555	473245
Description	384 Pin Replicator	96 Pin Replicator	MicroWell Plate Copier	OmniTray Copier	Disposable 96 Pin Replicator (TSP)
Total volume, µl	1 ± 0.1	1 ± 0.1	-	-	-
Sterile	-	-	-	-	+
External dim., mm	H: 121.6* W: 83.3 L: 135.4	H: 121.6* W: 83.3 L: 135.4	H: 23.9 W: 113.8 L: 164.6	H: 23.9 W: 113.8 L: 164.6	H: 13.0 W: 85.3 L: 127.4
Material	Anodized Aluminum with stainless steel pins	Anodized Aluminum with stainless steel pins	Polypropylene	Polypropylene	Polystyrene, PolySorp
Units per pack/case	1/1	1/1	1/1	1/1	10/210

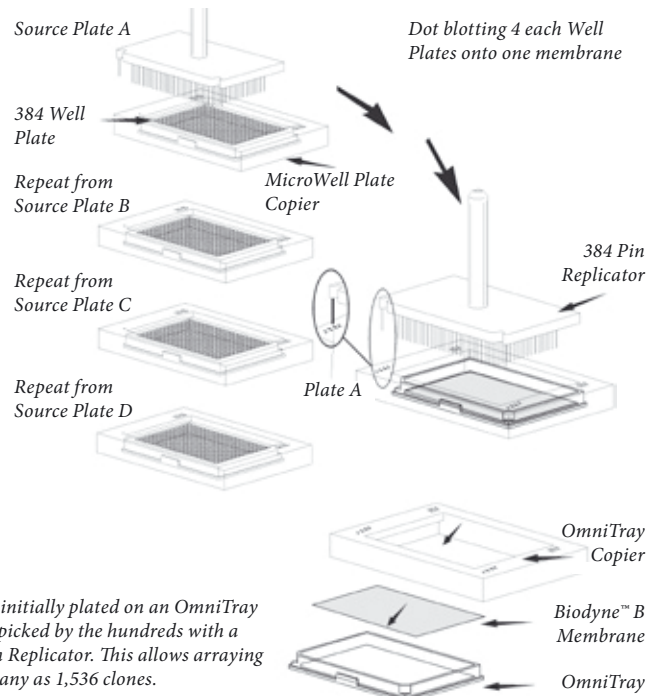
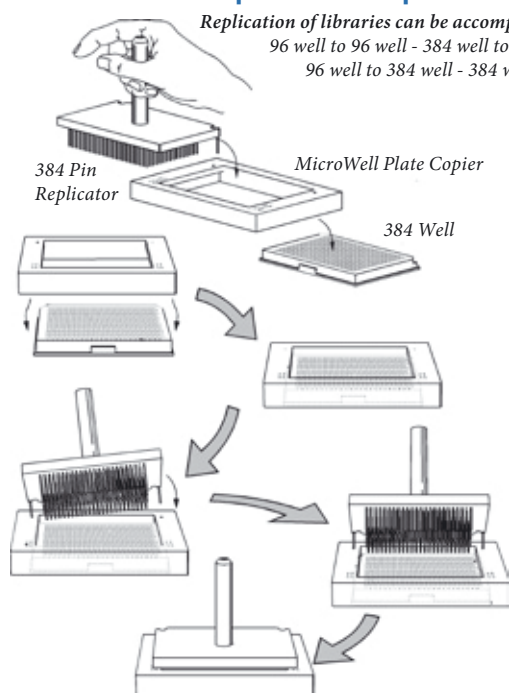
\* Height includes handle and pins



# Replication System

## Replication steps

Replication of libraries can be accomplished from:  
96 well to 96 well - 384 well to 384 well and  
96 well to 384 well - 384 well to 96 well



# OmniTray



- Ideal for screening libraries
- Useful for DNA hybridization methods
- Also suitable for standard petri dish techniques and bacterial growth

## Acts as:

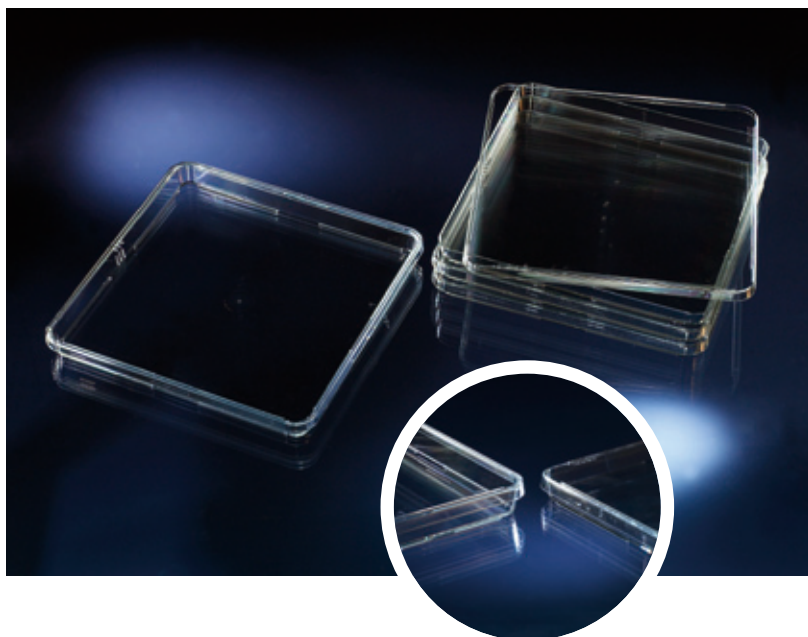
- Holder for membrane when dot blotting
- Container for denaturation, hybridization and washing steps
- Storage container for membranes
- Same external foot print dimensions as a 96 MicroWell™ plate
- Optical clarity makes colonies easy to see
- Can be stacked safely
- Walls are high and sturdy
- Can be frozen at -20°C

## Nunc OmniTray

Polystyrene, Sterile

Cat. No.	242811	264728	250385
Description	OmniTray with lid	OmniTray with lid	Pall Biodyne™ B nylon membrane
Total volume, ml	90	90	-
Suggested working vol., ml	35	35	-
External dimensions, mm	128 x 86	128 x 86	115 x 76
Units per pack/case	10/60	10/90	20/20

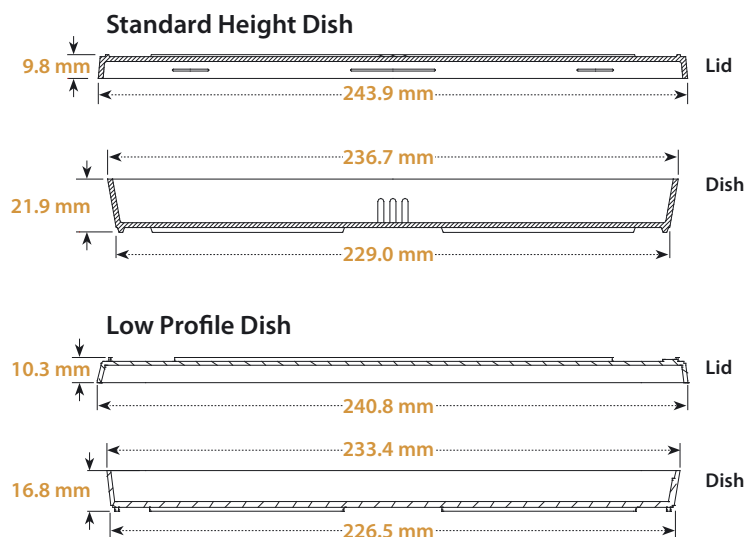
## Bio-Assay Dishes



- Useful for screening large numbers of colonies in cloning experiments
- Can be used for culturing of bacteria and fungi
- Suitable in agar diffusion assay
- Can be used as a moisture chamber for incubation of Nunc MicroWell™ Plates
- Lined with wet filter paper it is also useful as an incubation chamber for in situ hybridization
- Large growth area

### The Low profile Bio-Assay Dish

- Fits robotic instruments
- Designed for genomic screening and colony picking
- Saves space

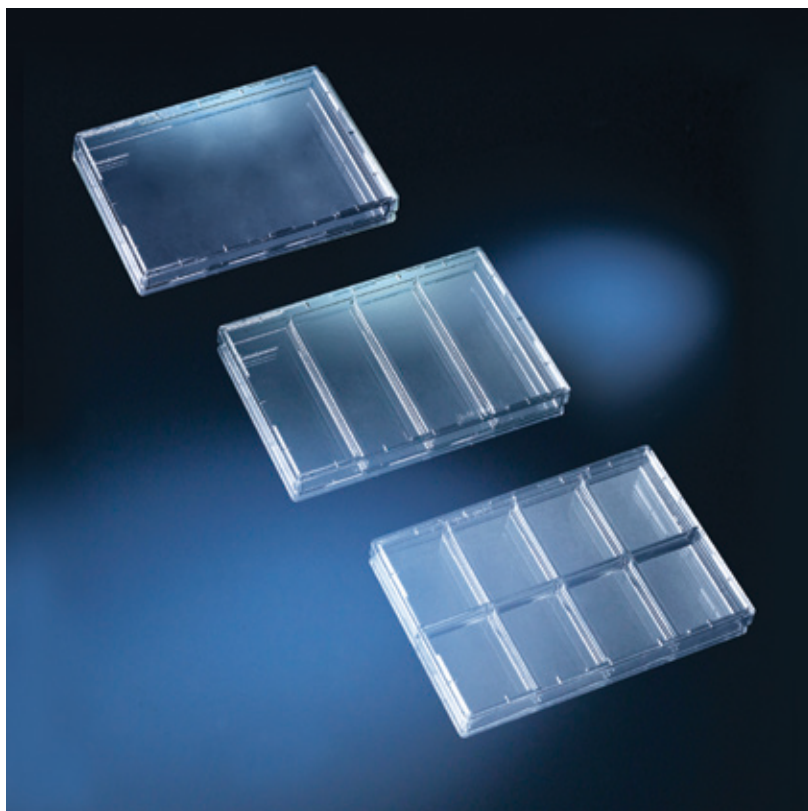


### Nunc Bio-Assay Dishes

Polystyrene. Sterile. With lid

Cat. No.	240835	240845
Description	Standard Height	Low Profile
External dimensions, mm	245 x 245 x 25	241 x 241 x 20
Suggested working volume, ml	225	215
Total surface area, cm <sup>2</sup>	500	478
Units per pack/case	4/16	5/20

## Rectangular Dishes 1, 4 and 8 Well



- Non-treated surface for molecular biology applications
- ANSI standard dimensions for instrument compatibility

### 1 Well

- HTS Petri Dish applications

### 4 and 8 Wells

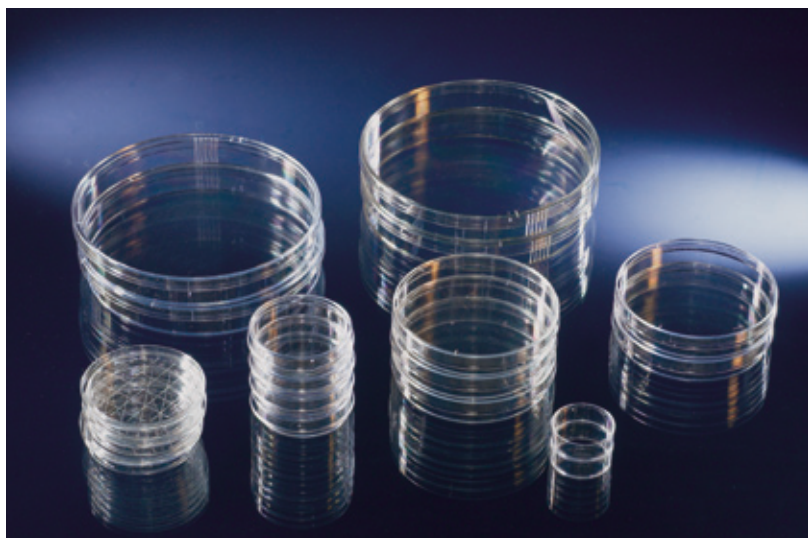
- Assay compartmentalization
- Probe multiple gene sub-sets
- Wash Western blot strips
- 4 well dish holds four glass slides

### Rectangular Dishes, 1, 4 and 8 Well

Polystyrene

Cat. No.	267060	267061	267062
Surface	Non-treated	Non-treated	Non-treated
Number of wells	1	4	8
Total volume, ml/well	90	22	11
Color	Clear	Clear	Clear
Sterile	+	+	+
With lid	+	+	+
Barcode	-	-	-
Units per pack/case	10/100	10/100	10/100

# Petri Dishes



- For culturing of fungi, bacteria and other microorganisms
- Contact dish useful for sampling in hospital environments (for research use only), as well as in food science and the pharmaceutical industry
- Perform well in automatic dispensers due to complete flatness and uniform height
- Available with a molded grid
- Deep Petri Dishes allow for longer culture periods
- Compatible with automated systems

## Nunc Lab-Tek™ Petri Dishes

Polystyrene

Cat. No.	4021 †	4022 †	4014 †	4031 †	4036 †
Description	Square	Square	Deep Petri	Deep Petri	Deep Petri
External dimensions incl. lid, mm	100 x 17	100 x 17	150 x 26	100 x 26	63 x 22
Internal dimensions, mm	89	89	137	86	57
Culture area, cm <sup>2</sup>	79	79	148	57	25
Stack ring	-	+	-	+	+
Airvent	+	-	-	+	+
Units per pack/case	20/500	20/500	12/72	12/300	16/400

† Available only in Americas

## Nunc Petri Dishes

Polystyrene

Cat. No.	240401	249964	254925	263991
External dimensions incl. lid, mm	145 x 21	140 x 20	100 x 15	100 x 15
Internal dimensions, mm	136 x 18	136 x 18	86 x 12	86 x 12
Total volume, ml	250	250	68	68
Suggested working volume, ml	35	35	12.5	12.5
Vents	+	+	+	+
Culture area, cm <sup>2</sup>	145	145	58	58
Sterile	-	+	-	+
Units per pack/case	10/180	10/80	20/320	20/320

## Nunc Contact Dishes

Polystyrene. Sterile

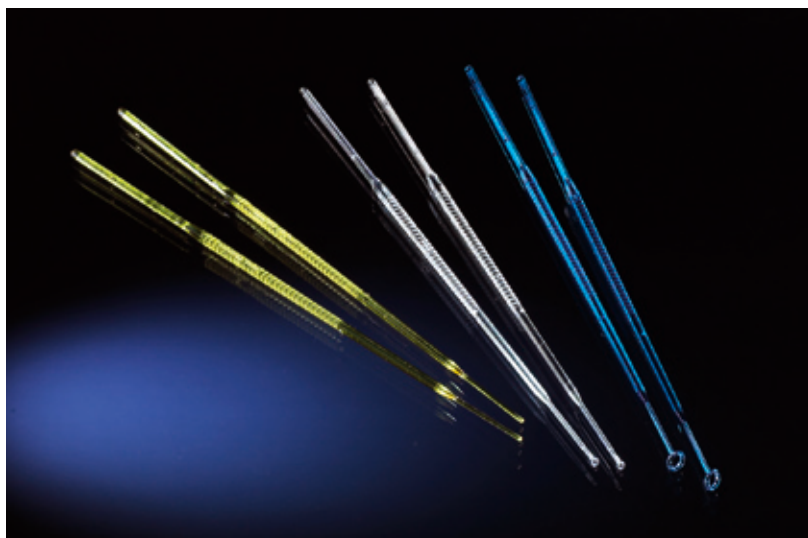


Cat. No.	240541 ‡
External dimensions incl. lid, mm	67 x 15
Internal dimensions, mm	57 x 3
Total volume, ml	7.7
Suggested working volume, ml	7.7
Culture area, cm <sup>2</sup>	25
Units per pack/case	11/396

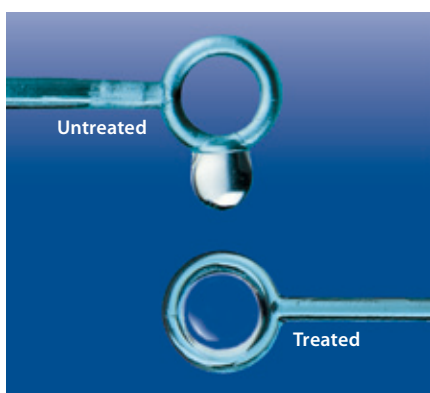
‡ Not Available in Americas



# Loops and Needles



- Meet semiquantitative standard for handling samples
- Surface treated for enhanced droplet adhesion
- Non-toxic (USP Class VI)
- Problem free inoculation with smooth loop surface
- Precision molded
- Calibration documents available for any batch upon request
- No flaming required



## Nunc Needles

Polystyrene. Sterile



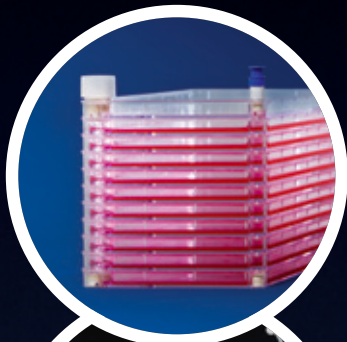
Cat. No.	253988	254399
Description	Yellow needle	Yellow needle
Units per pack/carton/case	50/1000/4000	12/600/2400

## Nunc Loops

Polystyrene. Sterile



Cat. No.	251586	254437	253287	254410
Description	Blue loop	Blue loop	Clear loop	Clear loop
Total volume, µl	10	10	1	1
Units per pack/carton/case	50/1000/4000	12/600/2400	50/1000/4000	12/600/2400





## Bio Production Introduction

This section includes cell factories, 2D MicroHex microcarriers, roller bottles, as well as all associated accessories, manipulators and handling systems for both laboratory and industrial scale production.

The flexible and cost efficient cell factory system saves space, time and labour and reduces contamination risk.

The system is used world-wide for culturing and nursing cells used in production of drugs, and other bio-active compounds as well as virus, cell populations and vaccines. The Nunc Large Scale Cell Culture system can provide a total solution to production at virtually any scale.

The actively gassed cell factory for higher yields and better control of the growth parameters is now joined by Cell Factories EasyFill™. With a wider, screw cap closure and a 'plug and play' connector, the CF EasyFill™ makes larger scale cell culture easier and more accessible than ever.

Nunc Brand can provide a custom made solution to large scale production at any level from single units in small laboratories to full scale mass production. For more information contact us directly at: [bioproduction.nunc@thermofisher.com](mailto:bioproduction.nunc@thermofisher.com).



Incubator or incubation room? Ask us for advice on design and solutions - we have almost 30 years experience.

## Contents

NEW

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# Cell Factories EasyFill™ Nunclon™ Δ Surface

NEW



**A time and space saving vessel for large scale cell culture production**

- Easy to fill and to empty
- Ready to use, no accessories needed
- Plug and play connection
- One CF EasyFill-10 equals 36 x T-175 flasks

## Literature:

For scientific references visit our website at:  
[www.nuncbrand.com/go/easyfill](http://www.nuncbrand.com/go/easyfill)

NEW

## Nunc Cell Factories EasyFill™ Nunclon™ Δ

Polystyrene. Sterile. Length 335 mm, Width 205 mm

Cat. No.	140000	140250	140360	140400
Number of trays	1	2	4	10
Culture area, cm <sup>2</sup>	630	1260	2520	6300
Suggested working vol., ml	200	400	800	2000
Units per pack/case	1/6	1/6	1/4	1/2

## Options and Accessories



Fill or empty through the plug and play connection, and work with a semi-closed system.



We offer a variety of devices (filters and a septum for sterile sampling, etc.) to fit the plug and play port. Please ask for custom solutions.

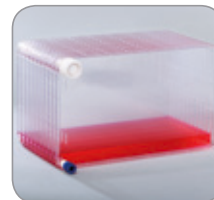
NEW

## Accessories

Cat. No.	173248	173249	173208	140099	132869
Description	Airvent filter with connector	0.2 μ Air Filter with Connector	Airvent filter with connector and septum	PC connector long	Closure Cap
Sterile	+	+	+	-	+
Units per pack/case	1/2	1/2	1/2	10/10	1/100



1. Pour media directly into the CF EasyFill™.



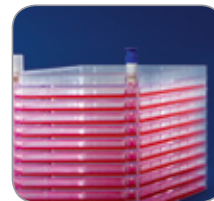
2. Equilibrate by placing the CF EasyFill™ on the side with the small port.



3. Turn the CF EasyFill™ 90°, so that the filling inlet is up. Media will be separated with equal amounts in each chamber.



4. With filling inlet up, carefully tilt the CF EasyFill™ to a horizontal incubation position. Handle by holding on to the sides - do not manipulate by holding on to the upper rim.



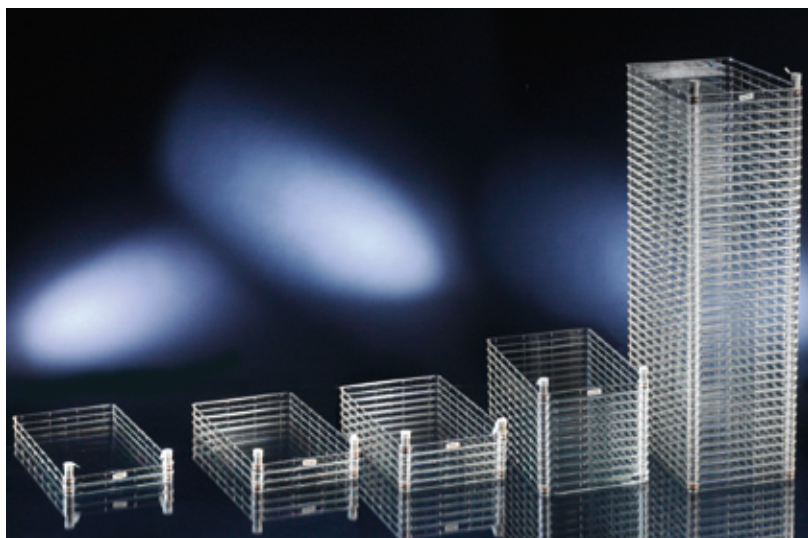
5. Incubate.



6. Loosen filter cap and remove cover cap. Empty directly into reservoir.



## Cell Factories Nunclon™ Δ Surface



- For industrial scale production of vaccines, monoclonal antibodies or pharmaceuticals
- Ideal for adherent cells
- Can be used for suspension culture
- Growth kinetics unaltered from laboratory scale culture
- Available in 1, 2, 4, 10 and 40 tray versions for easy scale-up
- Low contamination risk
- Compact design
- Certified Nunclon™Δ ensures consistent cell growth layer to layer, lot to lot

### Literature:

Tech Note Nos: 3, Vol. 4: 34, 35, 36, 37

See Pages 195-196 for full reference list with titles and links

Large scale animal cell cultivation for production of cellular biologicals. Arne Johansson 1991. Available on request

### Accessories:

Accessories Page 134  
Cell Factory Hand Manipulator for CF40 Page 136

### FAQ

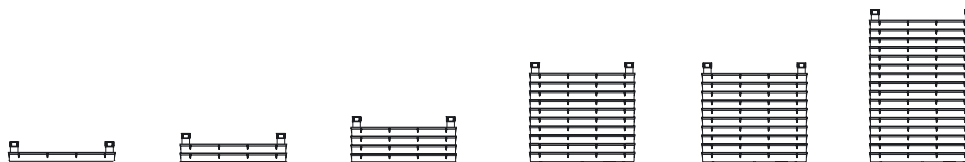
#### How can the cell growth be monitored microscopically in Cell Factories?

There are two ways.

1st and 2nd tray from the bottom in an inverted microscope. This requires a 4x objective with a working distance of approx. 25 mm. Such objectives are available for most brands of microscopes. Contact the microscope supplier for details. Alternatively, you can use a CF1 or CF2 as control.

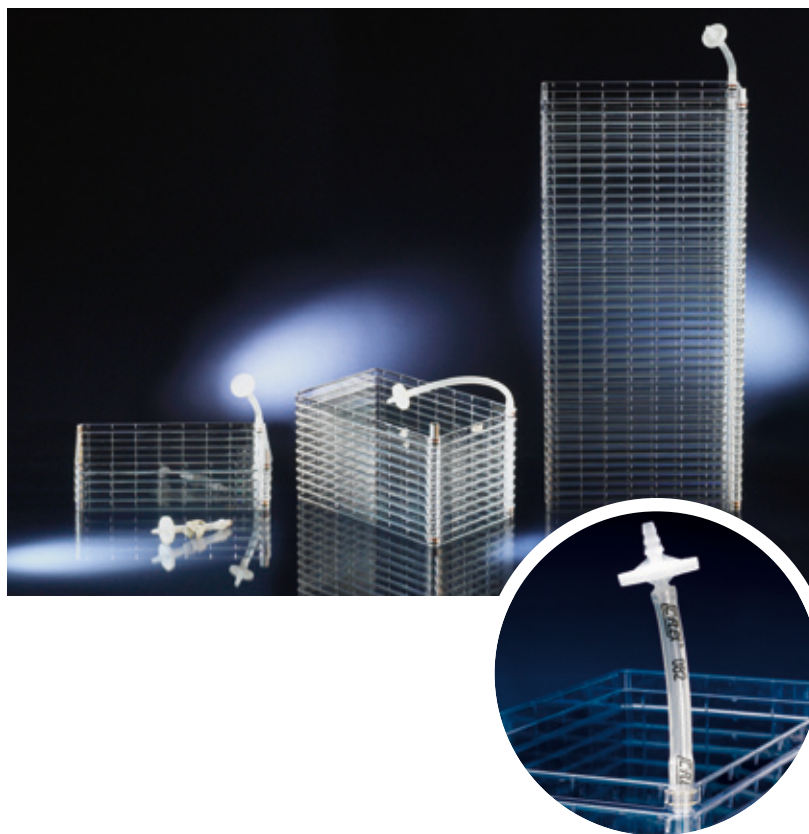
### Nunc Cell Factories

Polystyrene. Sterile  
Length 335 mm, Width 205 mm



Cat. No.	165250	167695	140004	164327	170009	139446
Number of trays	1	2	4	10	10	40
Culture area, cm <sup>2</sup>	632	1264	2528	6320	6320	25280
Suggested working volume, ml	200	400	800	2000	2000	8000
Units per pack/case	1/8	1/5	1/10	1/2	1/6	1/2

# Cell Factories for Active Gassing *Nunclon™Δ Surface*



- For industrial scale production of cell based vaccines, monoclonal antibodies or pharmaceuticals
- The gas-flow system ensures a controlled atmosphere in the culture trays by equal distribution of user-specified gas-mix actively pumped
- For culturing and nursing of pH sensitive and high oxygen demanding cells via controlled gas distribution
- Certified Nunclon™Δ surface treatment ensures consistent cell growth layer to layer, lot to lot
- Growth kinetics unaltered from laboratory scale culture
- Available in 4, 10 and 40 tray versions for easy scale-up
- Low contamination risk
- Compact design

## Literature:

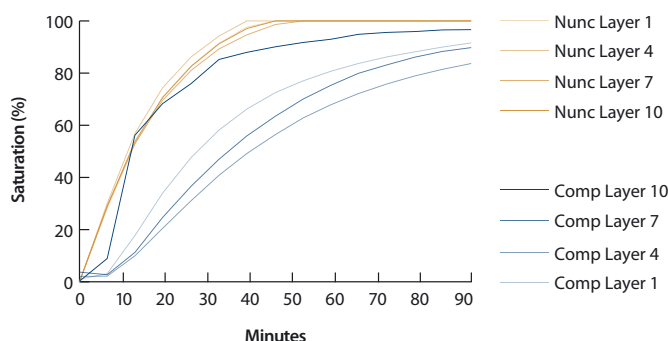
*Large scale animal cell cultivation for production of cellular biologicals. Arne Johansson 1991. Available on request.*

*Active Gassed Cell Factory Instruction for Cell Factory CF4, CF10, CF40: [www.nuncbrand.com/go/agefinstructions](http://www.nuncbrand.com/go/agefinstructions)*

## Accessories:

Accessories Page 134  
Cell Factory Hand Manipulator for CF40 Page 136

**Cell Factory vs Competitor (10 layer)**  
Gas Distribution & Saturation at 0.5 l/m



## Nunc Cell Factories for Active Gassing

Length 335 mm, Width 205 mm



Cat. No.	173239	173238	173240
Number of trays	4	10	40
Culture area, cm <sup>2</sup>	2528	6320	25280
Suggested working volume, ml	800	2000	8000
Units per pack/case	1/10	1/6	1/2

# Nunc Cell Factory Instructions



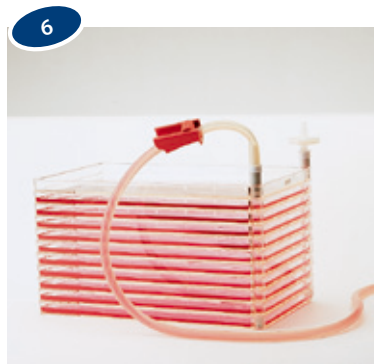
Remove seal from adaptor cap



Turn 90 degrees



Insert airvent filter



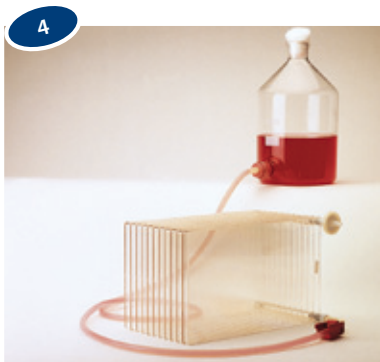
Place in horizontal position



Connect to media container



Replace connector with cover cap. Incubate



Turn on its side, filter up. Allow media to equalize



Empty by reversing the process

## Literature:

Cell Factory Instructions  
www.nuncbrand.com/go/cfinstructions

## Cell Factories Accessories



- Accessories for filling and emptying the cell factories with media



### Connectors, Filters and Caps for Nunc Cell Factories

Cat. No.	173248	173200	173208	179553	173249	167525	167652	170615	140082	140099	132869
Description	Airvent filter with connector	Airvent filter with connector	Airvent filter with connector and septum	Airvent filter	0.2 µ Air Filter with connector	Filter Adaptor Cap	Cover caps	Cover caps	PC connector short	PC connector long	Closure Cap
Sterile	+	+	+	+	+	+	+	+	-	-	+
Units per pack/case	1/2	1/12	1/2	1/10	1/2	1/20	2/400	2/40	10/10	10/10	1/100

### Start-up Kit

Sterile

Cat. No.	170769
Description	Starter kit includes: PC Connector, Airvent Filter, White Filter Adaptor Cap, Cover Caps, Tube Clamp and Silicone Tubing

### Cap for Cell Factory EasyFill

Cat. No.	132869
Closure	Closure Cap
Units per pack/case	1/100





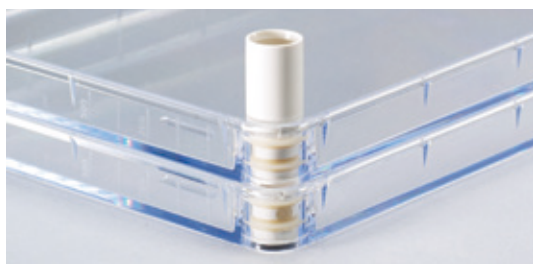
# Cell Factory Flexible System *Custom Capabilities*

## Custom Solutions

### -Ask us what we can do for you!

Do you have a preferred type of tube, connection or have you already validated a specific filter? No problem! We are very flexible and can assist you in designing the optimal configuration. Pour, plug, click or weld you access to our system:

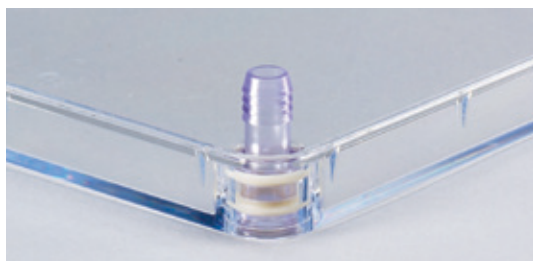
Please contact [bioproduction.nunc@thermofisher.com](mailto:bioproduction.nunc@thermofisher.com) for additional information or to get started.



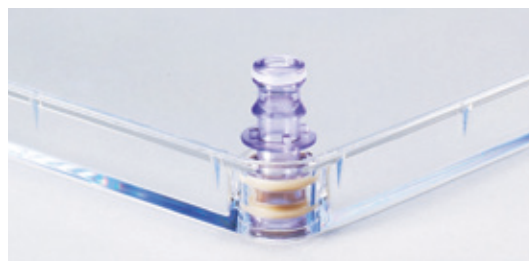
*PLUG* a media container into our standard port via a standard cell factory connector. Provides a semi-closed system for GMP production.



*POUR* into our CF EasyFill™ - easy filling and emptying without any accessories needed to get started. Recommended for research and process development.

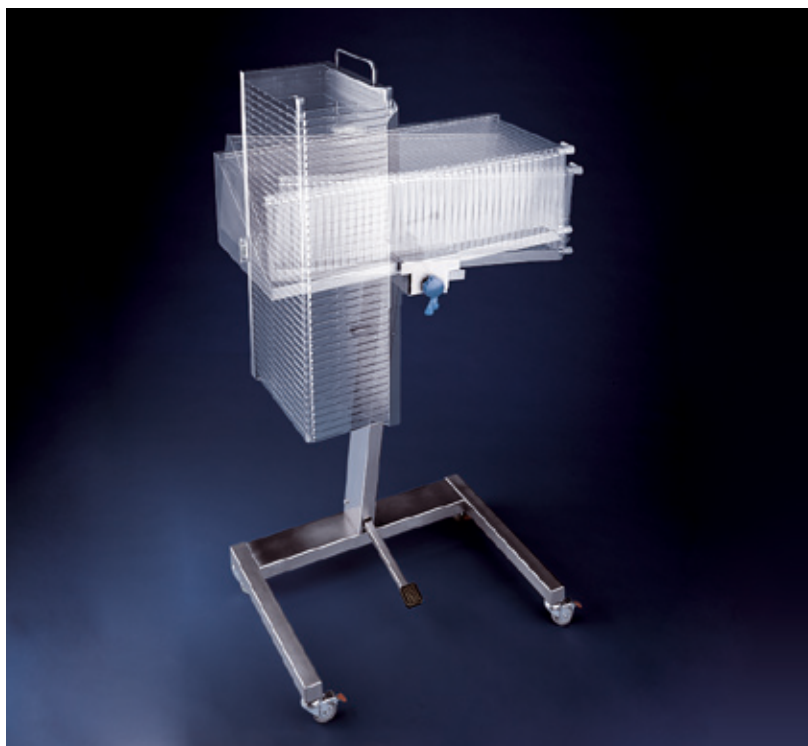


*WELD* the pre-assembled heat sealed tube of your choice together with your media vessel. A closed system that allows you to work outside a laminar flow hood.



*CLICK* a CPC connector on your media bag into a male CPC port. A semi-closed system for GMP production.

## Cell Factory Hand Manipulator CF40



CF40 Hand Manipulator (Cat. No. 176953).

- The Nunc Hand Manipulators are designed to manually handle a Cell Factory 40 with a growth area of 25,280 cm<sup>2</sup>
- The CF40 Hand manipulator comes with wheels and a foot brake



CF40 with a growth area of 25,280 cm<sup>2</sup>.

### Nunc Cell Factory Hand Manipulator Handling System

Cat. No.	176953
Description	CF40 Hand Manipulator
Material	Stainless steel
For Cell Factory	Cell Factory 40 Cat. Nos. 139446 and 173240

## Automatic Cell Factory Manipulator ACFM



1 assembly rack with rack carts for 4 Nunc Cell Factories, CF40

- The ACFM is an electronically and pneumatically controlled unit which automates the filling and emptying of medium or cell suspension into 4 x 3 Nunc Cell Factory 10 (Cat. Nos. 164327, 170009 and 173238) or 4 x 1 Cell Factories 40 (Cat. Nos. 139446 and 173240)

### Nunc Automatic Cell Factory Manipulator ACFM

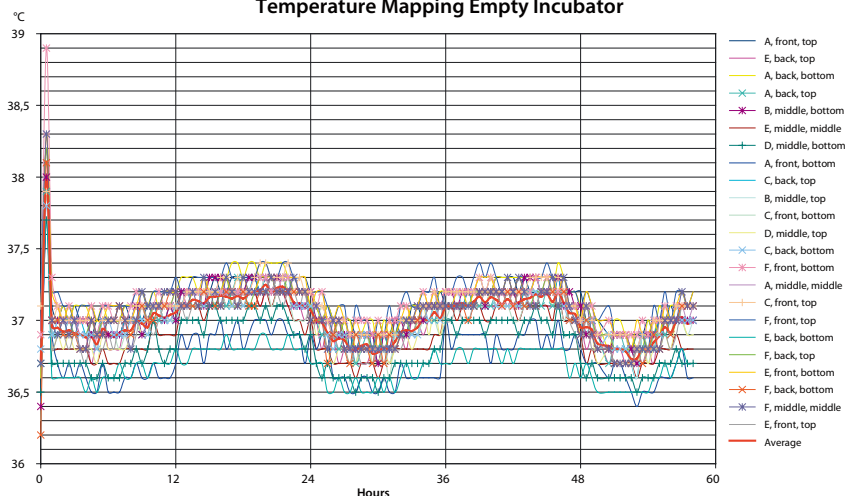
Cat. No.	132744
Description	Automatic CF manipulator
Material	Stainless steel
For Cell Factory 10	Cat. Nos. 164327, 170009, 173238, 140400
For Cell Factory 40	Cat. Nos. 139446, 173240

# Nunc CO<sub>2</sub> Incubator



- Doors with heated windows and blinders
- CO<sub>2</sub> control
- Temperature control
- Internal fans improving air circulation
- All alarm messages stored until actively cleared by operator
- Acoustic alert and alarm signal
- Available the data logger; FDA 21 CFR part 11 compliant
- Available with gas distribution manifold for active gassing
- Available with controller/mixer of up to 3 gasses for active gassing
- Racks for 4x3 CF10 with pre-mounted manifold for active gassing

Temperature Mapping Empty Incubator



## Nunc Incubator

Temperature up to 60° C

Cat. No.	140224
Material	Stainless steel
For Cell Factory 10	Cat. Nos. 164327, 170009, 173238
For Cell Factory 40	Cat. Nos. 139446, 173240

Incubator	Width	1800 mm
	Depth	1190 mm
	Height	1610/2430 mm
	Weight	600 kg
Temperature	Up to 60°	
CO <sub>2</sub>	Nom. Value: Up to 20%	



# In Vitro Roller Bottles



- For industrial scale production of vaccines, monoclonal antibodies or pharmaceuticals
- Molded of durable PETG
- Excellent substrate for adherent cells
- Quick-action ergonomic closure reduces wrist strain and increases productivity
- Wide range of sizes with surface areas from 1050 cm<sup>2</sup> to 4200 cm<sup>2</sup>
- Available in both Standard and Expanded Surface (XPS), that enables increased cell growth
- and product yield without the need to purchase additional production equipment
- or increase labor
- Easy-to-read graduations for medium fills
- Lot number is printed on each bottle to maximize traceability

## Literature:

Tech Note Nos: 3, 25, 57

See Pages 195-196 for full reference list with titles and links

## Nunc In Vitro Roller Bottles

PETG. Sterile

**NEW**

**NEW**

Cat. No.	1060-05	1060-20	1060-52	1060-50	1060-85	1860-22	1760-20	2160-05	2160-20	4260-22
Description	Standard	Standard	Standard PDL-Coated	Standard PDL-Coated	Standard Vented	Standard Long	Expanded Surface	Expanded Surface	Expanded Surface	Expanded Surface
Size	1.2X	1.2X	1.2X	1.2X	1.2X	1XL	2X	2.5X	2.5X	5X
Culture area, cm <sup>2</sup>	1050	1050	1050	1050	1050	1800	1700	2100	2100	4200
Suggested working volume, ml	100-500	100-500	100-500	100-500	100-500	200-1000	200-600	200-600	200-600	400-1000
Units per pack/case	5/20	20/20	2/2	20/20	5/20	22/22	20/20	5/20	20/20	22/22

## Accessories

Replacement Closures

Cat. No.	3080-01
Description	48 mm HDPE Vented Quick-Action Closure
Sterile	+
Units per pack/case	1/300



## 2D MicroHex™ Microcarriers Nunclon™Δ Surface

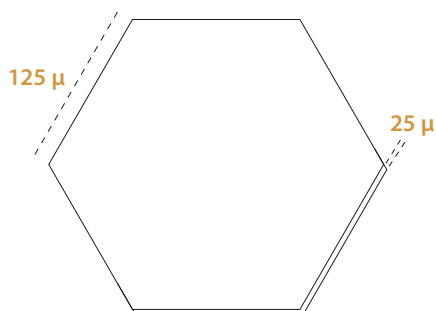
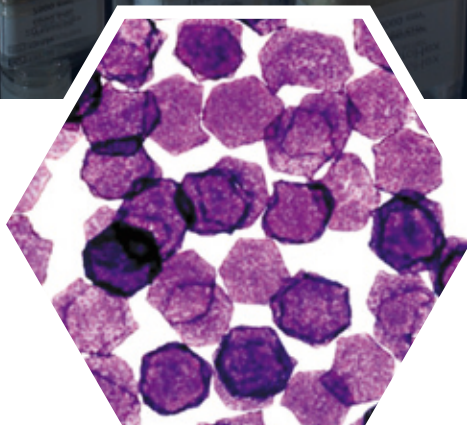


- 2D MicroHex are solid, non-swelling, non-porous and non-absorbing microcarriers for adherent cell culture
- Certified Nunclon™Δ surface ensures excellent conditions for cell attachment and growth
- 2D MicroHex can be kept in suspension at low stirring speed due to the shape and low weight of the particles, resulting in a uniform coverage of all carriers
- Very low displacement volume/unit surface area

### Literature:

Tech Note No: 48

See Pages 195-196 for full reference list with titles and links



**Regular hexagon:**  
 Side length = 125 μm  
 Thickness = 25 μm  
 Density = 1.05 g/cm<sup>3</sup>  
 Cultivation area = 760 cm<sup>2</sup>/g  
 Radiation sterilized  
 Solid particles  
 Non-porous  
 Non-absorbing  
 Non-swelling in aqueous media  
 Non-toxic

### Nunc 2D MicroHex™ Microcarriers Nunclon™Δ

Sterile

Cat. No.	139102	139104	139106	139108
Grams pr. bottle	2	10	20	100
Culture area, cm <sup>2</sup>	1500	7500	15000	75000
Units per case*	10	5	5	2

Custom-made packaging, available on request.





## Plates Introduction

Based on decades of experience, Nunc Brand provides a very wide range of plates. In addition to 96 well plates, we also provide 384 and 1536 well formats with both solid and optical bottoms in polystyrene (primarily for assays) and our wide range of polypropylene and DeepWell plates both for assay and storage applications.

### Polystyrene plates

The polystyrene range offers plates with flat bottom (F), conical (V), round (U), or C-shaped bottom (flat in the center with rounded corners for efficient washing) most of which are available in clear, black or white. We also offer both a polymer bottom and a cover glass optical bottom plate for applications where viewing from below is necessary. In cell culture, new Poly-D-Lysine and Collagen I coated versions are now available. Unique to the market are our CC2™ glass based plates treated with a chemical coating, which mimics polylysine.

The range of Immuno-plates has been expanded from the MaxiSorp™, PolySorp™, MediSorp™ and MultiSorp™ to include Immobilizer™ Glutathione, Ni-Chelate and Immobilizer Amino, which have joined Nunc CovaLink NH in our range of actively binding plates.

### Polypropylene plates

Most of the Nunc 96 well polypropylene plates feature the shared wall technology, where the internal space in

the plate is used maximized. Since our V-shaped 0.45 ml and U-shaped 0.5 ml plates are available in white or black, they are also suitable as assay plates. For easy identification the 0.5 and 0.45 ml polypropylene plates are also made in blue, yellow and red. All the polypropylene plates are suitable for heat sealing and the application of sealing tapes.

Plate materials are also optimized for diverse applications. MicroWell™ plates are made using polystyrene (PS) or polypropylene (PP). Polystyrene is characterized by its optical clarity and can be modified to give different binding characteristics, like Nunclon™Δ for cell culture and MaxiSorp™ for IgG adsorption. As polypropylene is resistant to chemicals and temperature extremes, it is ideal for storage of chemical compounds. For many applications it is also considered as a better choice for storage of biomolecules and as a plate for homogeneous (liquid phase) assays.

Abbreviation	Description	Advantages or Primary application
F	Flat Bottom	For assays where a flat bottom is needed for optical or application reason e.g. cell culture
U	Round Bottom	For optimal washing effect and mixing or where a precipitate is to be examined
C	Rounded corners & Flat Bottom	The rounded corners allow efficient washing with the optical advantages of the flat bottomed well
V	Conical Bottom	For precipitation or in order to optimize recovery of small volumes
PS Optical Bottom	Polystyrene Optical Bottom	For applications e.g. chemiluminescence/fluorescence where a colored upper structure is needed in combination with a clear bottom
CG Optical Bottom	Coverglass Optical Bottom	For applications e.g. chemiluminescence/fluorescence where a colored upper structure is needed in combination with a clear thin bottom with superior optical properties e.g. confocal microscopy

For full plate drawings, see [www.nuncbrand.com](http://www.nuncbrand.com)

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# Overview of Nunc Plates

Format	Polymer	Type	Color	Bottom	Volume (µl/well)	Cell Culture	CC <sup>2</sup> <sup>™</sup>	Poly-D-Lysine	Collagen I	Amino	Streptavidin passively coated	Streptavidin covalent coated	Glutathione	Nickel-Chelate	NucleoLink	PolySorp	MediSorp	MaxiSorp	MultiSorp	Non-treated, non-sterile	Non-treated, sterile
96 MicroWell Plates	Polystyrene	Solid	Clear	Flat (F)	400	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
				Flat w/curved edges (C)	350						+				+	+		+			
				Round (U)	300	+										+		+		+	+
				Conical (V)	300															+	+
		Solid	White	Flat (F)	400	+				+		+	+	+		+		+			+
				Flat w/curved edges (C)	350											+		+			
				Black	400	+				+		+	+	+		+		+		+	+
				Flat (F)																	
		OBP*	White	Flat (F), Polystyrene base	400	+		+	+											+	
				Flat (F), Coverglass base	400	+	+														
				Black	400	+		+	+											+	
				Flat (F), Coverglass base	400	+	+													+	
	Polypropylene	Solid	Natural	Round (U)	500, 1300, 2000															+	+
				Conical (V)	300, 450															+	+
			White	Round (U)	500															+	
				Conical (V)	450															+	
			Black	Round (U)	500															+	
				Conical (V)	450															+	
			Red, Blue, Yellow	Round (U)	500															+	
				Conical (V)	450															+	
384 Well Plates	Polystyrene	Solid	Clear	Flat (F)	120	+				+		+	+	+		+		+		+	+
				Flat (F), ShallowWell **	25	+														+	+
			White	Flat (F)	120	+				+		+	+	+		+		+		+	
				Flat (F), ShallowWell **	25	+														+	
		Solid	Black	Flat (F)	120	+				+		+	+	+		+		+		+	
				Flat (F), ShallowWell **	25	+														+	+
		OBP*	White	Flat (F), Polystyrene base	120	+														+	
				Flat (F), Coverglass base	120	+	+													+	
		OBP*	Black	Flat (F), Polystyrene base	120	+		+	+											+	
				Flat (F), Coverglass base	120	+		+	+											+	
	Polypropylene	Solid	Natural	Round (U)	120, 252															+	+
				Round (U), ShallowWell **	58															+	+
			White	Round (U)	120															+	
				Round (U), ShallowWell **	58															+	
			Black	Round (U), Low CrossTalk	120															+	
				Round (U)	120															+	
			Blue	Round (U), ShallowWell **	58															+	
				Round (U)	120															+	
1536 Well Plates	Polystyrene	Solid	Clear	Flat (F)	13	+														+	
			White	Flat (F)	13	+														+	
			Black	Flat (F)	13	+													+	+	

\* OBP = Optical Bottom Plates

\*\* ShallowWell = small volume plates

Well Color	Applications
Clear (PS)	Colorimetric assays
Natural (PP)	Storage
White (PS or PP)	Luminescence
Black (PS or PP)	Fluorescence, Luminescence
Black, white, blue yellow or red (PP)	Easy identification of different series of plates

Technical drawings of all plates can be found on Nunc Brand's Plate Guide: [www.plateguide.com](http://www.plateguide.com)



# Application Information

## Surface area, liquid height and liquid volume data

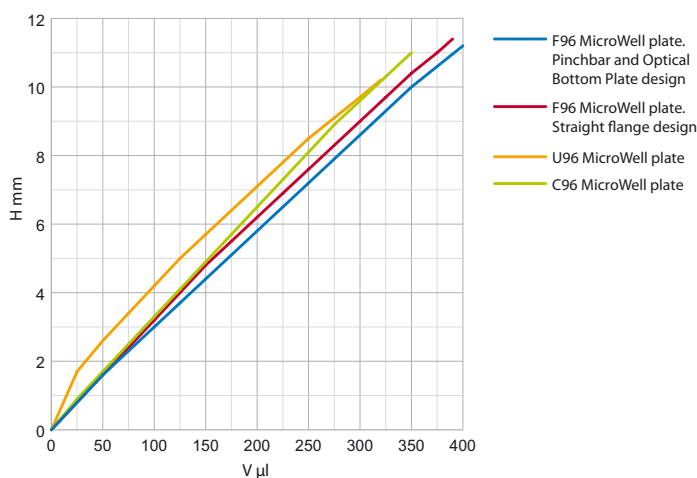
In recent years many new plate formats have been introduced.

Dense plate formats, such as 384 and 1536 MicroWell™ plates, are being used to decrease assay volume and handling time. However, those formats are difficult to handle in the initial manual assay development. In assay development, tests are often made in simpler formats, such as 96 MicroWell™ plates. After development, the assays are transferred to the denser formats. Most of the time the transformation is very straightforward, but the results can deviate from the original development results.

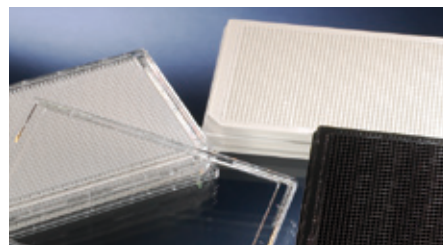
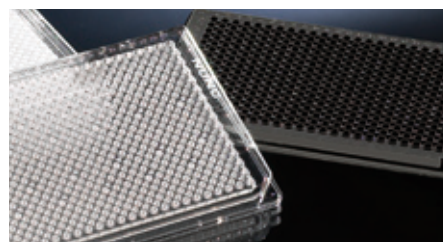
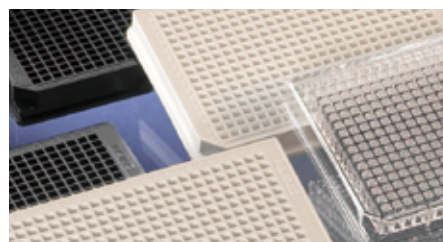
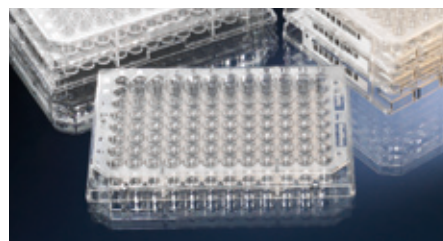
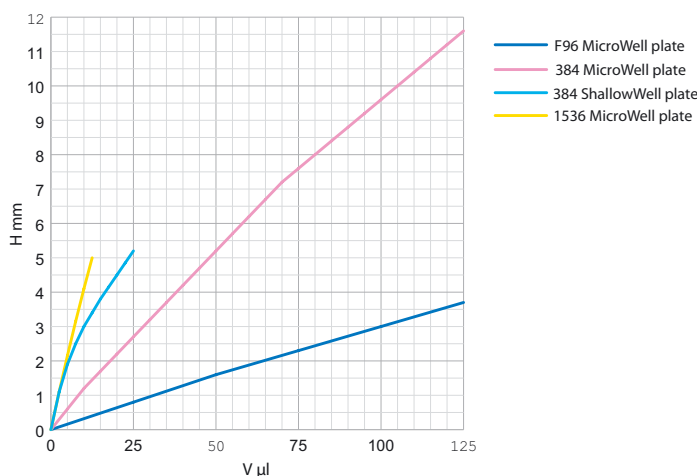
This may be due to the difference in surface to volume ratio as the kinetics of a solid phase assay can change in the smaller wells. The liquid height is a relevant factor for OD, but may also play a role in homogeneous assays.

We hope to help you in the shift between different plate formats with the information on the following pages. If you have additional questions or need more information, please do not hesitate to contact us.

Liquid height (H) vs. liquid volume (V)

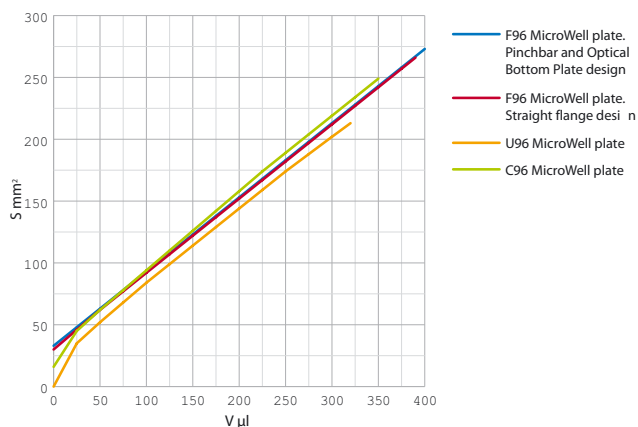


Liquid height (H) vs. liquid volume (V)

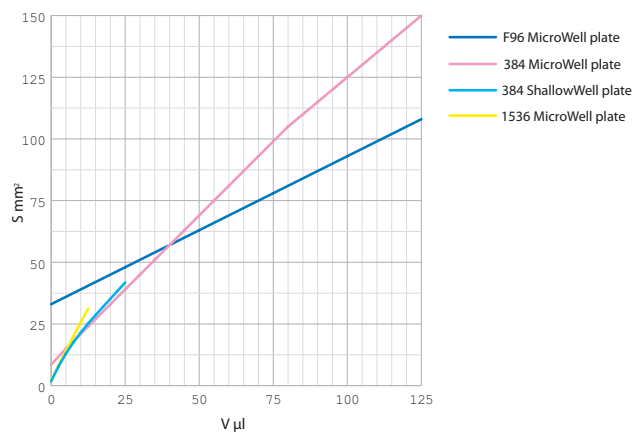


# Application Information

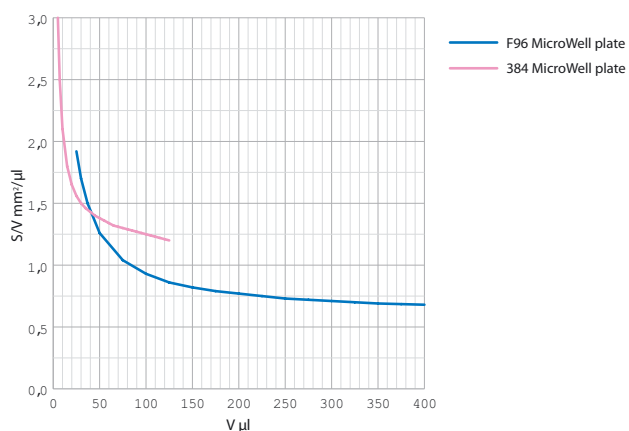
**Covered surface area (S) vs. liquid volume (V)**



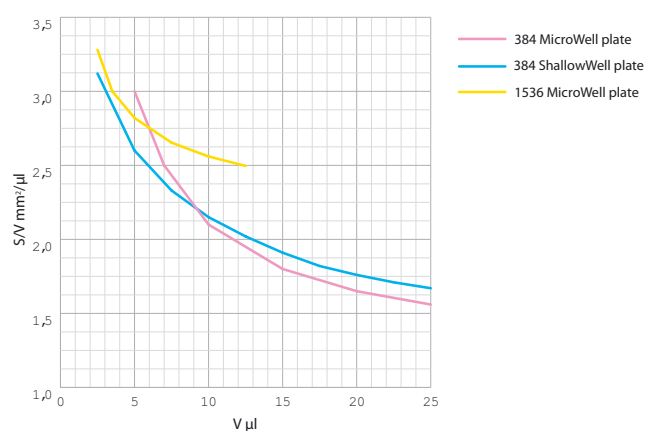
**Covered surface area (S) vs. liquid volume (V)**



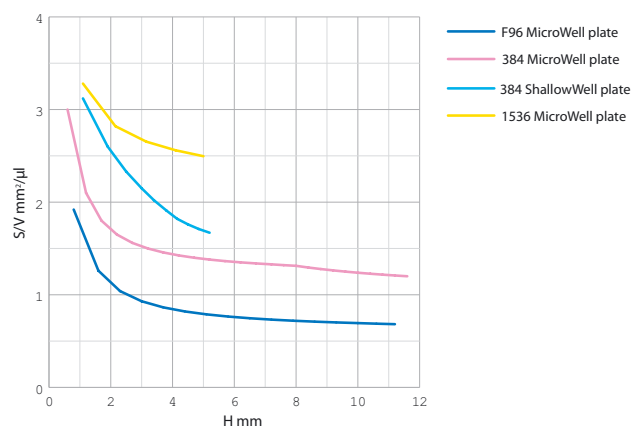
**Surface to volume ratio (S/V) vs. liquid volume (V)**



**Surface to volume ratio (S/V) vs. liquid volume (V)**



**Surface/volume ratio (S/V) vs. liquid height (H)**



# F96 MicroWell™ Plates Polystyrene Clear

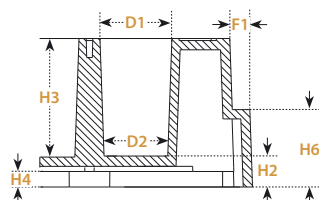


- MaxiSorp™, MediSorp™, MultiSorp™ and PolySorp™ for solid phase immuno assays
- Nunclon™Δ, Collagen I and Poly-D-Lysine for cell culture and assays
- Available pre-labeled with barcodes
- Clear plates with excellent optical clarity
- Working volume range: 50 - 250 µl/well

## Literature:

Bulletin Nos: 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 15

See Pages 195-196 for full reference list with titles and links



	mm
<b>Total height of plate</b>	<b>14.4 ± 0.2</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	3.0
<b>H3</b> Inside depth of well	11.4
<b>H4</b> Vertical distance from external well bottom to resting plane	1.9
<b>H5</b> Height of flange on the short side	2.4
<b>H6</b> Height of flange on the long side	7.4
<b>D1</b> Well diameter, top	7.0
<b>D2</b> Well diameter, bottom	6.2
<b>F1</b> Depth of flange	1.7



High Flange Design

## Nunc MicroWell™ Plates

Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Barcode	Units per pack/case
156545 *	Cell Culture	Clear	400	+	-	-	10/180
161093 *	Cell Culture	Clear	400	+	+	-	10/160
167008 *	Cell Culture	Clear	400	+	+	-	1/50
168055 *	Cell Culture	Clear	400	+	-	-	1/50
152038	Collagen I	Clear	400	- **	+	-	5/20
152039	Poly-D-Lysine	Clear	400	- **	+	-	5/20
256510 ‡	Non-treated	Clear	400	+	-	-	10/180
260836	Non-treated	Clear	400	-	-	-	10/180
260844	Non-treated	Clear	400	-	-	+	10/180
260860	Non-treated	Clear	400	+	+	-	10/160
260887	Non-treated	Clear	400	+	+	+	10/160
260895	Non-treated	Clear	400	-	+	-	10/160
456529	PolySorp	Clear	400	-	-	-	10/180
456537 *	MaxiSorp	Clear	400	-	-	-	10/180
460984 *	MaxiSorp	Clear	400	-	-	+	10/180
467320 *	MediSorp	Clear	400	-	-	-	5/60
467340 * ‡	MultiSorp	Clear	400	-	-	-	5/60

\* Certified

\*\* Produced in clean environment

‡ Not available in Americas

# F96 MicroWell™ Plates Polystyrene Clear



- MaxiSorp™ and PolySorp™ surfaces for solid phase immuno assays
- Non-treated surfaces for screening assays
- Working volume range: 50 - 250 µl/well

## Immobilizer™:

- Covalent attachment
- High sensitivity and specificity
- High signal to noise ratio
- Amino surface for rapid coupling of peptides, proteins and DNA
- Streptavidin surface for rapid coupling of biotinylated biomolecules such as peptides, antibodies, oligonucleotides or haptens
- Glutathione surface for rapid coupling of GST-tagged fusion proteins
- Nickel-Chelate surface for rapid coupling of 6x Histidine-tagged proteins

## Literature:

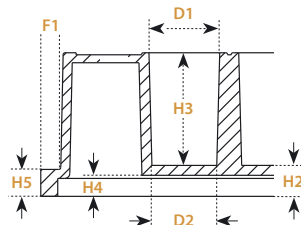
Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12,  
Tech Note Nos: 42, 43, 44, 45, 46, 47, 56

See Pages 195-196 for full reference list with titles and links

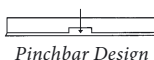
## Accessories:

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Immobilizer is a trademark of Exiqon A/S, Vedbaek, Denmark. The product is produced under license from Exiqon A/S and covered by EP 08 20483 and foreign application and patents.



	<b>Total height of plate</b>	<b>mm</b>
		<b>14.5 ± 0.2</b>
H2	Vertical distance from inside well bottom to resting plane	3.2
H3	Inside depth of well	11.2
H4	Vertical distance from external well bottom to resting plane	2.1
H5	Height of flange	2.85 ± 0.15
D1	Well diameter, top	7.05 ± 0.2
D2	Well diameter, bottom	6.5
F1	Depth of flange	2.0



## Nunc Immobilizer™ F96 MicroWell™ Plates

Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
436006	Amino	Clear	400	-	-	5/30
436014	Streptavidin	Clear	400	-	-	1/15
436024	Nickel-Chelate	Clear	400	-	-	1/15
436032	Glutathione	Clear	400	-	-	1/15

See Immuno Assay section for details regarding Immobilizer plates

## Nunc F96 MicroWell™ Plates

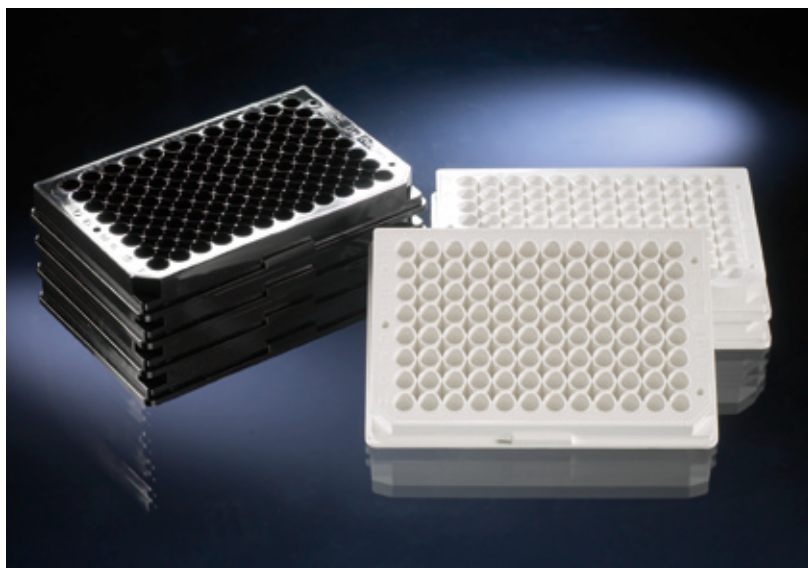
Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
269620	Non-treated	Clear	400	-	-	5/60
269787	Non-treated	Clear	400	+	-	1/50
439454 *	MaxiSorp	Clear	400	-	-	5/60
442404	MaxiSorp	Clear	400	-	-	5/60
475094	PolySorp	Clear	400	-	-	5/60

\* Certified



# F96 MicroWell™ Plates Polystyrene Black and White



- White plates provide maximum reflection, minimum auto-fluorescence and autoluminescence
- Black plates provide minimal background and light scatter in fluorescence assays
- Low crosstalk
- MaxiSorp™ and PolySorp™ for solid phase immuno assays
- Nunclon™Δ for cell based assays
- Working volume range: 50 - 250 µl/well

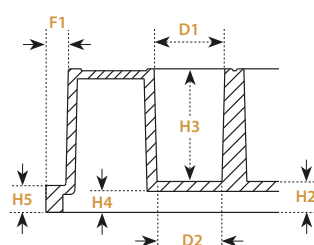
## Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12, 15  
Tech Note Nos: 6, 12

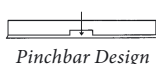
See Pages 195-196 for full reference list with titles and links

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	<b>Total height of plate</b>	<b>mm</b>
		<b>14.6 ± 0.3</b>
<b>H2</b>	Vertical distance from inside well bottom to resting plane	3.6
<b>H3</b>	Inside depth of well	11.2
<b>H4</b>	Vertical distance from external well bottom to resting plane	2.1
<b>H5</b>	Height of flange	2.7
<b>D1</b>	Well diameter, top	7.05
<b>D2</b>	Well diameter, bottom	6.55 ± 0.1
<b>F1</b>	Depth of flange	2.0



## Nunc F96 MicroWell™ Plates ☐

Polystyrene. External dimensions 128 x 86 mm

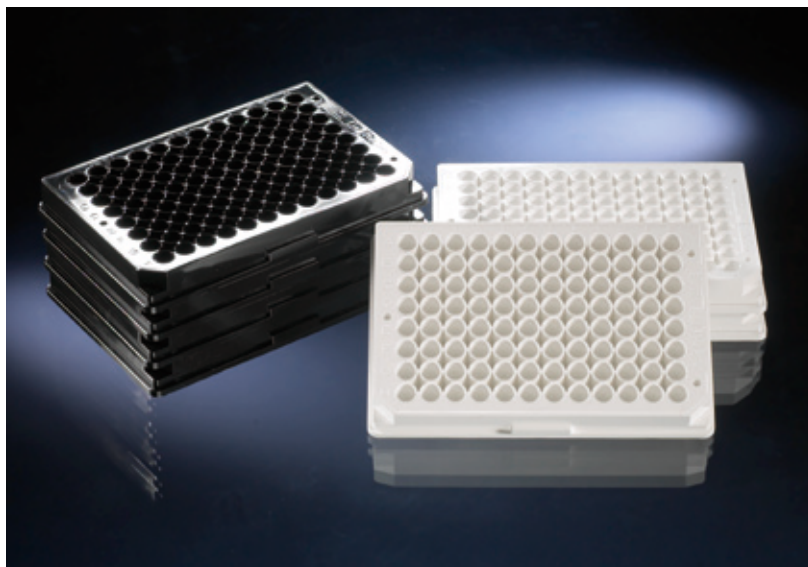
Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
136101 *	Cell Culture	White	400	+	+	1/50
136102 *	Cell Culture	White	400	+	+	10/160
137101 *	Cell Culture	Black	400	+	+	1/50
137103 *	Cell Culture	Black	400	+	+	10/160
236105	Non-treated	White	400	+	+	1/50
236107 ‡	Non-treated	White	400	+	+	10/160
236108	Non-treated	White	400	-	-	10/180
237105	Non-treated	Black	400	+	+	1/50
237107	Non-treated	Black	400	+	+	10/160
237108	Non-treated	Black	400	-	-	10/180
436110 *	MaxiSorp	White	400	-	-	10/80
437111 *	MaxiSorp	Black	400	-	-	10/80
436111	PolySorp	White	400	-	-	10/80
437112	PolySorp	Black	400	-	-	10/80

\* Certified

‡ Not available in Americas

# Immobilizer™ F96 MicroWell™ Plates

## Polystyrene Black and White



- Covalent attachment
- No blocking or activation steps required
- High sensitivity and specificity
- Highly specific binding
- High signal to noise ratio
- Amino surface for rapid coupling of peptides, proteins and DNA
- Streptavidin surface for rapid coupling of biotinylated biomolecules such as peptides, antibodies, oligonucleotides or haptens
- Glutathione surface for rapid coupling of GST-tagged fusion proteins
- Nickel-Chelate surface for rapid coupling of 6x Histidine-tagged proteins
- Certified reproducibility of binding: CV < 5% (well to well)
- Working volume range: 50 - 250 µl/well
- Also available as clear (see Page 146)

See Immuno Assay section for details regarding Immobilizer™ plates.

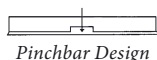
### Literature:

Bulletin Nos. 1, 42  
Tech Note Nos. 43, 44, 45, 46, 47 48

See Pages 195-196 for full reference list with titles and links

### Accessories:

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**Nunc Immobilizer™ F96 MicroWell™ Plates**   
Polystyrene. External dimensions 128 x 86 mm

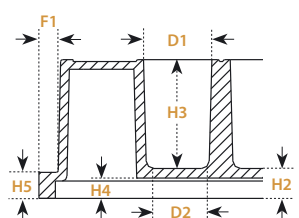
Immobilizer is a trademark of Exiqon A/S, Vedbaek, Denmark. The product is produced under license from Exiqon A/S and covered by EP 08 20483 and foreign application and patents.

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
436007	Amino	White	400	-	-	5/30
436008	Amino	Black	400	-	-	5/30
436015	Streptavidin	White	400	-	-	1/15
436016	Streptavidin	Black	400	-	-	1/15
436026	Nickel-Chelate	White	400	-	-	1/15
436027	Nickel-Chelate	Black	400	-	-	1/15
436033	Glutathione	White	400	-	-	1/15
436034	Glutathione	Black	400	-	-	1/15

# C96 MicroWell™ Plates Polystyrene



- C-shaped bottom for optimal washing and liquid retrieval
- FluoroNunc™ for fluorescence based immuno assays with minimal auto-fluorescence
- MaxiSorp™ and PolySorp™ for quantitative and qualitative solid phase immuno assays
- Streptavidin surface for coupling of biotinylated biomolecules such as peptides, antibodies, oligonucleotides or haptens
- NucleoLink™ surface for covalent heat-stable binding of DNA; optimized for DNA hybridization assays
- Working volume range: 50 - 250 µl/well



	mm
<b>Total height of plate</b>	<b>14.0 ± 0.3</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	3.1
<b>H3</b> Inside depth of well	11.0
<b>H4</b> Vertical distance from external well bottom to resting plane	2.1
<b>H5</b> Height of flange	2.7
<b>D1</b> Well diameter, top	6.6
<b>D2</b> Well diameter, bottom	6.1
<b>F1</b> Depth of flange	1.2



## Literature:

Bulletin Nos: 1, 4, 6, 7, 8, 9, 10, 11, 12, 15  
Tech Note Nos: 6, 12, 17

See Pages 195-196 for full reference list with titles and links

NucleoLink Application Guide available at:  
[www.nuncbrand.com/go/nucleolinkguide](http://www.nuncbrand.com/go/nucleolinkguide)

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## Nunc C96 MicroWell™ Plates

Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
236001 ‡	Streptavidin	Clear	350	-	-	1/15
430341	MaxiSorp	Clear	350	-	-	5/60
446612*	MaxiSorp	Clear	350	-	-	5/60
437958*	MaxiSorp	Clear	350	-	-	5/60
437796*	MaxiSorp	White	350	-	-	5/60
446140	PolySorp	Clear	350	-	-	5/60
437869 ‡	PolySorp	Clear **	350	-	-	5/60
437842	PolySorp	White	350	-	-	5/60

\* Certified

\*\* FluoroNunc™

‡ Not available in Americas

## Nunc C96 MicroWell™ Plates

Activated heat-stable polymer. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
248150 ‡	NucleoLink	Clear	350	-	-	5/30

‡ Not available in Americas

# U96 MicroWell™ Plates Polystyrene Clear



- Clear plates with excellent optical clarity
- MaxiSorp™ and PolySorp™ for solid phase immuno assays
- Nunclon™Δ surface for cell based assays
- Sterile version for bacteriological applications
- Working volume range:  
50 - 250 µl/well

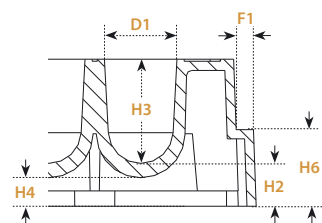
## Literature:

Bulletin Nos: 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 15

See Pages 195-196 for full reference list with titles and links


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	mm
<b>Total height of plate</b>	<b>14.5 ± 0.1</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	4.2
<b>H3</b> Inside depth of well	10.2
<b>H4</b> Vertical distance from external well bottom to resting plane	2.8
<b>H5</b> Height of flange on the short side	2.4
<b>H6</b> Height of flange on the long side	7.5
<b>D1</b> Well diameter, top	7.1
<b>D2</b> Well diameter, bottom	Round bottom
<b>F1</b> Depth of flange	1.7

  
High Flange Design

**Nunc U96 MicroWell™ Plates**   
Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
143761*	Cell Culture	Clear	300	+	-	1/50
163320*	Cell Culture	Clear	300	+	+	1/50
168136*	Cell Culture	Clear	300	+	+	10/160
260210	Non-treated	Clear	300	+	-	10/180
262146 †	Non-treated	Clear	300	-	-	135/135
262162	Non-treated	Clear	300	+	-	1/50
268152	Non-treated	Clear	300	-	-	10/180
268200	Non-treated	Clear	300	+	+	10/160
449824	MaxiSorp	Clear	300	-	-	5/60
475434	PolySorp	Clear	300	-	-	5/60

\*Certified

† Only available in Americas



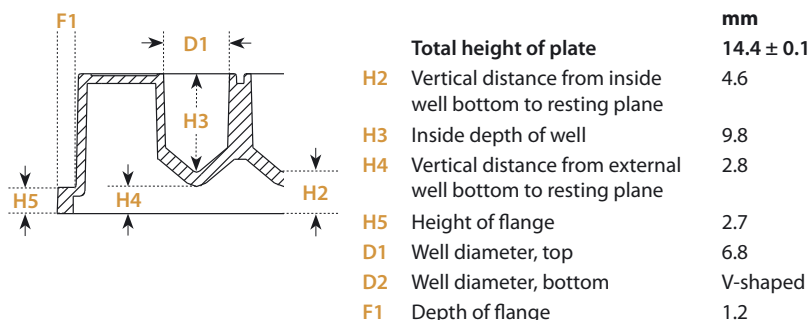
# V96 MicroWell™ Plates Polystyrene Clear



- Applications include: antibiotic screens, serological tests, storing and screening compounds and DNA libraries
- The wells have raised rims and lids are supplied with rings, which prevent crosscontamination
- Well shape maximizes sample recovery
- Working volume range: 50 - 250 µl/well

## Accessories:

Racks	Page 172
Sealing Tapes	Page 176
Lids	Page 174
Immuno Washers	Page 76



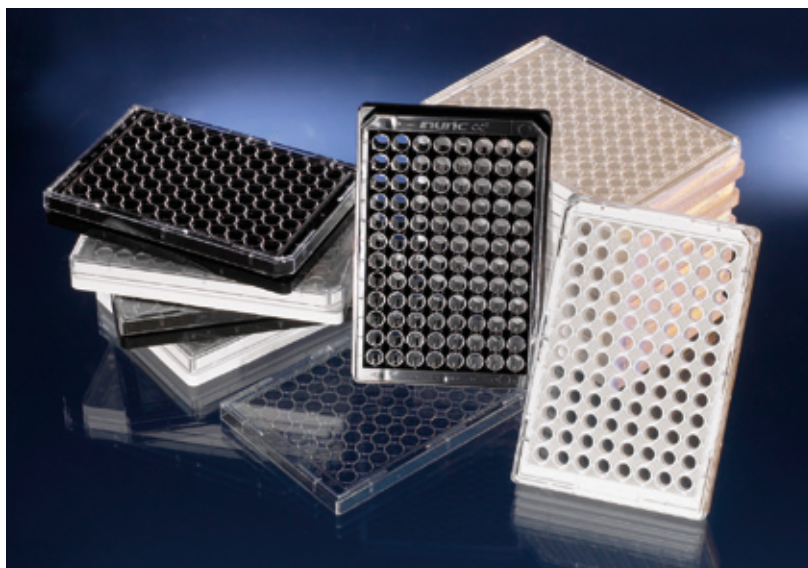
## Nunc V96 MicroWell™ Plates

Polystyrene. External dimensions 128 x 86 mm

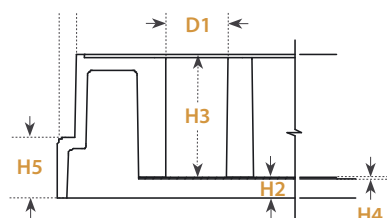
Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
249662	Non-treated	Clear	300	+	-	1/50
277143 ‡	Non-treated	Clear	300	+	+	1/50
249935	Non-treated	Clear	300	+	+	10/80
249940	Non-treated	Clear	300	+	-	10/80
249952	Non-treated	Clear	300	+	+	10/160
249570	Non-treated	Clear	300	-	-	10/180

‡ Not available in Americas

## 96 Well Optical Bottom Plates *Polymer Base*



- Nunclon™Δ, Poly-D-Lysine or Collagen I surfaces for cell culture
- Non-treated plates are optimized for scintillation counting
- White or black upper structure with polymer bottom plates combine the optical clarity of virgin crystalline polystyrene with optimal surface for a wide range of HTS applications
- Working volume range:  
50 - 200 µl/well



- Total height of plate**
- H2** Vertical distance from inside well bottom to resting plane
- H3** Inside depth of well
- H4** Polystyrene film
- H5** Height of flange
- D1** Well diameter

mm  
14.9  
2.55  
9.8  
0.25  
6.2  
6.5

### Literature:

Bulletin Nos: 2, 15

See Pages 195-196 for full reference list with titles and links

### Accessories:

Racks Page 172  
Sealing Tapes Page 176  
Lids Page 174



### Nunc 96 Well Optical Bottom Plates

Polystyrene/Polymer base. External dimensions 128 x 86 mm

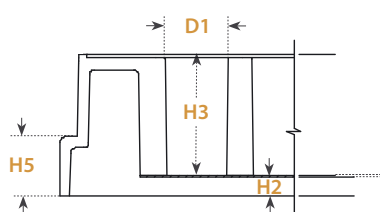
Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Unit per pack /case
165306	Cell Culture	White	400	+	+	10/30
165305	Cell Culture	Black	400	+	+	10/30
152040	Collagen I	White	400	-*	+	5/20
152036	Collagen I	Black	400	-*	+	5/20
152028	Poly-D-Lysine	White	400	-*	+	5/20
152037	Poly-D-Lysine	Black	400	-*	+	5/20
265302	Non-treated	White	400	-	-	10/30
265301	Non-treated	Black	400	-	-	10/30

\* Produced in clean environment

# 96 Well Optical Bottom Plates *Polystyrene/Coverglass*



- White or black upper structure with coverglass bottom for minimum light scatter and low auto-fluorescence, ensuring accurate results due to higher signal-to-noise ratios
- Optimum clarity for viewing well contents
- CC<sup>2</sup>™ surface treatment closely mimics a biological surface similar to Poly-D-Lysine and is a superior surface for attachment and growth of fastidious cells
- Non-treated plates are optimized for fluorescence
- Working volume range: 50 - 200 µl/well



- Total height of plate**
- H2** Vertical distance from inside well bottom to resting plane
- H3** Inside depth of well
- H5** Height of flange
- D1** Well diameter

mm  
14.9  
2.5  
12.2  
6.2  
6.5

## Literature:

Bulletin Nos: 2, 15

See Pages 195-196 for full reference list with titles and links

## Accessories:

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High Flange Design

## Nunc 96 Well Optical Bottom Plates

Polystyrene/Coverglass base. External dimensions 128 x 86 mm

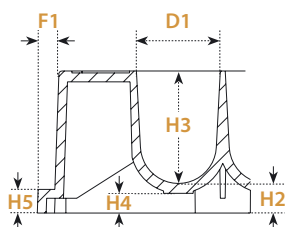
Cat. No.	Surface	Color	Total vol., µl/well	Glass thickness *	Sterile	With lid	Unit per pack /case
164588	Cell Culture	Black	400	1.5	+	+	6/30
164590	Cell Culture	White	400	1.5	+	+	6/30
160376	CC <sup>2</sup>	Black	400	1.5	+	+	6/30
265300	Non-treated	Black	400	1.5	-	-	5/30

\* No. 1.0 = 0.13-0.16 mm, No. 1.5 = 0.16-0.19 mm

# U96 MicroWell™ Plates Polypropylene



- 0.5 ml volume in standard MicroWell™ format
- Shared well technology increases well volume and wider cells improve mixing
- Low binding polypropylene for homogeneous assays and storage
- Ideal as collection plate for Nunc Filter Plates
- White plates for fluorescence and luminescence applications
- Black plates for fluorescence applications
- Yellow, red, natural and blue plates for storage applications
- Resistant to most solvents used in combinatorial chemistry
- Working volume range: 20 - 450 µl/well



	mm
<b>Total height of plate</b>	<b>14.5 ± 0.3</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	3.1
<b>H3</b> Inside depth of well	11.2
<b>H4</b> Vertical distance from external well bottom to resting plane	2.0
<b>H5</b> Height of flange on the short side	2.4
<b>D1</b> Well diameter, top	8.5
<b>F1</b> Depth of flange	1.7

## Accessories:

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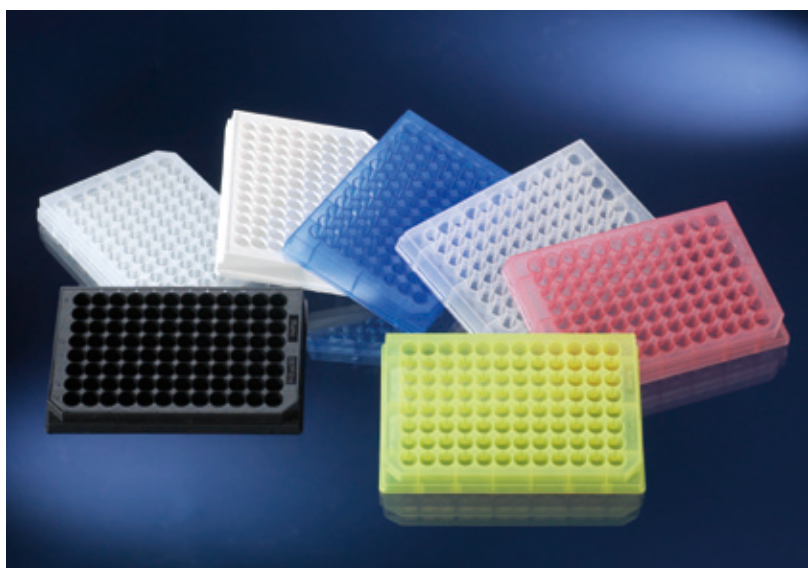


**Nunc U96 MicroWell™ Plates**  
Polypropylene. External dimensions 128 x 86 mm

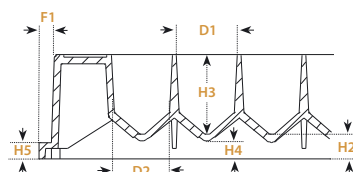
Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Unit per pack /case
267245	Non-treated	Natural	500	-	-	10/120
267334	Non-treated	Natural	500	+	-	10/120
267342	Non-treated	Black	500	-	-	10/120
267350	Non-treated	White	500	-	-	10/120
267369	Non-treated	Red	500	-	-	10/120
267385	Non-treated	Blue	500	-	-	10/120
267407	Non-treated	Yellow	500	-	-	10/120



# V96 MicroWell™ Plates Polypropylene



- V - shape well bottoms and PP material provide optimal recovery of reagents
- Shared well technology increases well volume and wider cells improve mixing
- Low binding polypropylene for homogeneous assays and storage
- Total well volume of 0.45 ml
- White plates for assays using fluorescence and luminescence
- Black plates for assays using fluorescence
- Yellow, red, natural and blue plates for storage applications
- Resistant to many solvents used in storage and combinatorial chemistry
- Ideal as collector plates for Nunc Filter Plates
- Certified RNase/DNase-free
- Working volume range: 10 - 400 µl/well



	mm
<b>Total height of plate</b>	<b>14.4 ± 0.1</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	3.4
<b>H3</b> Inside depth of well	11.0
<b>H4</b> Vertical distance from external well bottom to resting plane	2.5
<b>H5</b> Height of flange on the short side	2.3
<b>H6</b> Height of flange on the long side	7.5
<b>D1</b> Well diameter, top	8.5
<b>D2</b> Well diameter, bottom	V-bottom
<b>F1</b> Depth of flange	1.7

## Accessories:

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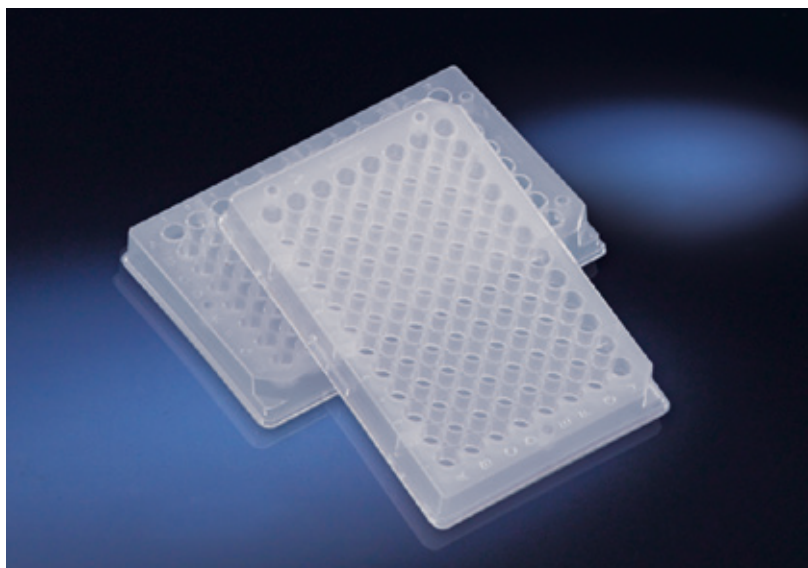
High Flange Design

## Nunc V96 MicroWell™ Plates

Polypropylene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Unit per pack /case
249944	Non-treated	Natural	450	-	-	20/120
249946	Non-treated	Natural	450	+	-	20/120
249945	Non-treated	Black	450	-	-	20/120
249949	Non-treated	White	450	-	-	20/120
249943	Non-treated	Red	450	-	-	20/120
249947	Non-treated	Yellow	450	-	-	20/120
249950	Non-treated	Blue	450	-	-	20/120

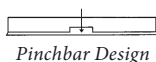
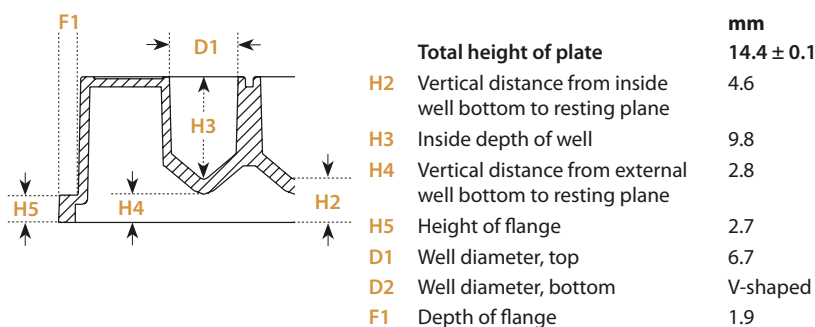
## V96 MicroWell™ Plates Polypropylene



- Resistant to most compound solvents used in combinatorial chemistry
- Well shape maximizes sample recovery
- Low binding polypropylene for homogeneous assays and storage
- Working volume range: 10 - 250 µl/well
- Convenient package size

### Accessories:

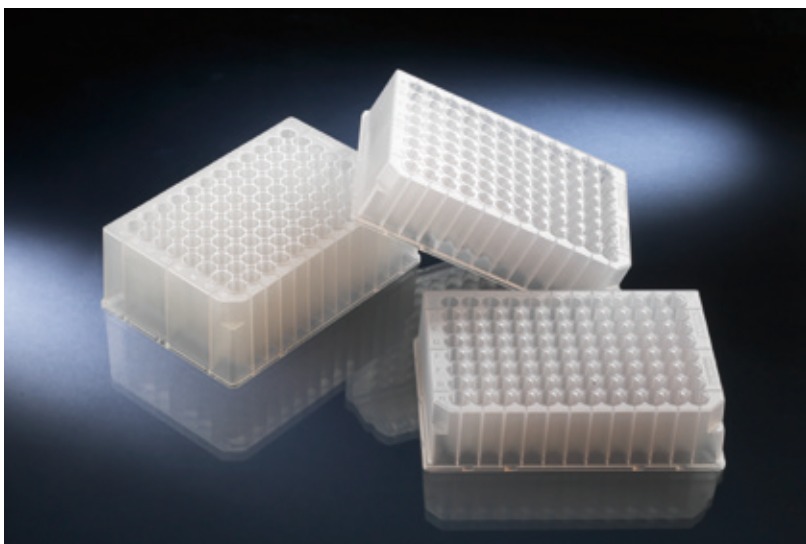
Filter Plates	Page 159
Racks	Page 172
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**Nunc V96 MicroWell™ Plates**  
Polypropylene. External dimensions 127 x 85 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Unit per pack /case
442587	Non-treated	Natural	300	-	-	5/60

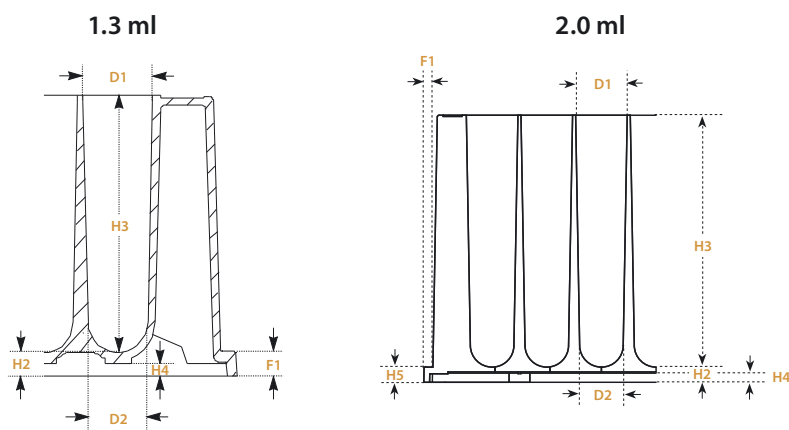
## U96 DeepWell™ Plates 1.3 ml & 2.0 ml Polypropylene



- Unique low design with shared well technology for increased well volume. Optimum storage capacity and improved mixing
- Round well shape reduces liquid retention
- Well cap available for safe storage - minimal protrusion into each well
- Ideal for sample collection, storage, combinatorial chemistry and library applications
- Resistant to most chemicals, solvents and alcohols used in combinatorial chemistry
- Widely used for bacterial and yeast growth
- Ideal as collection plates for Nunc Filter Plates
- Working volume range:

Cat Nos. 260251 and 260252:  
50 - 1000 µl/well

Cat Nos. 278743 and 278752:  
50 - 1900 µl/well



	mm		mm
<b>Total height of plate</b>	<b>31.6</b>	<b>Total height of plate</b>	<b>44.0</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	2.5	<b>H2</b> Vertical distance from inside well bottom to resting plane	2.5
<b>H3</b> Inside depth of well	29.1	<b>H3</b> Inside depth of well	41.5
<b>H4</b> Vertical distance from external well bottom to resting plane	1.4	<b>H4</b> Vertical distance from external well bottom to resting plane	1.5
<b>D1</b> Well diameter, top	8.5	<b>H5</b> Height of flange	2.5
<b>D2</b> Well diameter, bottom	8.4	<b>D1</b> Well diameter, top	8.5
<b>F1</b> Depth of flange	2.5	<b>D2</b> Well diameter, bottom	6.0
		<b>F1</b> Depth of flange	1.5

### Literature:

Bulletin Nos: 39, 40

See Pages 195-196 for full reference list with titles and links

### Accessories:

Filter Plates  
Well Caps

Page 159  
Page 171

### Nunc U96 DeepWell™ Plates 1.3 ml and 2.0 ml

Polypropylene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., ml/ well	Sterile	With lid	Unit per pack /case
260251	Non-treated	Natural	1.3	+	-	5/50
260252	Non-treated	Natural	1.3	-	-	5/50
278743	Non-treated	Natural	2.0	+	-	1/60
278752	Non-treated	Natural	2.0	-	-	5/60

## 96 DeepWell™ Plates 1.0 ml Polystyrene

**NEW**



- Round bottom wells
- Easy to use with automatic sample handling instruments
- Alpha-numeric grid for quick sample identification
- Ideal for sample collection, storage, combinational chemistry library applications
- Sealable with well caps and sealing tape

### Accessories:

Sealing Tapes

Page 176

**NEW**

### Nunc 96 DeepWell™ Plates

Polystyrene. External dimensions 128 x 86 x 41

Cat. No.	278605	278606
Configuration	Round	Round
Plate color	Transparent	Transparent
Total volume, ml	1.0	1.0
Working volume, ml	0.9	0.9
Sterile	-	+
Units per pack/case	4/32	4/32

**NEW**

### Nunc 96 Well Caps\* for above 1.0 ml Nunc DeepWell™ Plates

External dimensions 119 x 77

Cat. No.	278616
Material	Ethylene-Vinyl Acetate
Sterile	+
Units per pack/case	1/25

\* Not suitable for DeepWell Plates Cat. Nos. 260251, 260252, 278752, 278743



# 96 Filter Plates 1.3 ml

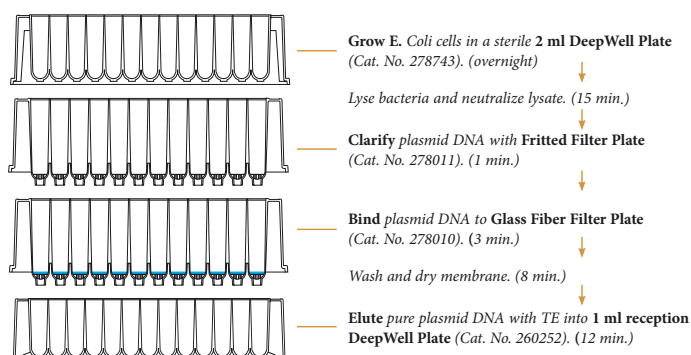


- For efficient purification of high quality plasmid DNA or PCR products
- Designed specifically for high throughput sample processing
- Conforms to standard 96 well footprint
- Made of polypropylene offering chemical resistance and mechanical strength
- Suitable for vacuum filtration, centrifugation or positive pressure techniques
- Polyethylene terephthalate (PET) frit in fritted plate has 20 µm pore size
- Glass fiber plate has PET frit and 2 layers of glass fiber membrane for binding of DNA
- Shared wall configuration gives reduced plate height, wider wells for faster processing, higher yields and less clogging
- Purified DNA is suitable for downstream applications such as sequencing and restriction digestion

## Flow diagram for plasmid DNA purification

Procedure:

**Figure 1.**  
Procedure on how to use Nunc Filter Plates for cost effective DNA purification.



### Literature:

Bulletin Nos: 39, 40

See Pages 195-196 for full reference list with titles and links

### Accessories:

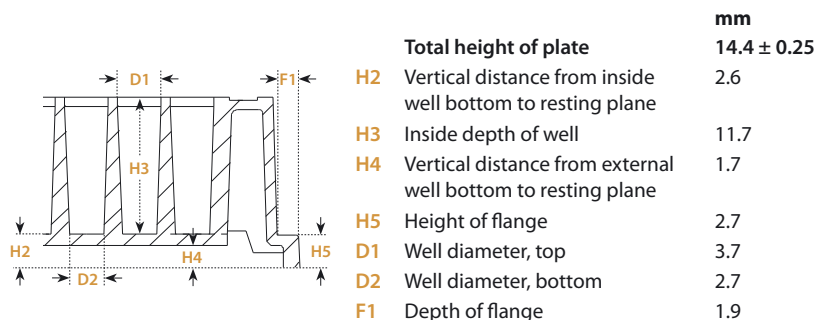
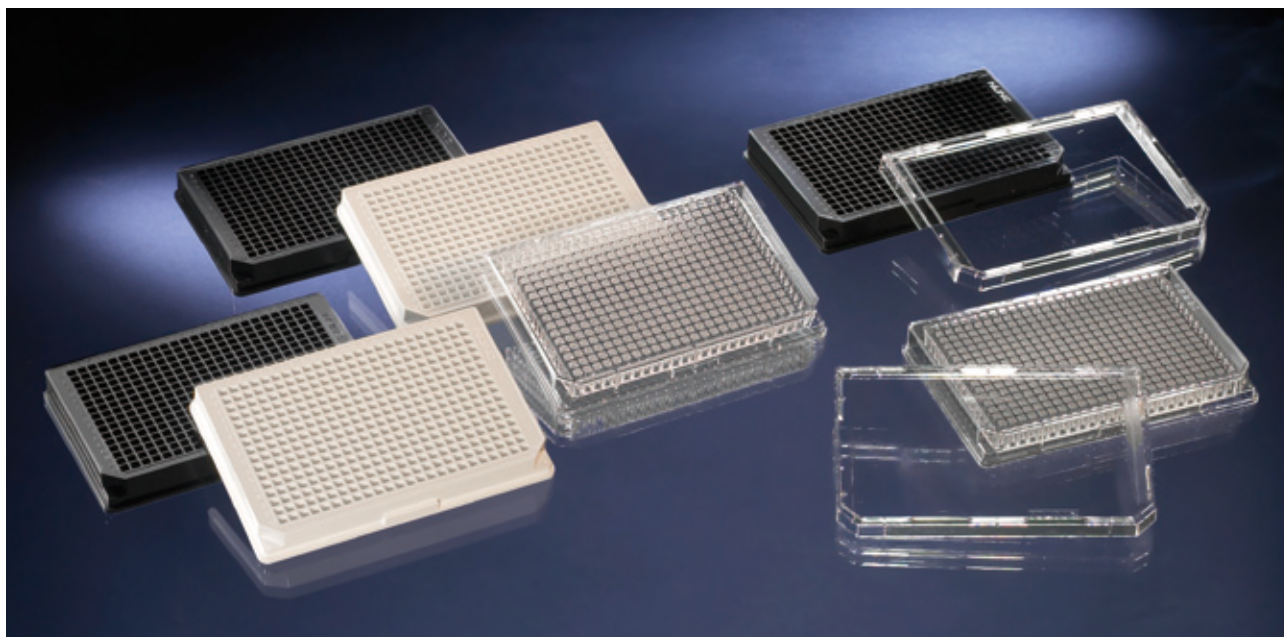
96 DeepWell Plates	Page 157-158
Sealing Tapes	Page 176
U96 MicroWell Plates 500 µl	Page 154
V96 MicroWell Plates 450 µl	Page 155

## Nunc 1.3 ml Filter Plates

Cat. No.	278010	278011	278012
Description	Glass Fiber 96 Well Filter (Binding) Plate	Fritted 96 DeepWell™ Plate	Unfritted 96 DeepWell™ Plate
Total volume, ml	1.3	1.3	1.3
Recommended working volume:	1.0	1.0	1.0
Frit Size, µm	20*	20	-
Material	Polypropylene	Polypropylene	Polypropylene
Sterile	-	-	-
Units per pack/case	5/50	5/50	5/50

\* Has 2 layers of glass fiber membrane on top of the PET frit

# Immobilizer™ 384 Well Plates Polystyrene



## Literature:

Bulletin Nos: 41, 42, 43, 44, 45, 46, 47, 56

See Pages 195-196 for full reference list with titles and links

## Accessories:

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See Immuno Assay section for details regarding Immobilizer™ plates.

## Nunc Immobilizer™ 384 Well Plates

Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
436009	Amino	Clear	120	-	-	5/30
436011	Amino	White	120	-	-	5/30
436012	Amino	Black	120	-	-	5/30
436017	Streptavidin	Clear	120	-	-	1/15
436018	Streptavidin	White	120	-	-	1/15
436019	Streptavidin	Black	120	-	-	1/15
436028 ‡	Nickel-Chelate	Clear	120	-	-	1/15
436029 ‡	Nickel-Chelate	White	120	-	-	1/15
436031 ‡	Nickel-Chelate	Black	120	-	-	1/15
436036 ‡	Glutathione	Clear	120	-	-	1/15
436037 ‡	Glutathione	White	120	-	-	1/15
436038 ‡	Glutathione	Black	120	-	-	1/15

‡ Not available in Americas

- **Amino** surface for rapid coupling of peptides, proteins and DNA
- **Streptavidin** surface for rapid coupling of biotinylated biomolecules such as peptides, antibodies, oligonucleotides or haptens
- **Nickel-Chelate** surface for rapid coupling of 6x Histidine-tagged proteins
- **Glutathione** surface for rapid coupling of GST-tagged fusion proteins
- Cell culture surface available
- Non-treated surface for storage, assays and screening
- **MaxiSorp™** and **PolySorp™** for ELISA
- Clear plates for colorimetric assays and sample storage
- White plates for luminescence and fluorescence assays
- Black plates for fluorescence assays
- White and black plates minimize crosstalk
- Rounded square wells eliminate wicking (capillary action)
- Flat bottom for optical reading
- Optimized for scintillation counting
- Working volume range: 10 - 100 µl/well



Pinchbar Design

## Nunc 384 Well Plates

Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
164688*	Cell Culture	Clear	120	+	+	10/30
164555*	Cell Culture	Clear	120	+	-	25/100
164610*	Cell Culture	White	120	+	+	10/30
165195*	Cell Culture	White	120	+	-	25/100
164564*	Cell Culture	Black	120	+	+	10/30
164571*	Cell Culture	Black	120	+	-	25/100
242757	Non-treated	Clear	120	+	+	10/30
242765	Non-treated	Clear	120	+	+	1/30
262160	Non-treated	Clear	120	-	-	25/100
265196 ‡	Non-treated	Clear	120	-	-	10/30
242850** ‡	Non-treated	Clear	120	+	+	10/30
265202	Non-treated	Clear	120	+	+	25/100
265203	Non-treated	Clear	120	+	-	25/100
262360	Non-treated	White	120	-	-	25/100
264556 ‡	Non-treated	Black	120	-	-	10/30
262260	Non-treated	Black	120	-	-	25/100
460440 ‡	PolySorp	Clear	120	-	-	10/30
460435	PolySorp	Black	120	-	-	10/30
464718*	MaxiSorp	Clear	120	-	-	10/30
460372*	MaxiSorp	White	120	-	-	10/30
460518*	MaxiSorp	Black	120	-	-	10/30

\* Certified

\*\* Barcoded on the left short side with Code 39

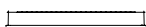
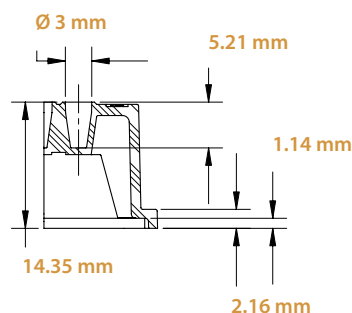
‡ Not available in Americas

# 384 ShallowWell Standard Height Base Polystyrene

**NEW**



- Conical flat bottom for cell culture or assays
- 25 µl total volume saves reagents
- Standard height provides optimal handling, barcoding
- Clear, black or white for colorimetric, fluorescent and luminescent assays
- Working volume range: 2 - 20 µl/well



**NEW**

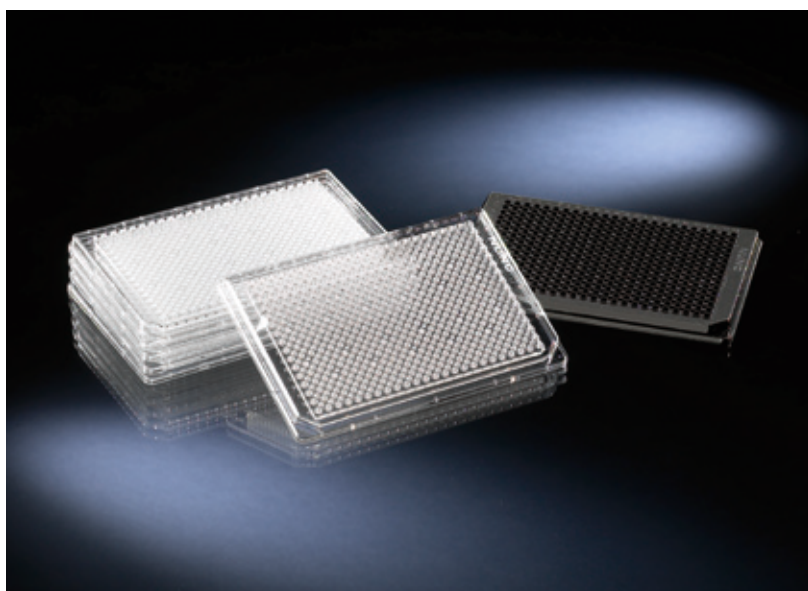
## Nunc 384 ShallowWell, Standard Height Plates

Polystyrene. Maximum volume 25µl, working volume 2 - 20 µl

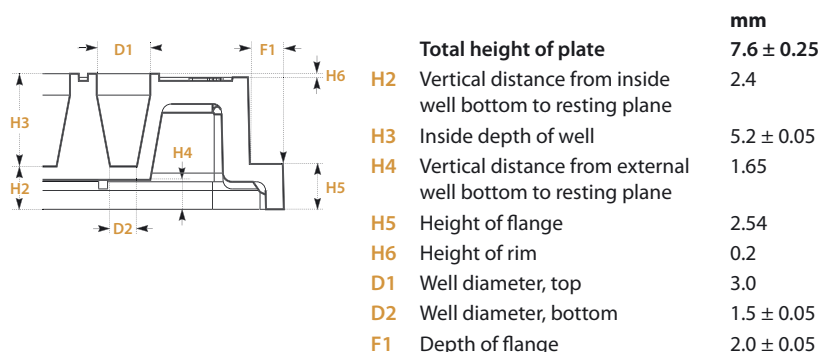
Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
164701	Cell Culture	Clear	25	+	+	25/100
164702	Cell Culture	Black	25	+	+	25/100
164703	Cell Culture	White	25	+	+	25/100
264704	Non-treated	Clear	25	-	-	25/100
264705	Non-treated	Black	25	-	-	25/100
264706	Non-treated	White	25	-	-	25/100



# 384 ShallowWell Plates *Polystyrene*



- Low profile design for maximum stacking capacity
- Plate height optimized for top and bottom reading
- Available with unique, low profile lid (LowBot lid)
- Conical wells with flat bottom
- Cylindrical well top for minimizing evaporation
- Highly rigid plate, for secure robot handling
- Packed in antistatic bags
- Elevated rims allow heat sealing of wells
- Nunclon™Δ surface for cell culture
- Working volume range: 2 - 20 µl/well



## Accessories:

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Sealing Tapes	Page 176
Lids	Page 174

## Nunc 384 ShallowWell Plates

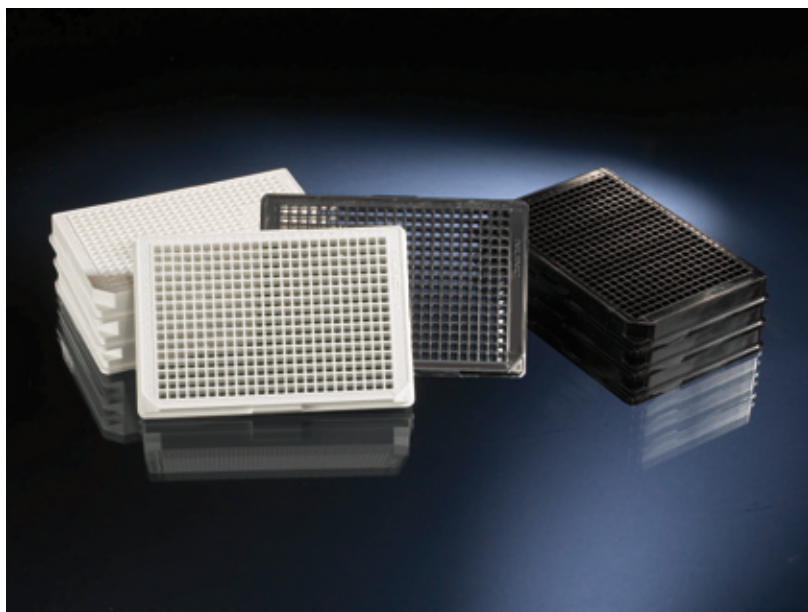
Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
164310* ‡	Cell Culture	Clear	25	+	+	25/100
164400* ‡	Cell Culture	Black	25	+	+	25/100
264340 ‡	Non-treated	Clear	25	-	-	25/100
264360 ‡	Non-treated	Clear	25	+	+	25/100
264430 ‡	Non-treated	Black	25	-	-	25/100
264460 ‡	Non-treated	Black	25	+	+	25/100

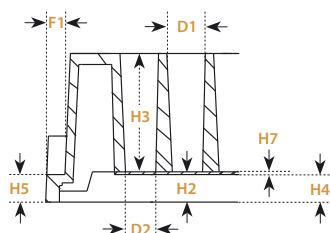
\*Certified

‡ Not available in Americas

## 384 Well Optical Bottom Plates *Polystyrene/Polymer Base*



- White or black upper structures with optically clear bottoms
- Can be read from bottom and top, or both
- Optical film made of polystyrene
- Rounded square wells eliminate wicking (capillary action)
- Optimized for scintillation counting
- Cell Culture, Poly-D-Lysine or Collagen I surfaces for cell culture
- Produced in clean environment
- Working volume range: 10 - 100 µl/well
- For research use only



	mm
<b>Total height of plate</b>	<b>14.4 ± 0.25</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	2.7
<b>H3</b> Inside depth of well	11.6
<b>H4</b> Vertical distance from external well bottom to resting plane	2.5
<b>H5</b> Height of flange	2.7
<b>H7</b> Bottom thickness	0.3
<b>D1</b> Well diameter, top	3.7 x 3.7
<b>D2</b> Well diameter, bottom	2.9 x 2.9
<b>F1</b> Depth of flange	1.8

### Literature:

Bulletin No: 15

See Pages 195-196 for full reference list with titles and links

### Accessories:

Sealing Tapes  
Lids

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### Nunc 384 Well Optical Bottom Plates

Polystyrene/Polymer base. External dimensions 128 x 86 mm

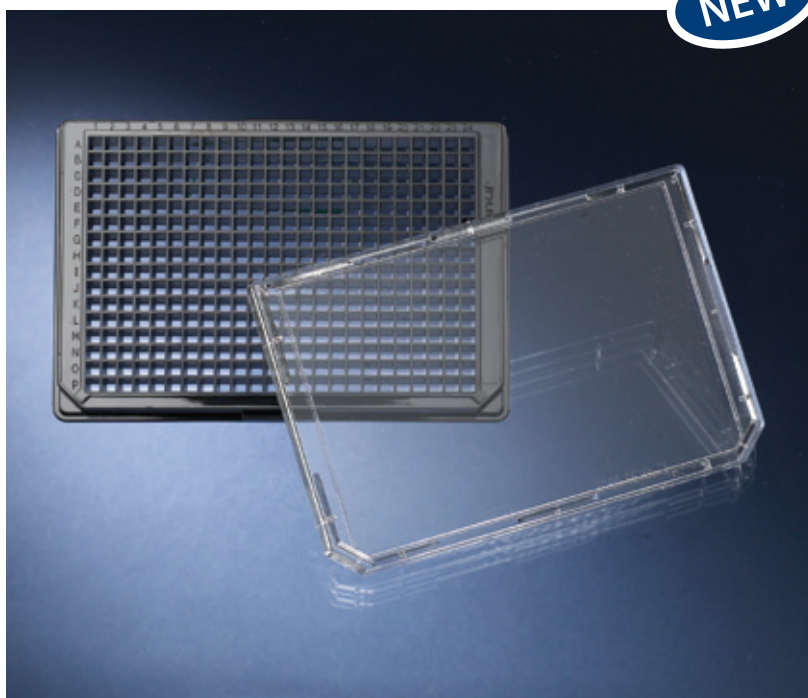
Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
142762*	Cell Culture	White	120	+	+	10/30
142761*	Cell Culture	Black	120	+	+	10/30
164730*	Cell Culture	Black	120	+	-	10/30
152041	Collagen I	Black	120	-**	+	5/20
152029	Poly-D-Lysine	Black	120	-**	+	5/20
242763	Non-treated	White	120	-	-	10/30
242764	Non-treated	Black	120	-	-	10/30

\* Certified

\*\* Produced in clean environment

# 384 Well Optical Bottom Plates *Polystyrene/Coverglass Base*

NEW



- Black upper structure with coverslip for minimum light scatter and low auto-fluorescence, ensuring accurate results due to high signal to noise ratio
- Optimum clarity for viewing well contents
- Flat bottom well for plate reader access
- Rounded square wells eliminate wicking (capillary action)
- Footprint compatible with standard equipment and automated systems
- Non-treated plates are optimized for fluorescence
- Working volume range: 10-100 µl/well

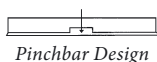
## Accessories:

Lids

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Sealing Tapes

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Pinchbar Design

NEW

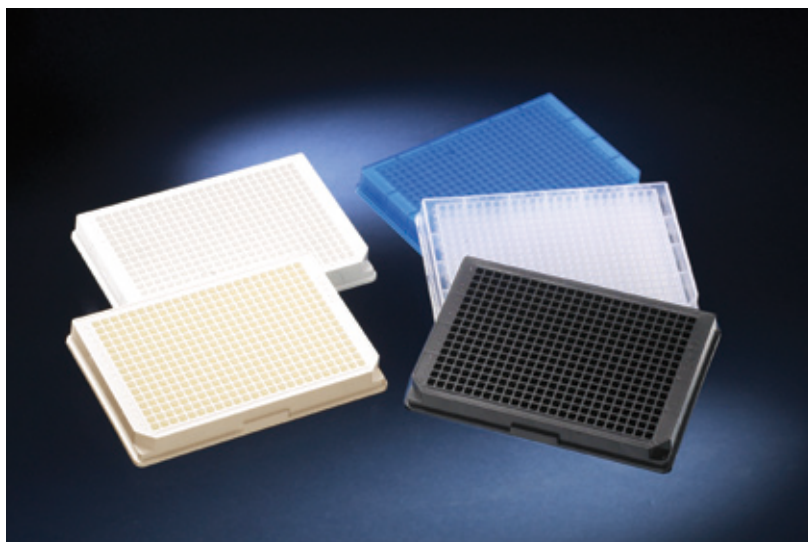
## Nunc 384 Well Optical Bottom Plates

Polystyrene/Coverslip base. External dimensions 128 x 86 mm

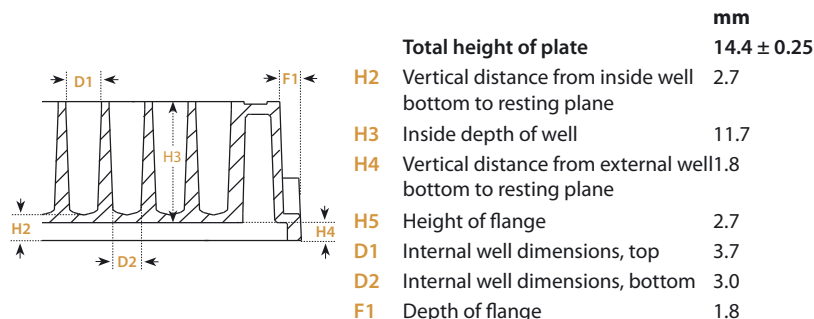
Cat. No.	Surface	Color	Total vol., µl/well	Glass thickness *	Sterile	With lid	Units per pack/case
164586	Cell Culture	Black	120	1.5	+	+	6/30
240074	Non-treated	Black	120	1.5	-	-	5/30

\* No. 1.5 = 0.16-0.19 mm

# 384 Well Plates *Polypropylene*



- Different colors for storage applications
- Low-binding surface
- White plates for luminescent and fluorescent homogeneous applications (SPA)
- Black plates for fluorescent homogeneous applications
- Round bottom wells for optimal sample recovery
- Rounded square wells minimize wicking (capillary action)
- Resistant to many solvents used in storage and in combinatorial chemistry
- Certified RNase/DNase-free
- Working volume range: 10 - 100 µl/well



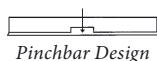
## Low Cross Talk

Higher density and therefore

- low cross talk
- highly reflective surface
- with low capillary action compared to white polystyrene

## Accessories:

Racks	Page 172
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## Nunc 384 Well Plates

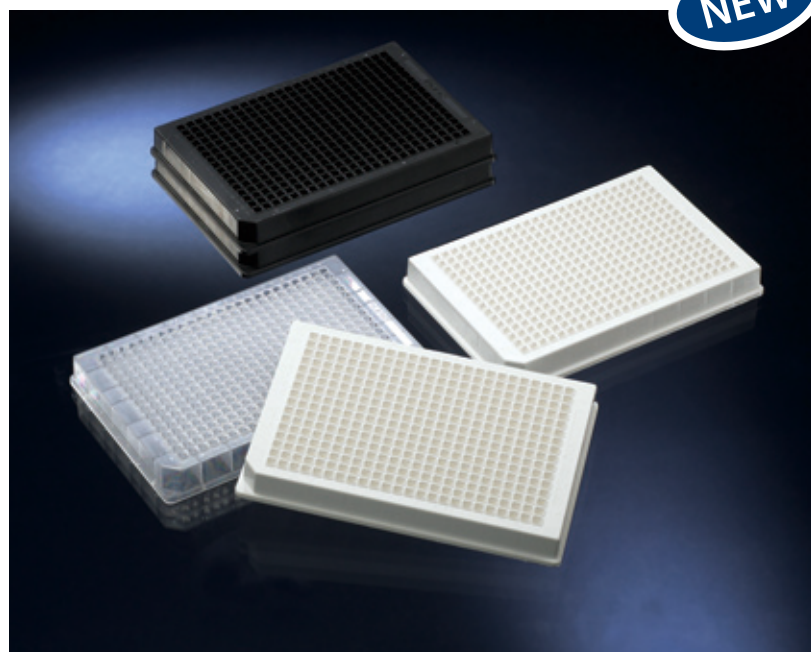
Polypropylene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
264573	Non-treated	Natural	120	-	-	20/120
264574	Non-treated	Natural	120	+	-	20/120
264575	Non-treated	White	120	-	-	20/120
264576	Non-treated	Black	120	-	-	20/120
240182	Non-treated	Black	120	+	-	20/120
264579	Non-treated	Blue	120	-	-	20/120
264675	Non-treated*	White	120	-	-	20/120

\* Low cross talk



## 384 ShallowWell Standard Height Plates *Polypropylene*

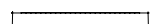


- Small volume applications
- Automation compatible, ANSI standard
- Low-binding and chemically resistant surface
- Natural plates for storage or colorimetric assays
- White plates for luminescent assays, including SPA
- Black plates for fluorescent assays
- Round bottom wells for optimal sample recovery
- Rounded square wells minimize wicking (capillary action)
- Working volume range: 2-35 µl/well

### Accessories:

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Lids

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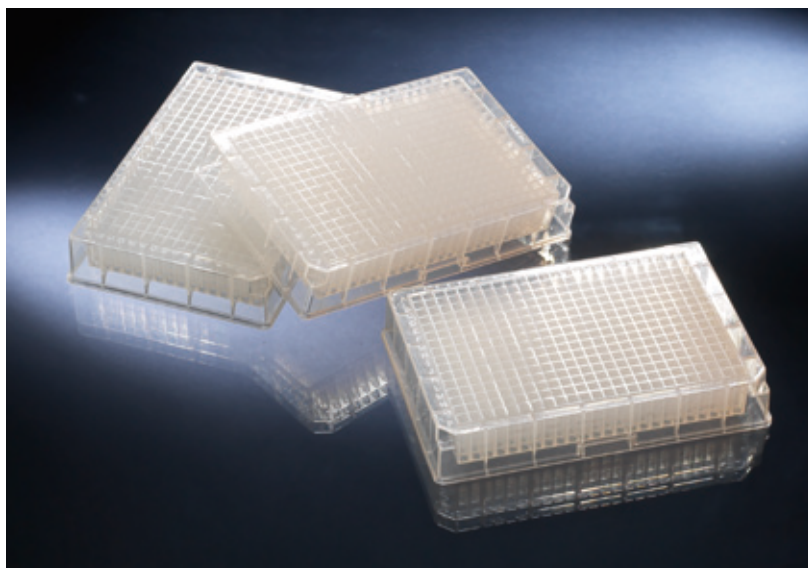


### Nunc 384 ShallowWell Plates

Polypropylene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol, µl/well	Sterile	With lid	Units per pack/case
267459	Non-treated	Natural	58	-	-	25/100
267460	Non-treated	Natural	58	+	-	25/100
267461	Non-treated	Black	58	-	-	25/100
267462	Non-treated	White	58	-	-	25/100

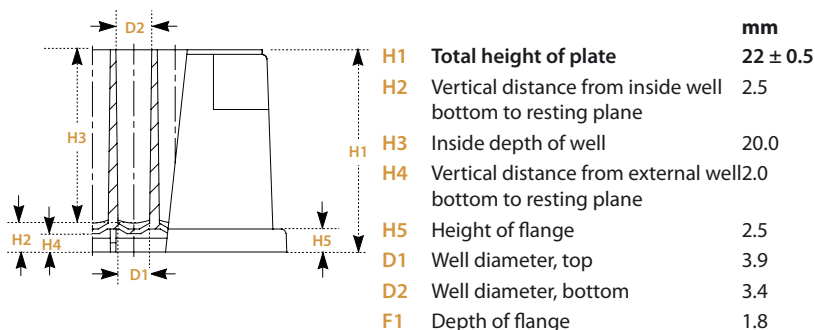
## 384 DeepWell Plates *Polypropylene*



- Excellent for storing DMSO and other strong chemicals and solvents
- Well shape maximizes sample retrieval
- Compatible with robotics and automation
- Rounded square wells minimize wicking (capillary action)
- Barcoding available by arrangement
- Sealable with chemical-resistant well cap mats
- Working volume range: 5 - 240 µl/well

### Accessories:

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<i>Lids</i>	<i>Page 174</i>
<i>Well Caps</i>	<i>Page 171</i>
<i>Sealing Tapes</i>	<i>Page 176</i>

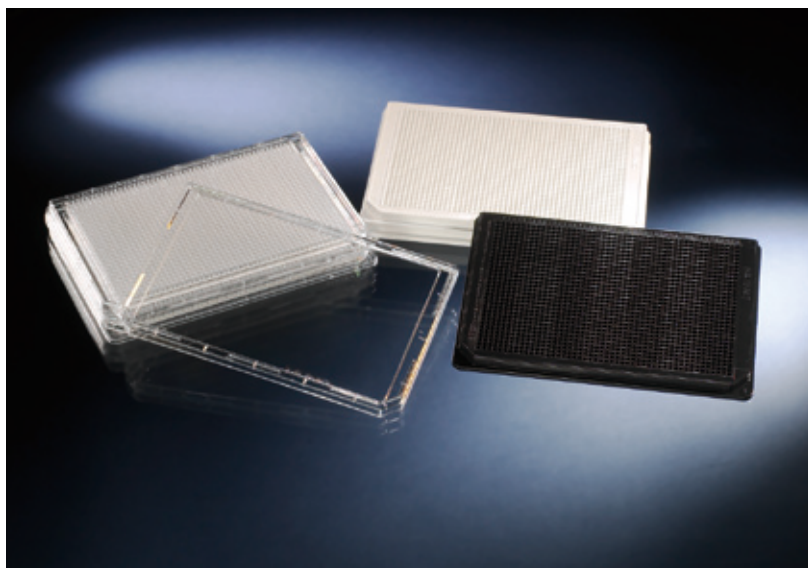


### Nunc 384 DeepWell Plates

Polypropylene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total vol., µl/well	Sterile	With lid	Units per pack/case
269390	Non-treated	Natural	252	-	-	5/60

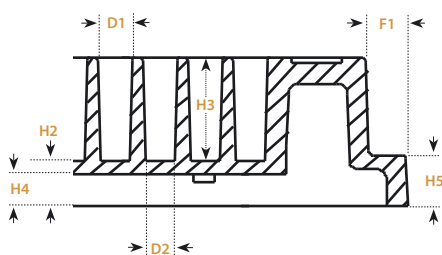
## 1536 Well Plates Polystyrene



- Available in black, white and clear
- Working volume range: 1 - 10 µl/well
- Non-treated or MaxiSorp™ treated
- Low plate height optimized for stacking efficiency
- Working volume range: 1 - 10 µl/well

### Accessories:

Racks	Page 172
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	mm
<b>Total height of plate</b>	<b>7.4</b>
<b>H2</b> Vertical distance from inside well bottom to resting plane	2.4
<b>H3</b> Inside depth of well	5.0
<b>H4</b> Vertical distance from external well bottom to resting plane	1.5
<b>H5</b> Height of flange	2.5
<b>D1</b> Well diameter, top	1.7
<b>D2</b> Well diameter, bottom	1.5
<b>F1</b> Depth of flange	1.8

### Nunc 1536 Well Plates

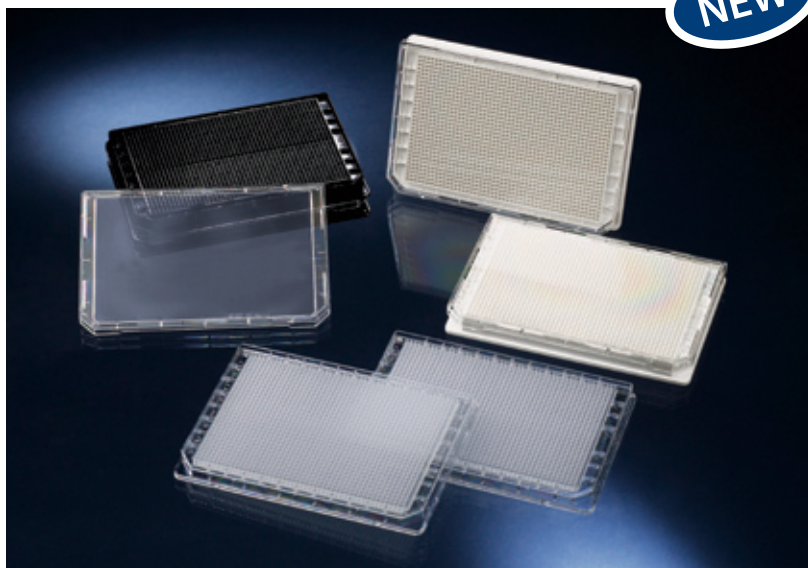
Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total volume, µl/well	Sterile	With lid	Units per pack/case
453603	MaxiSorp*	Black	13.4	-	-	30/90
253614	Non-treated	Clear	13.4	-	-	30/90
253601	Non-treated	Black	13.4	-	-	30/90
253607	Non-treated	White	13.4	-	-	30/90

\* Certified

# 1536 Well High Base Plates *Polystyrene*

**NEW**



- Optimal robotic handling
- Preferred skirt design
- Maximal barcode placement area
- Non-treated or cell culture surface
- Fluorescent, luminescent and colorimetric assays
- ANSI (SBS) standard footprint l x w
- Low volume saves reagents
- Working volume range: 2-10 µl/well

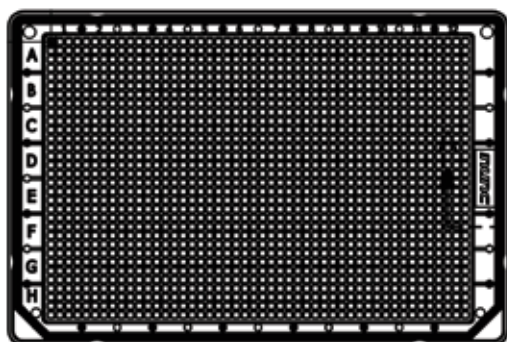
## Accessories:

Lids

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**NEW**

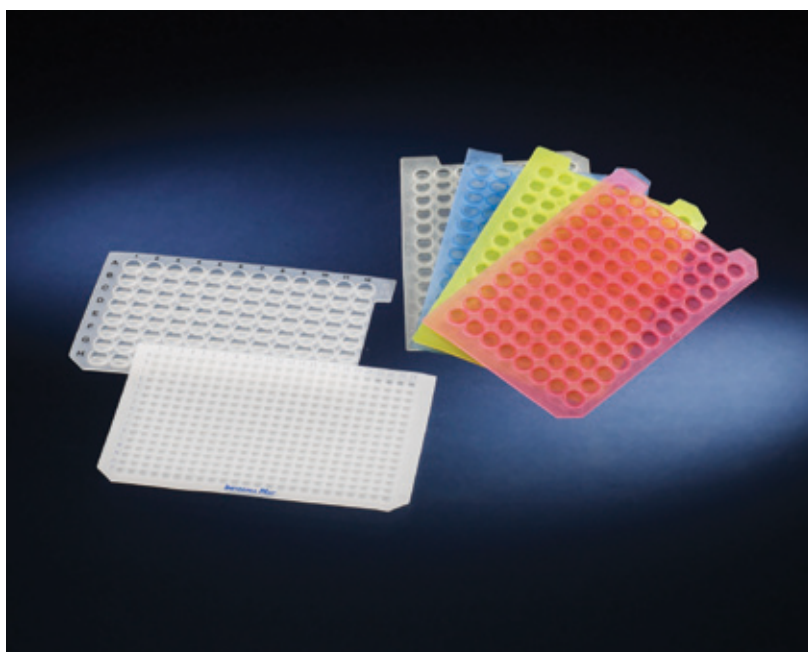
## Nunc 1536 Well High Base Plates

Polystyrene. External dimensions 128 x 86 mm

Cat. No.	Surface	Color	Total volume, µl/well	Sterile	With lid	Units per pack/case
164707	Cell Culture	Clear	13.4	+	+	25/100
164708	Cell Culture	Black	13.4	+	+	25/100
164709	Cell Culture	White	13.4	+	+	25/100
264710	Non-treated	Clear	13.4	-	-	25/100
264711	Non-treated	Black	13.4	-	-	25/100
264712	Non-treated	White	13.4	-	-	25/100



# Well Cap Mats



- Protect well contents during short or long-term storage of chemicals or compounds
- Chemically resistant, pierceable thermoplastic elastomer well caps are excellent for compound storage to -80°C
- Silicone pre-slit well caps permit a pipette tip or probe to enter the well without damage to the cap
- Ethylene-vinyl acetate cap mats effectively seal polystyrene DeepWell™ plates
- Cat. No. 276011 is pierceable by pipette tips
- 96 well caps for sealing all Nunc PP plates with shared wall technology

*Teflon is a registered trademark of DuPont*

## Nunc 96 Cap Mats

Cat. No.	96 PP*	96 DW	Features	Material	Pierce**	Color	Sterile	Packed
276000	+	+	Resists DMSO, ethanol and methanol	Thermo-plastic elastomer	Yes	Natural	+	1/50
276002	+	+	Resists DMSO, ethanol and methanol	Thermo-plastic elastomer	Yes	Natural	-	5/50
276003 ‡	+	+	Resists DMSO, ethanol and methanol	Thermo-plastic elastomer	Yes	Yellow	-	5/50
276004 ‡	+	+	Resists DMSO, ethanol and methanol	Thermo-plastic elastomer	Yes	Red	-	5/50
276005	+	+	Resists DMSO, ethanol and methanol	Thermo-plastic elastomer	Yes	Blue	-	5/50
276011	+	+	Pre-slit; solvent resistant, but avoid 100% DMSO	Silicone	Yes, *** repeatedly	Natural	-	10/50

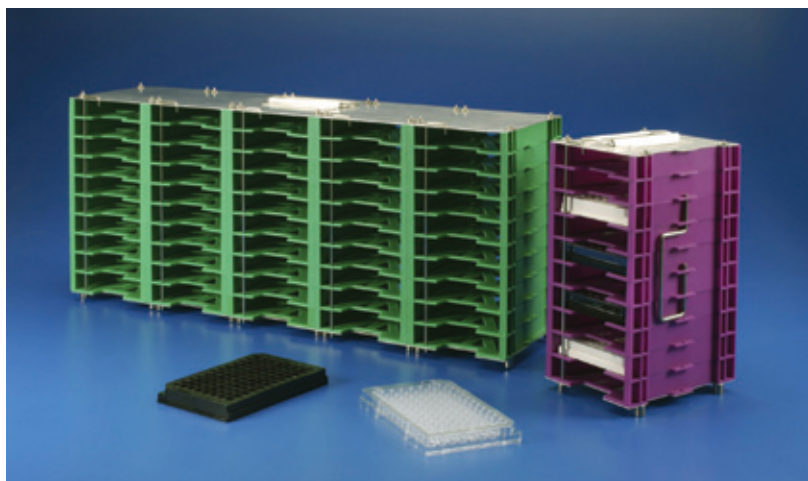
\* Except Cat. No. 442587, 96 Polypropylene Plates

\*\* Hypodermic needles

\*\*\* Also by pipette tips

‡ Not available in Americas

# Microplate Storage Racks



## Plastic Plate Storage Racks in Colors

- Transport or store up to 50 standard plates or 25 DeepWell™ plates per rack
- For chest and upright mechanical freezers or incubators
- Sturdy polypropylene and metal construction is lightweight, durable
- Available in four colors to organize your samples
- Locking bar keeps plates secure
- Handle allows convenient transport
- Freezer compatible down to -80°C
- Not for use in liquid/vapor nitrogen

## For Standard Plates

Cat. No.	344260 †	344261 †	344262 †	344263 †	344280 †	344281 †	344282 †	344283 †
Capacity (plates)	10	10	10	10	50	50	50	50
Color	Green	Purple	Red	Yellow	Green	Purple	Red	Yellow
Configuration	10 Tall	10 Tall	10 Tall	10 Tall	10 x 5	10 x 5	10 x 5	10 x 5
Size H x W x D, cm:	344260 - 344261 - 344262 - 344263 = 23 x 10 x 14 344280 - 344281 - 344282 - 344283 = 23 x 51 x 14							
Height per shelf, cm	2	2	2	2	2	2	2	2
Units per case	1	1	1	1	1	1	1	1

† Only available in Americas

## For DeepWell™ Plates

Cat. No.	344380 †	344381 †	344382 †	344383 †
Capacity (plates)	25	25	25	25
Color	Green	Purple	Red	Yellow
Configuration	5 x 5	5 x 5	5 x 5	5 x 5
Size H x W x D, cm:	344380 - 344381 - 344382 - 344383 = 25 x 51 x 14			
Height per shelf, cm	5	5	5	5
Units per case	1	1	1	1

† Only available in Americas



### Aluminum Racks in Colors

- Adjustable shelves to fit any plate or tube rack
- Color coded top and sides for easy identification
- Locking bar keeps plates secure
- For chest and upright mechanical freezers or incubators
- Autoclavable
- Accommodates:
  - 18 Low Profile
  - 10 Standard
  - 6 DeepWell™ 1 ml
  - 5 DeepWell™ 2 ml

### Aluminum Plate Storage Racks

Cat. No.	367001	367002
Color	Blue	Natural
Configuration	5 - 18 Tall	5 - 18 Tall
Size, H x W x D, cm	23.5 x 9.5 x 13.5	
Height per shelf, cm	Adjustable	Adjustable
Units per case	1/1	1/1









### Stainless Steel Plate Storage Racks

- Durable stainless steel construction
- Retainer clip on each compartment holds plates securely in place
- Sturdy handles on top and sides for easy transport
- Label holder for easy identification
- Two convenient horizontal sizes to fit your freezer or refrigerator

Cat. No.	5039-0048	5039-0072
Capacity (plates)	80 Low Profile 48 Standard 16 DeepWell™	120 Low Profile 72 Standard 24 DeepWell™
Color	Natural	Natural
Configuration	4 Tall x 4 Wide	4 Tall x 6 Wide
Size, H x W x D, cm	21.6 x 48.3 x 14	21.6 x 57.9 x 14
Height per shelf, cm	5.3	5.3
Units per case	1/1	1/1

# Overview of Nunc Lids

- Clear, strong polystyrene
- Nunc version lids have notches for quick orientation
- Universal version lids can be used with any plates
- Reduces water loss due to lower evaporation
- 96-well lids feature individual condensation rings
- LowBot™ lids feature side cut-outs that facilitate barcode reading and automated handling of shallow well plates

Cat. No.	Height without stacking holders, mm	Cut-off corners	Condensation rings	Evaporation Barrier*	Height	Color	Sterile	Packed
<b>Nunc Standard Lids, Nunc Version for 96 MicroWell™ Plates</b> With condensation rings and evaporation rim. Polystyrene. External dimensions 127 x 85 mm 								
263339	7.9	Long side	+	+	Standard	Clear	-	5/100
264122	7.9	Long side	+	+	Standard	Clear	+	1/50
264623	7.9	Long side	+	+	Standard	Clear	+	20/60
<b>Nunc Standard Lids for 96 Optical Bottom Plates</b> With condensation rings and evaporation rim. Polystyrene. External dimensions 127 x 85 mm 								
255983	7.8	Right short side	+	+	Standard	Clear	-	20/60
<b>Nunc Standard Lids, Nunc Version for 384 Well Plates</b> With evaporation rim. Polystyrene. External dimensions 127 x 85 mm 								
264611	7.9	Long side	-	+	Standard	Clear	+	1/60
264612	7.9	Long side	-	+	Standard	Clear	-	20/180
264616	7.9	Long side	-	+	Standard	Clear	+	20/180
<b>Nunc White Lid, Nunc version for 384 and 1536 Well Plates and OmniTrays</b> Polystyrene. External dimensions 127 x 85 mm 								
448143	7.9	Long side	-	-	Standard	White	-	20/120
<b>Nunc Universal Lid for 384 and 1536 Well Plates</b> With side cut-out and evaporation rim. Polystyrene. External dimensions 128 x 86 mm 								
250002	8.34	-	-	-	Standard	Clear	+	20/60
250003	8.34	-	-	-	Standard	Clear	-	20/60
250005	8.34	-	-	-	Standard	Clear	-	20/180
<b>Nunc LowBot Lids, Universal Version for 384 and 1536 Well Plates</b> With side cut-out and evaporation rim. Polystyrene. External dimensions 128 x 86 mm 								
253623	4.6	-	-	+	Low profile	Clear	-	25/100
253624	4.6	-	-	+	Low profile	Clear	+	25/100

\* Evaporation barrier is a rim around the inside edge of the lid

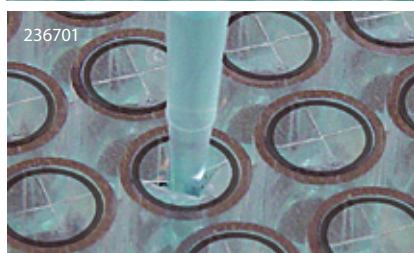
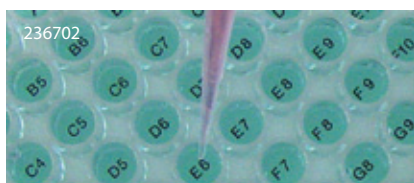
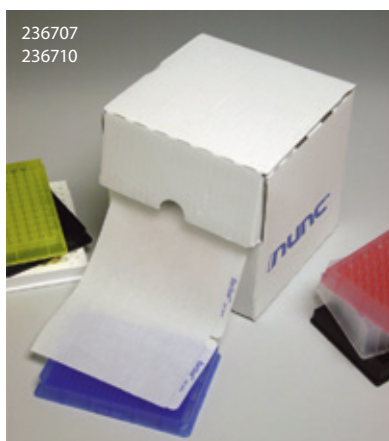


# Nunc Lid Guide

Cat. No.	Type 1 Plates 96 Solid MicroWell* PS, PP	Type 2 Plates 96 Optical Bottom	Type 3 Plates 384 Standard Height, 384 ShallowWell PS Standard Height, 1536 High Base	Type 4 Plates 384 ShallowWell Low Profile, 1536 Low Profile	Type 5 Plates 96 DeepWell (278605 and 278606), 384 ShallowWell PP
Nunc Standard Lids, Nunc Version for 96 MicroWell™ Plates					
263339	+	-	-	-	-
264122	+	-	-	-	-
264622	+	-	-	-	-
264623	+	-	-	-	-
264626	+	-	-	-	-
Nunc Standard Lids for 96 Optical Bottom Plates					
255983	-	+	-	-	-
Nunc Standard Lids, Nunc Version for 384 and 1536 Well Plates					
264611	+	-	+	-	-
264612	+	-	+	-	-
264616	+	-	+	-	-
Nunc White Lid, Nunc Version for 384 and 1536 Well Plates and Omnitrays					
448143	+	-	+	-	-
Nunc Standard Lids, Universal Version for Standard Height 384 and 1536 Well Plates					
250002	+	+	+	-	+
250003	+	+	+	-	+
250005	+	+	+	-	+
Nunc LowBot Lids, Universal Version for 384 and 1536 Well Plates					
253623	+	+	+	+	+
253624	+	+	+	+	+

\* Not 1 ml DeepWell PP (278605 and 278606)

# Sealing Tapes



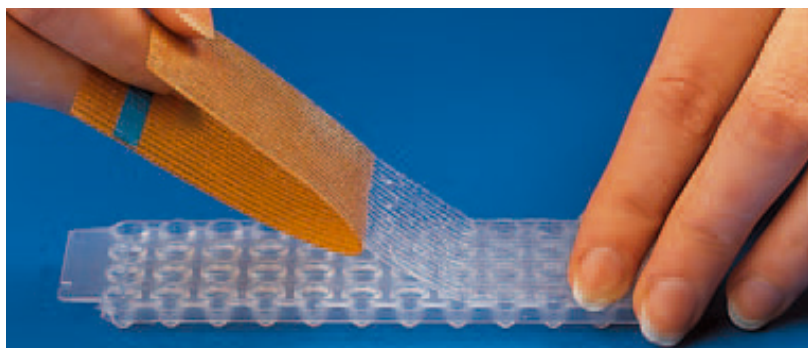
- Effectively seal all microplate formats
- For storage, PCR, microscopy, culture, protection
- Protective backing
- Pre-cut, plate-sized sheets
- Pierceable tapes are available

## Sealing Tapes

	Cat. No.	Description	Material	Adhesive	Color	Sterile	Pierce	Certified RNase/ DNase-free	Temperature Range, °C	Packed
	276014	General use, PCR, storage, photo-sensitive samples	Aluminium	Silicone	Silver	-	+	+	-80 to +120	100/100
NEW	232698	PCR and storage in 96 well plates	Aluminium	Acrylate	Silver	-	+	+	-80 to +150	100/100
NEW	232699	PCR and storage in 384 well plates	Aluminium	Acrylate	Silver	-	+	+	-80 to +150	100/100
	236370 †	General purpose seal and sample protection	Polyester	Silicone	Clear	-	-	-	-70 to +100	100/100
	236269 ‡	Slightly stiffer than polyolefin tape, general purpose	Polyester	Acrylic	Clear	-	-	-	-20 to +100	200/800
	235305	Opaque, white seal, luminescent assays	Polyester	Acrylate	White	+	-	-	-70 to +100	100/100
	236366	Cell culture, sterile applications	Polyester	Acrylic	Clear	+	-	-	-70 to +100	200/800
NEW	236707	Convenient roll dispenser, general use tape	Polyester	Acrylic	Clear	-	-	-	-20 to +100	1000/1000
	235306	Repeat piercing, non sticky, low fluorescence, storage	Polyethylene	Silicone	Clear	-	+	-	-70 to +100	100/100
	232701	Microscopy, good optics, low auto-fluorescence, DMSO compatible	Polyolefin	Acrylate	Clear	-	-	-	-70 to +100	100/100
	232702	PCR, fluorescence assays, microscopy	Polyolefin	Acrylate	Clear	-	-	+	-70 to +100	100/100
	235307	Best optics, microscopy, lowest fluorescence, Q-PCR	Polyolefin	Silicone	Clear	-	-	-	-70 to +100	100/100
NEW	236702	Black alpha numeric guide on 96 well plate bottom label	Polypropylene	Acrylate	Clear	-	-	-	N/A	100/100
NEW	249720	Breathable	Rayon	Acrylate	White	-	+	-	-20 to +80	50/50
NEW	241205	Breathable, cell culture	Rayon	Acrylate	White	+	+	-	-20 to +80	25/50
NEW	236703	Apply to plate top or bottom, protect light sensitive samples	Vinyl	Acrylate	Black	-	-	-	-40 to +80	50/50
NEW	236701	Repeat piercing, pre-cut "X" self closes, short term storage	Vinyl	Acrylate	Clear	-	+	-	-40 to +80	100/100

† Only available in Americas

‡ Not available in Americas



- Clear, pierceable polyester strips
- -20°C to 100°C

### Tape 12 and Tape 48

Cat. No.	Description	Color	Sterile	Units per pack/Case
232689	Seal one row of a 96 MicroWell™ Plate	Clear	-	100/400
232700	Seal 4 rows of a 96 MicroWell™ Plate	Clear	-	100/400



### Applicator

Cat. No.	Description	Color	Sterile	Units per pack/Case
250050	Rectangular, hand held, promotes consistent seal	Gold	-	2/2







## Custom Services *Introduction*

### We understand your needs

#### - and meet your demands

Our highly experienced specialty teams are ready to bring you the very best solutions for your unique applications.

#### Our commitment to our customers includes:

- Innovative solutions
- Flexibility
- R & D support
- Customization
- Functional surfaces
- Coating
- Design
- Batch reservation
- Lot-to-lot consistency

### Developing tomorrow's products

Product development has always been a cooperative effort to create innovative products to suit individual requirements. As an extension of this, we have established teams using our expert staff. They will support your idea from the beginning through implementation.

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Barcoded Products .....	182

## Nunc Custom Coating of MicroWell™ Plates

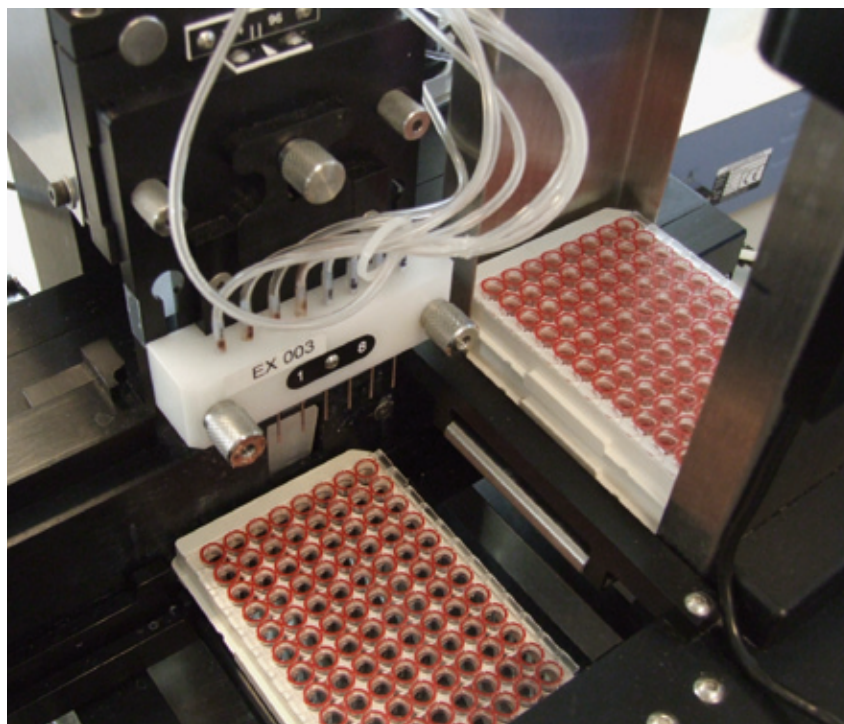
### Nunc Brand research knowledge and production skills can decrease your time-to-market

Manufacturers of diagnostic kits, as well as screening departments within pharmaceutical companies, can quickly benefit from our new plate-coating service.

Access Nunc Brand's comprehensive knowledge and experience in producing MicroWell plates when you need custom specific-protocol plate coating. Assisting you at every step is a team with deep knowledge and expertise in immuno diagnostics and surface modification. The team's goal is optimal binding of your target molecule to a MicroWell plate. Nunc Brand is committed to offering reliable, cost-effective custom assay development and production optimization.

Basically stated, we help develop, then apply your custom coating on our standard microwell plates and Immuno Modules, using our reliable, proven microplate processing equipment. This mix of new and existing processes/equipment can markedly decrease expense and increase availability of your unique application.

To learn more about our new service, contact us at:  
[diagnostics.nunc@thermofisher.com](mailto:diagnostics.nunc@thermofisher.com)



### Optimize Your Opportunities - Outsource Your Plate-Coating Operations

#### Optimize your production capacity

- Increase your production flexibility
- Access secondary production production facilities
- Avoid backorders
- Use an independent coating facility

#### Optimize resources

- Reduce your investments
- Focus on value-added projects
- Allocate assets effectively

#### Optimize time to market

- Use Nunc knowledge in
  - Surface treatment
  - Surface capabilities
  - Production skills
- Improve your output
- Stay ahead of your competitors

#### Quality Control

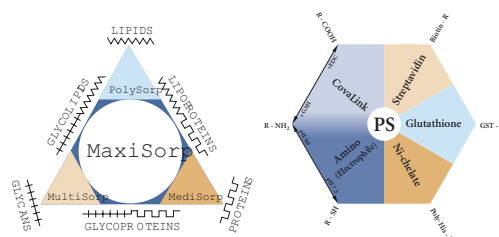
Our highly skilled QC and QA technicians are at your disposal to provide the quality documentation necessary to fulfil your requirements. Our controlled environment facilities assures a high consistency throughout the entire production run.

#### We are able to offer

- Full Quality Control and Certification of conformity according to your specifications
- Production using calibrated equipment according to controlled SOPs
- All product documentation controlled by our QA Department



*The combination of Nunc Immuno Modules coated by Nunc and packaging vials by Nalgene provide a well-documented product.*



## Barcoded Products

Barcodes play an essential role in tracking samples. They provide a tool for reviewing the large quantities of data. As a consequence, Nunc Brand Products offer barcoded products – either as part of our standard assortment (F96 new standard design and barcoded flasks with existing catalog numbers) or as customized products, e.g. barcoded CryoTubes™, barcoded MicroWell™ plates and other Nunc Brand Products. We offer the complete range of barcoded products plus 2 scanners to read barcodes.

### Why use barcodes?

A barcode provides the safest way to keep track of your sample. The code is extremely durable and will help reduce human errors. Barcoded products are suitable for automated or manual operations. Some barcoded products provide a trouble-free human readable code, which can be manually entered when a scanner is not available.

### Barcodes

A barcode is a “machine-readable code” which can be used when many samples are to be processed, analyzed or stored by means of automated equipment.

#### The advantages of using barcodes are:

- Improved accuracy (see chart below)
- Increased efficiency
- Higher safety levels
- Reduced costs

	Manual Entry	Barcode Scanning
Time Required to key 20 char.	10 seconds	4 seconds
Accuracy	1 error / 300 characters	1 error / 10 million characters

### Available codes:

#### Code 39

Code 39 is an alphanumerical code, meaning that it has both numbers and letters. It can have variable lengths and is self-checking. Every Code 39 character has five bars and four spaces. Code 39 is self-checking.

#### Interleaved 2 of 5

Int 2 of 5 is numerical code (no letters) and is also self-checking to improve the data security. Each Interleaved 2 of 5 characters encodes two digits (one in the bars and one in the spaces). Each character has five bars or five spaces (two broad and three narrow). It is recommended to have a check digit if possible.

#### Code 128

Code 128 is also alphanumerical, but has a higher density than Code 39. Code 128 character comprises three bars and three spaces. Code 128 encodes the full ASCII 128 character set, and has 107 different printed characters. Each character can have one of three different meanings, depending on which subset

of characters being used initially. Subset A, Subset B and Subset C are the three different subsets.

### Prefix/suffix

Prefixes/suffixes are a fixed group of characters that can appear on a barcode. Prefixes are available before the variable numbers or suffix after the variable numbers. e.g. “NU” in a 10 digit numeric code counting up from start number NU00000001. The prefix might help in identifying different companies or series of data.

### ANSI-Grade scale

With the three mentioned codes, we follow the standardized ANSI X3.182- 1990 guideline (Barcode Print Quality-Guideline) (ANSI = American National Standard Institute).

### Barcoded plates

When you require barcoded MicroWell™ plates, we can offer two different solutions: Nunc standard products and Nunc custom barcode plates.

On standard barcoded Nunc plates, a seven-digit Code 39 alphanumeric label is applied to the short left side of the plate.

On customized barcoded plates, we offer Code 128, Code 39 and Interleaved 2 of 5.

#### You have the flexibility to choose:

- The number of digits
- Code type
- Numerical or alphanumerical
- Label placement (one, two, three or all four sides)
- Prefix or Suffix

For further information and to download the barcoded plate request, please look at the barcode section at [www.nuncbrand.com](http://www.nuncbrand.com), or contact Nunc Brand directly at [barcode.nunc@thermofisher.com](mailto:barcode.nunc@thermofisher.com).

### Barcoded CryoTubes™

Barcodes can be placed on CryoTubes™ in two different ways:

#### Pad-print/Ink Jet

This is done by printing directly on the CryoTube™. First a white background is pad-printed, then the ink jet technique is used to print the black codes on the white background. These codes can withstand the temperature fluctuations that a CryoTube™ would be exposed to in freezing liquid nitrogen and the following defrosting.

#### Label

This solution is unique because the codes can withstand most chemicals, e.g. toluene, acetone and DMSO. Like the pad-printed version, these codes can withstand temperature fluctuations, freezing in liquid nitrogen and the following defrosting.



## Barcoded CryoTubes™ Capabilities

Method		Ink-jetted*	Label	Label	Label	Label	Label	Label
Description and base product catalog number	Packed	Interleaved 2 of 5 Max 9 digits (**)	Code 39 Max. 3 digits Small label	Code 39 Max. 6 digits Large label	Code 128 Max. 7 digits Small label	Code 128 Max. 13 digits Large label	Interleaved 2 of 5 Max 9 digits Small label	Interleaved 2 of 5 Max 13 digits Large label
Int. round b. 3.6 ml (366524)	50/500/2000	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Int. round b. 4.5 ml (363452)	50/400/1600	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Int. round b. 1.8 ml (363401)	50/500/2000	Yes	Yes	No	Yes	No	Yes	No
Int. skirt b. 1.8 ml (368632)	50/450/1800	Yes	Yes	No	Yes	No	Yes	No
Int. skirt b. 1.0 ml (366656)	50/500/2000	No	Yes	No	Yes	No	Yes	No
Int. star b. 3.6 ml (379189)	50/400/1600	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Int. Star b. 4.5 ml (379146)	50/300/1200	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Int. star b. 1.8ml (377267)	50/450/1800	Yes	Yes	No	Yes	No	Yes	No
Ext. star b. 1.8 ml (375418)	50/450/1800	Yes	Yes	No	Yes	No	Yes	No
Ext. star b. 4.5 ml (337516)	50/300/1200	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ext. round b. 1.8 ml (340711)	50/500/2000	Yes	Yes	No	Yes	No	Yes	No

\* Ink-jet printing directly on tube, special specifications.

\*\* If check digit is omitted, we can offer 9 counting digits in the code and the first digit as a prefix giving 10 digits.

## Barcoded Flasks

Nunc Brand Products offer two standard barcoded flasks intended for all users of the SelecT fully automated cell culture robot, from The Automation Partnership. These flasks are also useful for all barcoded flask applications. The flask comes with a high quality 10-digit numeric Code 128 barcode label.

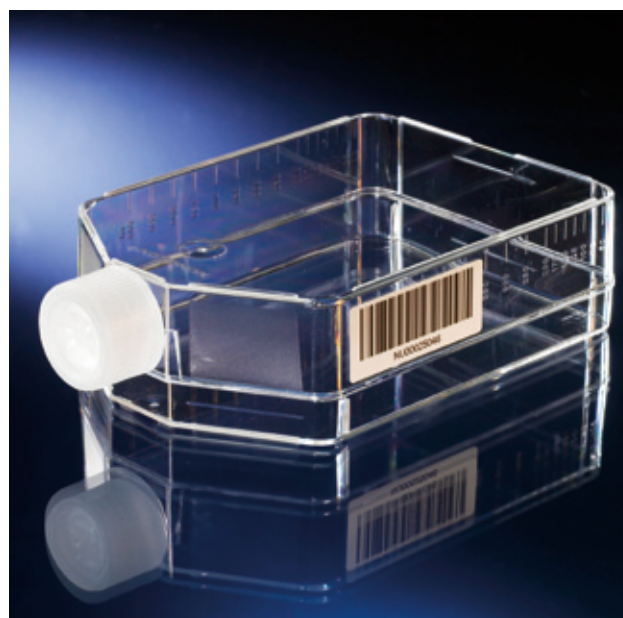
### Barcoded Flasks Nunclon™Δ

Polystyrene. Sterile. White filter caps

Cat. No.	178983	132920
Culture area, cm <sup>2</sup>	175	500
Suggested working volume, ml	68	200
Units per pack/case	4/32	4/32

## Barcode Scanners

Two different versions of handheld plug and play barcode scanners are available. Please see Page 41 for details.



## *Additional Information*

### *Contents*

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# Physical Properties of Nunc Brand Products

	Max. Use Temp (°C)	Transparency	Microwave-ability <sup>1</sup>	Sterilization <sup>3</sup>					Specific Gravity	Flexibility	Permeability Coefficient		
				Auto-claving	Gas	Dry Heat	Radiation	Disinfectants			ml - mm Units: sec - cm <sup>2</sup> - cmHg x10 <sup>-10</sup>		
											N <sub>2</sub>	O <sub>2</sub>	CO <sub>2</sub>
ACL	121	Opaque	Marginal <sup>2</sup>	Yes <sup>4</sup>	Yes	No	No	Yes	1.43	rigid	0.2	0.4	1.6
ETFE/ ECTFE	150	Transluc	Yes	Yes	Yes	Yes	No	Yes	1.70	rigid	–	–	–
FEP	205	Transluc	Marginal <sup>2</sup>	Yes	Yes	Yes	No	Yes	2.15	excel	20	60	135
HDPE	120	Transluc	No	No	Yes	No	Yes	Yes	0.95	rigid	3	10	45
LDPE	80	Transluc	Yes	No	Yes	No	Yes	Yes	0.92	excel	20	60	280
NYL	90	Transluc	No	No	Yes	No	Yes	Yes	1.13	rigid	0.3	1.0	1.8
PC	135	Clear	Marginal <sup>2</sup>	Yes <sup>4</sup>	Yes	No	Yes	Yes	1.20	rigid	3	20	85
PETG	70	Clear	Yes	No	Yes	No	Yes	Yes	1.27	mod	0.8	1.1	4.5
PFA	250	Transluc	Yes	Yes	Yes	Yes	No	Yes	2.15	excel	–	–	–
PMMA	50	Clear	–	No	Yes	No	Yes	Some	1.20	rigid	–	–	–
PP	135	Transluc	Yes	Yes	Yes	No	No	Yes	0.90	rigid	4	25	90
PPCO	121	Transluc	Marginal <sup>2</sup>	Yes	Yes	No	No	Yes	0.90	mod	6	30	100
PS	90	Clear	No	No	Yes	No	Yes	Some	1.05	rigid	3	15	75
PSF	165	Clear	Yes	Yes	Yes	Yes	Yes	Yes	1.24	rigid	3	15	60
PUR	82	Clear	No	No	Yes	No	Yes	Yes	1.20	excel	–	–	–
PVDF	110	Transluc	–	No	Yes	No	No	Yes	1.75	rigid	–	–	–
TFE	121	Opaque	–	Yes	Yes	No	–	Some	1.20	excel	–	–	–
TPE	260	Opaque	–	Yes	Yes	No	–	Some	1.20	excel	–	–	–
TPX	175	Clear	Yes	Yes	Yes	Yes	No	Yes	0.83	rigid	65	270	–
XLPE	100	Transluc	No	No	Yes	No	Yes	Yes	0.93	rigid	–	–	–
TMX	150												
PMX	180												

<sup>1</sup> Ratings are based on 5-minute tests at 100% power (600 watts) of exposed, empty labware. CAUTION: Do not exceed Max. Use Temp., above, or expose labware to chemicals where heating may cause to attack the plastic or be rapidly absorbed.

<sup>2</sup> Plastic will absorb heat.

<sup>3</sup> Sterilization:  
Autoclaving (121°C, 15 psi for 20 minutes) - Clean and rinse item with distilled water before autoclaving. Certain chemicals, which have no appreciable effect on resins at room temperature, may cause deterioration at autoclaving temperatures unless removed with distilled water beforehand. (Always completely disengage threads before autoclaving).  
Gas - Ethylene oxide formaldehyde. Dry heat (160°C, 120 minutes) Disinfectants - Benzalkonium chloride, formalin, ethanol, etc. Radiation - gamma irradiation at 2.5 (Mrad) with unstabilized plastic.

<sup>4</sup> Sterilizing reduces mechanical strength. Do not use PC vessels for vacuum applications if they have been autoclaved.

## Resins

The table is meant a guideline only. The properties of the materials may vary both due to minor differences in the production conditions and to different conditions in the testing laboratory. Therefore Nunc cannot guarantee that the specifications will always hold.

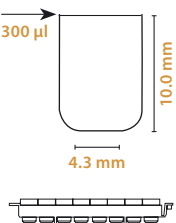
All plastics have a limited temperature range as shown in the adjacent table.

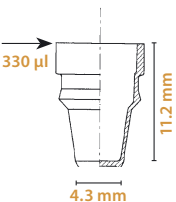
Resin	Brittleness T <sup>0*</sup>	Max. Use T <sup>0</sup>
High density polyethylene (HDPE)	-100	120
Low density polyethylene (LDPE)	-100	80
Polycarbonate (PC)	-135	135
Polyethylene terephthalate copolymer (PETG)	-40	70
Permanox (PMX)	-10	82
Polypropylene Homopolymer (PP)	0	135
Polypropylene Copolymer (PPCO)	-40	121
Polystyrene (PS)	20	90
Thermanox (TMX)	-60	65

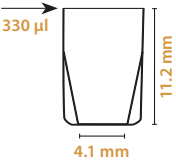
\* The brittleness temperature is the temperature at which an item made from the resin or crack if dropped. This is not the lowest use temperature if care is exercised in use and handling.

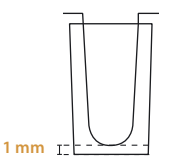
# Well and Tube Geometry

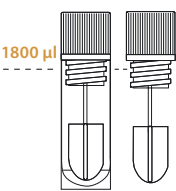
Corresponding figures relevant for designing solid phase assays in Nunc products.

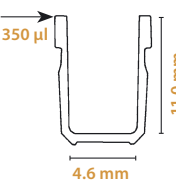
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>C8 Break Apart Modules</b>				
	250	190	8.5	7.6
	200	159	6.9	7.9
	175	143	6.1	8.2
	150	127	5.2	8.5
	125	110	4.4	8.8
	100	94	3.5	9.4
	75	78	2.7	10.4
	50	61	1.8	12.2

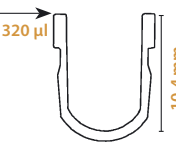
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>NucleoLink Modules</b>				
	330	234	11.2	7.1
	200	159	8.1	7.9
	100	96	5.2	9.6
	50	57	2.4	11.4
	25	37	1.6	14.8

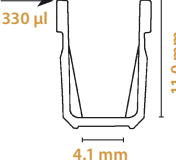
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>C8 StarWell™ Modules</b>				
	250	23	7.7	9.0
	200	198	6.3	9.9
	175	193	5.7	11.0
	150	166	4.9	11.0
	125	146	4.2	11.7
	100	125	3.4	12.5
	75	100	2.6	13.3
	50	72	1.8	14.4

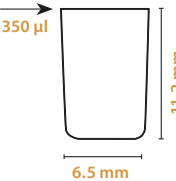
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>TSP in MicroWell™ F</b>				
	250	95	9.7	3.8
	200	75	7.6	3.8
	150	53	5.6	3.5
	125	41	4.6	3.3
	100	29	3.5	2.9
	75	20	2.8	2.4
	50	9	1.8	1.8
	50	55	3.4	11.0

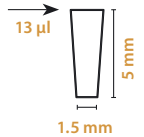
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>Immuno Stick</b>				
				
	Volume in tubes $\mu\text{l}$	Paddle area covered	Liquid height on paddle mm	Area/volume $\text{cm}^2/\text{cm}^3$
	1000	520	8.5 (0.7)	5.2
	500	335	10.5 (0.7)	6.7
	250	176	6.2 (0.7)	7.0

Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>C8 LockWell™ Modules</b>				
	250	188	7.9	7.5
	200	157	6.4	7.8
	175	141	5.6	8.1
	150	126	4.8	8.4
	125	110	4.0	8.8
	100	94	3.2	9.4
	75	78	2.4	10.4
	50	62	1.6	12.5

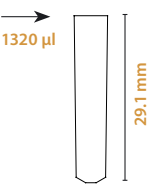
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>U8 LockWell™ Modules</b>				
	250	178	8.6	7.1
	200	147	7.1	5.9
	175	132	6.3	7.5
	150	116	5.6	7.7
	125	101	4.8	8.0
	100	85	4.0	8.5
	75	69	3.2	9.2
	50	53	2.5	10.7

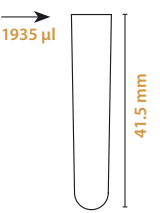
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>C8 LockWell™ StarWell™ Modules</b>				
	250	244	8.4	9.8
	200	213	6.9	10.7
	175	196	6.2	11.2
	150	177	5.4	11.8
	125	156	4.5	12.5
	100	132	3.7	13.2
	75	105	2.8	14.0
	50	75	1.9	15.1

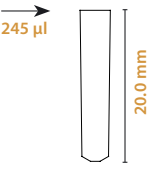
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>C8, C12 MicroWell™ Modules</b>				
	250	185	8.3	7.4
	200	154	6.7	7.7
	150	122	5.1	8.1
	125	106	4.3	8.5
	100	90	3.5	9.0
	75	73	2.7	9.7
	50	56	1.8	11.2

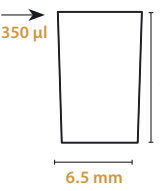
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
<b>1536 Well Plates</b>				
	12	32	4.6	26.7
	10	27	3.9	27.3
	8	23	3.2	28.0
	6	18	2.4	29.3
	4	113	1.6	31.5
	2	8	0.9	37.3
	1	5	0.5	47.2




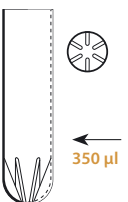
Product	Liquid volume $\mu\text{l}$	Covered area $\text{mm}^2$	Liquid height mm	Area/volume ratio $\text{cm}^2/\text{cm}^3$
96 DeepWell Plates 1.0 ml				
	1200	649	26.9	5.4
	1000	553	23.2	5.5
	800	453	19.2	5.7
	600	350	15.1	5.8
	400	245	10.7	6.1
	200	138	6.1	6.9
	100	84	3.7	8.4

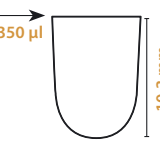
96 DeepWell Plates 2.0 ml				
	1800	952	39.1	5.3
	1600	855	35.4	5.3
	1200	658	27.7	5.5
	1000	558	23.7	5.6
	600	354	15.3	5.9
	400	247	10.8	6.2
	200	136	6.0	6.8

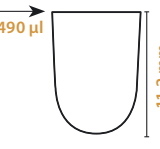
384 DeepWell Plates				
	225	244	18.1	10.9
	200	220	16.4	11.0
	150	168	12.7	11.2
	125	142	10.8	11.4
	100	116	8.8	11.6
	50	62	4.7	12.4
	25	35	2.6	14

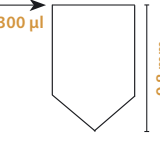
F96, F16, F8 MicroWell™ Plates and Modules				
	250	184	7.3	7.4
	200	154	5.9	7.7
	150	124	4.5	8.3
	125	109	3.8	8.7
	100	94	3.0	9.4
	75	79	2.3	10.5
	50	63	1.5	12.6

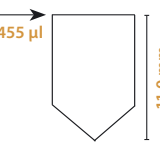
Immuno™ Tube 70 x 11				
	1500	760	27.0	5.1
	1000	520	18.4	5.2
	750	400	14.0	5.3
	500	280	9.5	5.4
	300	160	6.1	5.5
	250	140	5.6	5.6
	1	5	0.5	47.2

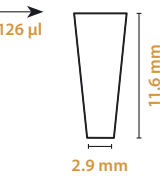
Immuno™ Tube 75 x 12 (Startube 75 x 12)				
	1500	695 (815)	24.4 (25.5)	4.6 (5.4)
	1000	480 (600)	16.9 (18.0)	4.8 (6.0)
	500	260 (380)	9.3 (10.4)	5.2 (7.6)
	350	195 (315)	7.0 (7.6)	5.6 (9.0)
	300	175 (290)	6.2 (6.8)	5.8 (9.7)
	250	155 (260)	5.4 (5.8)	6.2 (10.4)

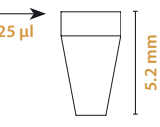
U96, U16, U8 MicroWell™ Plates and Modules 0.35 ml				
	250	184	9.0	7.4
	200	154	7.6	7.7
	150	124	6.2	8.3
	125	109	5.3	8.7
	100	94	4.7	9.4
	75	78	3.9	10.4
	50	63	3.2	12.6

U96, U16, U8 MicroWell™ Plates and Modules 0.50 ml				
	450	259	10.5	5.8
	400	234	9.6	5.9
	300	184	7.6	6.1
	200	134	5.6	6.7
	150	109	4.6	7.3
	100	84	3.5	8.4
	50	55	2.3	11.0

V96 MicroWell™ Plates 0.30 ml				
	250	177	9.2	7.1
	200	147	7.8	7.3
	150	117	6.4	7.8
	125	101	5.6	8.1
	100	86	4.9	8.6
	75	71	4.1	9.4
	50	55	3.4	11.0

V96 MicroWell™ Plates 0.45 ml				
	400	234	10	5.9
	300	187	8.2	6.2
	250	161	7.2	6.4
	200	136	6.2	6.8
	150	111	5.2	7.4
	100	86	4.2	8.6
	50	59	3.1	11.8

384 Well Plates				
	110	144	10.5	13.1
	100	133	9.7	13.2
	80	110	8.0	13.7
	60	86	6.3	14.3
	40	61	4.4	15.3
	20	36	2.3	17.6
	10	32	1.2	21.9

ShallowWell Plates				
	22.5	38.5	4.8	17.1
	20.0	35.5	4.5	17.6
	15.0	28.6	3.8	19.1
	12.5	25.2	3.4	20.2
	10.0	21.5	3.0	21.5
	5.0	13.0	1.9	26.0
	2.5	7.8	1.1	31.2

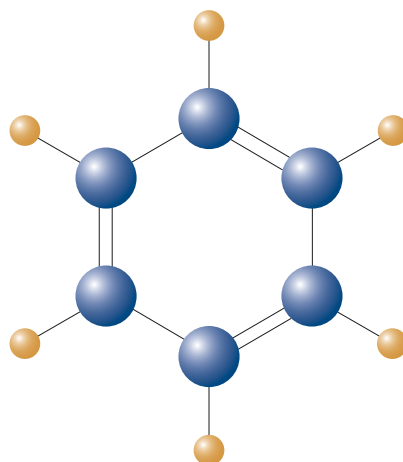
# Chemical Resistance Chart *Nunc Labware*

## Interpretation of Chemical Resistance

The Chemical Resistance Chart that follows is a general guide only. Because so many factors can affect the chemical resistance of a given product, *you should test under your own conditions.*

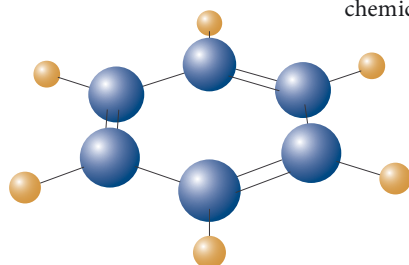
## Effects of Chemicals on Plastics

Chemicals can affect the strength, flexibility, surface appearance, color, dimensions or weight of plastics. The basic modes of interaction which cause these changes are: (1) chemical attack on the polymer chain, with resultant reduction in physical properties, including oxidation; reaction of functional groups in or on the chain; and depolymerization; (2) physical change, including absorption of solvents, resulting in softening and swelling of the plastic; permeation of solvent through the plastic; dissolution in a solvent; and (3) stress cracking from the interaction of a "stress cracking agent" with internal or external stresses. Also see "Chemical Resistance Classification."



Mixing and/or dilution of certain chemicals in Nunc labware can be potentially dangerous.

The reactive combination of different chemicals or compounds of two or more classes may cause an undesirable chemical effect or result in an increased temperature, which can affect chemical resistance (as temperature increases, resistance to attack decreases). Other factors affecting chemical resistance include pressure and internal or external stresses (e.g. centrifugation), length of exposure, and concentration of the chemical.



## Environmental Stress Cracking

Environmental stress cracking is the failure of a plastic material in the presence of certain types of chemicals.

This failure is not a result of chemical attack. Simultaneous presence of three factors causes stress cracking: tensile stress, a stress cracking agent and the inherent susceptibility of the plastic to stress cracking.

Common stress cracking agents are detergents, surface active chemicals, lubricants, oils, ultra-pure water and plating additives such as brighteners and wetting agents. Relatively small concentrations of stress cracking agent may be sufficient to cause cracking.

Mixing and/or dilution of certain chemicals may result in reactions which produce heat, which can cause product failure.

Pre-test your specific usage and always follow correct lab safety procedures.

## Caution

*Do not store strong oxidizing agents in plastic labware except that made of TEFLON FEP or PFA. Prolonged exposure causes the material to become brittle.*

*We have included a number of resins, which are not used in Nunc Brand products, as we feel that customers may find the information useful.*

### Resin Codes:

ACL	Acetal (polyoxymethylene)
ECTFE	Halar ECTFE (ethylene-chlorotrifluoroethylene copolymer)
ETFE	Tefzel ETFE (ethylene-tetrafluoroethylene)
FEP	TEFLON FEP (fluorinated ethylene propylene)
HDPE	High-density polyethylene
LDPE	Low-density polyethylene
NYL	Nylon (polyamide)
PC	Polycarbonate
PETG	Polyethylene terephthalate copolymer
PFA	TEFLON PFA (perfluoroalkoxy)
PMMA	Polymethyl methacrylate (acrylic)

### Resin Codes:

PP	Polypropylene
PPCO*	Polypropylene copolymer
PS	Polystyrene
PSF	Polysulfone
PUR	Polyurethane
PVDF	Polyvinylidene fluoride
TFE	TEFLON TFE (tetrafluoroethylene)
TMX	Thermanox
TPE	Thermoplastic elastomer
PMX	Permanox
XLPE	Cross-linked high-density polyethylene

*\*PPCO has replaced polyallomer (PA) in all products.*

## Chemical Resistance Chart

Chemical Resistance Classifications are given at the bottom of the following charts.

First letter of each pair applies to conditions at 20°C; the second to those at 50°C. At 20°C →EG← at 50°C.

Chemical	LDPE	HDPE	PP	PPCO	PETG	FEP	TFE	PFA	ECTFE	ETFE	PC	PSF	PS	PVDF	PMX	TMX
1,2,4-Trichlorobenzene	NN	NN	NN	NN	NN	EE	EE	EE	EG	EG	NN	NN	NN	EE	GF	-
1,2 Dichloroethane	NN	NN	NN	NN	NN	EE	EE	EE	EE	EE	NN	NN	NN	EE	NN	-
1,4-Dioxane	GF	GG	GF	GF	-	EE	EE	EE	EF	EF	GF	GF	NN	NN	GF	EN
2,2,4-Trimethylpentane	FN	FN	FN	FN	-	EE	EE	EE	EG	EG	NN	GF	NN	EE	FN	-
2,4 Dichlorophenol	NN	NN	NN	NN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	FN	-
2-Butanol	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EG	EG	GG	EE	EG	EN
2-Methoxyethanol	EG	EE	EE	EE	-	EE	EE	EE	EG	EG	NN	NN	NN	EE	EE	-
2-Propanol	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	EN
Acetaldehyde	GN	GF	GN	GN	-	EE	EE	EE	GF	GF	FN	NN	NN	EE	GN	-
Acetamide, Sat.	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	NN	NN	EE	-	EE	EG
Acetic Acid, 5%	EE	EE	EE	EE	G-	EE	EE	EE	EE	EE	EG	EE	EG	EE	EE	EN
Acetic Acid, 50%	EE	EE	EE	EE	FN	EE	EE	EE	EG	EG	EG	GG	GG	EE	EE	EN
Acetic Acid, Glacial	EG	EE	EG	EG	NN	EE	EE	EE	EE	EE	NN	FN	NN	EG	EG	EN
Acetic Anhydride	NN	FF	GF	GF	-	EE	EE	EE	EE	EE	NN	NN	NN	NN	EG	-
Acetone	NN	NN	EG	EE	NN	EE	EE	EE	GF	GF	NN	NN	NN	NN	EE	EF
Acetonitrile	EE	EE	FN	FN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	FN	-
Acetophenone	NN	FF	FF	FN	-	EE	EE	EE	EE	EE	NN	NN	NN	NN	GN	-
Acrylonitrile	EE	EE	FN	FN	-	EE	EE	EE	EG	EG	NN	NN	NN	GF	FN	E -
Adipic Acid	EG	EE	EE	EE	-	EE	EE	EE	EE	EE	EE	GG	EE	EE	EE	-
Allyl Alcohol	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	GF	GF	GF	EG	EG	EN
Aluminum Hydroxide	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	FN	GG	GG	EE	EE	-
Amino Acids	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	-
Ammonia	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	NN	GF	GF	EE	EE	NN
Ammonia, 25%	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	NN	EG	EG	NN	EE	NN
Ammonium Glycolate	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	GF	GG	EE	EE	EG	-
Ammonium Hydroxide, 5%	EE	EE	EE	EE	FN	EE	EE	EE	EE	EE	FN	GG	EF	EE	EE	FN
Ammonium Hydroxide, 30%	EG	EE	EG	EG	NN	EE	EE	EE	EE	EE	NN	GG	GF	EE	EG	NN
Ammonium Oxalate	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	EE	EE	EE	EE	EG	-
Ammonium Salts	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EG	EE	GG	EE	EE	GF
Amyl Alcohol	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	GF	EE	GF	EE	EE	E -
Amyl Chloride	NN	FN	NN	NN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	NN	-
Aniline	EG	EG	GF	GF	-	EE	EE	EE	GN	GN	FN	NN	NN	EF	GF	E -
Aqua Regia	NN	NN	NN	NN	-	EE	EE	EE	EG	EG	NN	NN	NN	EF	NN	NN
Arsenic Acid	GF	EG	EE	EG	-	EE	EE	EE	EE	EE	EE	-	EE	EE	EE	-
Benzaldehyde	EG	GN	EG	EG	-	EE	EE	EE	EF	EF	FN	FF	NN	EE	EG	E -
Benzenamine	EG	EG	GF	GF	-	EE	EE	EE	GN	GN	FN	NN	NN	EF	GF	E -
Benzene	NN	NN	NN	NN	NN	EE	EE	EE	EG	EG	NN	NN	NN	EE	GF	GN
Benzoic Acid, Sat.	EE	EE	EG	EG	-	EE	EE	EE	EE	EE	EG	FF	GG	EE	EG	EN
Benzyl Acetate	EG	EE	EG	EG	-	EE	EE	EE	EG	EG	FN	NN	NN	-	EG	-
Benzyl Alcohol	NN	FN	NN	NN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	NN	EF
Boric Acid	EE	EE	EE	EE	NN	EE	EE	EE	EE	EE	EE	-	EG	EE	EE	-
Bromine	NN	FN	NN	NN	-	EE	EE	EE	EG	EG	FN	NN	NN	EE	NN	-
Bromobenzene	NN	NN	NN	NN	-	EE	EE	EE	GN	GN	NN	NN	NN	EE	NN	-
Bromoform	NN	NN	NN	NN	-	EE	EE	EE	GF	GF	NN	NN	NN	EE	NN	-
Butadiene	NN	FN	NN	NN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	NN	-
Butyl Acetate	NN	FF	FF	FF	-	EE	EE	EE	EE	EE	NN	NN	NN	GN	GF	G-
Butyl Chloride	NN	NN	NN	NN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	FN	-
Butyric Acid	NN	FN	NN	NN	-	EE	EE	EE	EE	EE	FN	GG	NN	EE	NN	-

E-No damage after 30 days of constant exposure. G-Little or no damage after 30 days of constant exposure.

F-Some effect after 7 days of constant exposure. N-Immediate damage may occur. Not recommended for continuous use.

## Chemical Resistance Chart

Chemical Resistance Classifications are given at the bottom of the following charts.

First letter of each pair applies to conditions at 20°C; the second to those at 50°C. At 20°C →EG← at 50°C.

Chemical	LDPE	HDPE	PP	PPCO	PETG	FEP	TFE	PFA	ECTFE	ETFE	PC	PSF	PS	PVDF	PMX	TMX
Calcium Hydroxide	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	NN	GG	GG	EE	EE	–
Calcium Hypochlorite	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	FN	EE	GF	EE	EG	NN
Carbazole	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	NN	NN	EE	–	EE	–
Carbon Disulphide	NN	NN	NN	NN	–	EE	EE	EE	EF	EF	NN	NN	NN	EE	NN	E -
Carbon Tetrachloride	FN	GF	GF	GF	NN	EE	EE	EE	EE	EE	NN	NN	NN	EE	NN	NN
Cellosolve Acetate	EG	EE	EG	EG	–	EE	EE	EE	EG	EG	FN	NN	NN	EG	EG	–
Chlorine Water	GN	GF	FN	FN	–	EE	EE	EE	EE	EE	GF	NN	NN	EE	GF	NN
Chlorine, 10% (Moist)	GN	GF	FN	FN	–	EE	EE	EE	EE	EE	GF	NN	NN	EE	GN	NN
Chlorine, 10% in air	GN	EF	GN	GN	–	EE	EE	EE	EE	EE	EG	NN	FN	EE	GN	NN
Chlorine, wet gas	GN	GF	FN	FN	–	EE	EE	EE	EE	EE	GF	NN	NN	EE	GN	NN
Chloroacetic Acid	EE	EE	EG	EG	–	EE	EE	EE	EE	EE	FN	NN	GN	E -	EG	–
Chlorobenzene	NN	NN	NN	NN	–	EE	EE	EE	EG	EG	NN	NN	NN	EE	FN	GN
Chloroform	FN	FN	NN	NN	–	EE	EE	EE	GF	GF	NN	NN	NN	EE	NN	N -
Chromic Acid, 10%	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	GF	NN	EE	EE	EE	NN
Chromic Acid, 20%	EE	EE	GG	GF	–	EE	EE	EE	EE	EG	GF	NN	GG	EG	EE	NN
Chromic Acid, 50%	EE	EE	GF	GF	–	EE	EE	EE	EE	EE	FN	NN	FF	EG	GF	NN
Chromic:Surfuric Acid Mixture, 96%	NN	NN	NN	NN	E -	EE	EE	EE	EG	EG	NN	NN	NN	GN	NN	NN
Citric Acid, 10%	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	EE	EG	EE	EE	–
Cresol	NN	FN	GF	GF	–	EE	EE	EE	EG	EG	NN	NN	NN	EE	NN	EN
Cyclohexane	FN	FN	FN	FN	–	EE	EE	EE	EG	EG	EG	NN	NN	EE	NN	–
Cyclohexanone	NN	FN	FN	FN	NN	EE	EE	EE	EE	EE	NN	NN	NN	FN	GF	EF
Cyclopentane	NN	FN	FN	FN	–	EE	EE	EE	EE	EE	NN	NN	NN	EE	FN	–
Decahydronaphtalene	GF	EG	GF	GF	–	EE	EE	EE	EE	EE	NN	NN	NN	–	FN	–
Diacetone	NN	NN	GF	GF	–	EE	EE	EE	GF	GF	NN	NN	NN	GN	FF	E -
Diacetone Alcohol	FN	EE	EF	EF	–	EE	EE	EE	EG	EG	NN	NN	GN	NN	EE	–
Dibutylphthalate	–	- N	NN	–	–	EE	EE	EE	GN	EG	GN	NN	NN	GN	GG	FN
Diethyl Benzene	NN	FN	NN	NN	–	EE	EE	EE	EG	EG	FN	NN	NN	EE	NN	–
Diethyl Ether	NN	FN	NN	NN	–	EE	EE	EE	EG	EG	NN	NN	NN	EG	NN	EN
Diethyl Ketone	NN	NN	GG	GG	–	EE	EE	EE	GF	GF	NN	NN	NN	NN	GF	E -
Diethyl Malonate	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	FN	FF	NN	EG	EG	–
Diethylamine	NN	FN	GN	GN	–	EE	EE	EE	EG	EG	NN	GF	GG	NN	FF	–
Diethylene Dioxide	GF	GG	GF	GF	–	EE	EE	EE	GG	EG	FN	NN	NN	NN	FN	EN
Diethylene Glycol	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	GF	GG	GG	EE	EE	–
Diethylene Glycol Ethyl Ether	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	FN	FF	NN	NN	EE	–
Dimethyl Acetamide	FN	EE	EE	EE	–	EE	EE	EE	EG	EG	NN	NN	NN	NN	FG	EN
Dimethyl Formamide	EE	EE	EE	EE	–	EE	EE	EE	GG	GG	NN	NN	NN	NN	EE	EN
Dimethylsulphoxide (DMSO)	EE	EE	EE	EE	NN	EE	EE	EE	EG	EG	NN	NN	EG	NN	EE	EN
Dioxane	GF	GG	GF	GF	–	EE	EE	EE	GG	EG	FN	NN	NN	NN	FN	EN
Dimethyl Formamide	EE	EE	EE	EE	–	EE	EE	EE	GG	GG	NN	NN	NN	NN	EE	EN
Dimethylsulphoxide (DMSO)	EE	EE	EE	EE	NN	EE	EE	EE	EG	EG	NN	NN	EG	NN	EE	EN
Dioxane	GF	GG	GF	GF	–	EE	EE	EE	GG	EG	FN	NN	NN	NN	FN	EN
Dipropylene Glycol	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	GF	GG	EE	NN	EE	–
Ethanol, 40%	EG	EE	EG	EG	–	EE	EE	EE	EE	EE	EG	EG	GF	EE	EG	EN
Ether	NN	FN	NN	NN	E -	EE	EE	EE	EG	EG	NN	NN	NN	EG	NN	EN
Ethyl acetate	EE	EE	EG	EE	NN	EE	EE	EE	EE	EE	NN	NN	NN	NN	FN	EN
Ethyl Alcohol (Absolute)	EG	EE	EG	EG	–	EE	EE	EE	EE	EE	EG	EG	FN	EE	EG	EN

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First letter of each pair applies to conditions at 20°C; the second to those at 50°C. At 20°C →EG← at 50°C.

Chemical	LDPE	HDPE	PP	PPCO	PETG	FEP	TFE	PFA	ECTFE	ETFE	PC	PSF	PS	PVDF	PMX	TMX
Ethyl Alcohol, 40%	EG	EE	EE	EE	G -	EE	EE	EE	EE	EE	EG	EG	GF	EE	EG	EN
Ethyl Alcohol, 96%	EG	EG	EE	EE	G -	EE	EE	EE	EE	EE	EG	EG	GF	EE	EG	-
Ethyl Benzene	NN	NN	NN	NN	E -	EE	EE	EE	GF	GF	NN	NN	NN	-	NN	-
Ethyl Benzoate	FF	GG	GF	GF	-	EE	EE	EE	EG	EG	NN	NN	NN	NN	GF	-
Ethyl Butyrate	GN	GF	GN	GN	-	EE	EE	EE	EG	EG	NN	NN	NN	NN	FN	-
Ethyl Chloride	FN	FF	FN	FN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	FN	-
Ethyl Chloride, Liquid	FN	FF	FN	FN	-	EE	EE	EE	EE	EE	NN	NN	NN	EE	FN	-
Ethyl Cyanoacetate	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	FN	FF	GN	NN	EE	-
Ethyl Lactate	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	FN	FF	FN	NN	EE	-
Ethylene Chloride	GN	GF	FN	FN	NN	EE	EE	EE	EE	EE	NN	NN	NN	EE	NN	EF
Ethylene Glycol	EE	EE	EE	EE	E -	EE	EE	EE	EE	EE	GF	EE	EE	EE	EE	-
Ethylene Glycol	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	FN	FF	NN	NN	EE	-
Monomethyl Ether	FF	GF	FF	FF	GF	EE	EE	EE	EE	EE	FN	EE	NN	EE	FN	-
Ethylene Oxide Gas	FF	GF	FF	FF	GF	EE	EE	EE	EE	EE	FN	EE	NN	EE	FN	-
Ethylene Oxide, 100%	EG	EE	EG	EG	GF	EE	EE	EE	EG	EG	GF	GG	EF	EE	EG	-
Fatty Acids	FN	GN	FN	FN	-	EG	EG	EG	EF	EF	GF	NN	NN	GN	FN	E -
Fluorine	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EG	GF	FN	EE	EG	E -
Formaldehyde, 10%	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	EG	GF	NN	EE	EG	E -
Formaldehyde, 40%	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EG	GF	FN	EE	EG	E -
Formalin, 10%	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	EG	GF	NN	EE	EG	GN
Formalin, 40%	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	EF	FF	FF	EE	EF	EN
Formic Acid	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	EG	GG	EG	EE	EG	EN
Formic Acid, 3%	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	GF	GG	FF	EE	EG	GN
Formic Acid, 50%	EE	EE	EG	EG	-	EE	EE	EE	EE	EE	FN	EG	FF	EE	EF	GN
Formic Acid, 85%	EG	EE	EG	EG	-	EE	EE	EE	EE	EE	FN	FF	FF	EE	EF	E -
Formic Acid, 100%	EG	EG	EG	EG	-	EE	EE	EE	EG	EG	GF	EG	FN	EE	FN	E -
Freon TF	EG	EE	EE	EE	G -	EE	EE	EE	EG	EG	EF	GG	EF	EE	FF	EF
Glutaraldehyde	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	E -
Glycerine (Glycerol)	NN	GF	GF	GF	E -	EE	EE	EE	EE	EE	FN	EG	NN	EE	FN	-
Hexane	NN	NN	NN	NN	-	EE	EE	EE	GF	GF	NN	NN	NN	NN	NN	GN
Hydrazine	-	- N	EG	-	-	EE	EE	EE	EE	EE	GF	EG	FF	EE	EE	GF
Hydrobromic Acid, 69%	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EE	EE	EE	EE	EG	GN
Hydrochloric Acid, 5%	EE	EE	EE	EE	E -	EE	EE	EE	EE	EE	GF	EE	EE	EE	EG	NN
Hydrochloric Acid, 20%	EE	EE	EG	EG	-	EE	EE	EE	EE	EE	NN	EE	FF	EE	EG	GF
Hydrochloric Acid, 35%	EG	EE	EG	EG	FN	EE	EE	EE	EE	EE	GF	GF	GF	EE	EG	GN
Hydrobromic Acid, 4%	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	NN	FN	NN	EE	EE	EF
Hydrobromic Acid, 48%	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	EN
Hydrogen Peroxide, 3%	EG	EE	EG	EG	E -	EE	EE	EE	EE	EE	EE	EE	EG	EE	EG	GN
Hydrogen Peroxide, 30%	EG	EE	EG	EG	E -	EE	EE	EE	EE	EE	EE	EE	EG	E -	EG	-
Hydrogen Peroxide, 90%	NN	NN	FN	FN	-	EE	EE	EE	EG	EG	NN	NN	NN	EE	GN	EN
Iodine Crystals	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EG	EG	GG	EE	EG	EN
Isobutanol	EE	EE	EE	EE	-	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	-
Isopropanol, 100%	GF	EG	GF	GF	-	EE	EE	EE	EG	EG	NN	NN	NN	GN	GF	-
Isopropyl Acetate	FN	GF	FN	FN	-	EE	EE	EE	EG	EG	NN	NN	NN	-	NN	
Isopropyl Ether	NN	NN	NN	NN	-	EE	EE	EE	EG	EG	NN	NN	NN	EE	EE	-
Lactic Acid, 3%	EG	EE	EG	EG	FN	EE	EE	EE	EE	EE	EG	EE	GG	EG	EG	EN
Lactic Acid, 85%	EG	EE	EG	EG	NN	EE	EE	EE	EG	EG	EG	EE	GG	GF	EG	GN
Mercury	EE	EE	EE	EE	-	EE	EE	EE	EG	EG	NN	EE	EE	EE	EE	-
Methanol, 100%	EE	EE	EE	EE	G -	EE	EE	EE	EE	EE	GF	GF	FN	EE	EE	EN
Methoxyethyl Oleate	EG	EE	EG	EG	G -	EE	EE	EE	EE	EE	FN	NN	NN	-	EG	-

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## Chemical Resistance Chart

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Chemical	LDPE	HDPE	PP	PPCO	PETG	FEP	TFE	PFA	ECTFE	ETFE	PC	PSF	PS	PVDF	PMX	TMX
Methyl Acetate	FN	FF	GF	GF	–	EE	EE	EE	EG	EG	NN	NN	NN	NN	EE	–
Methyl Ethyl Ketone	NN	NN	EG	EG	G -	EE	EE	EE	GF	GF	NN	NN	NN	NN	NN	E -
Methyl Isobutyl Ketone (MIBK)	NN	NN	GF	GF	NN	EE	EE	EE	GF	GF	NN	NN	NN	GN	FF	E -
Methyl Propyl Ketone	GF	EG	GF	GF	NN	EE	EE	EE	EG	EG	NN	NN	NN	NN	FF	E -
Methyl-t-Butyl Ether	NN	FN	FN	FN	NN	EE	EE	EE	EG	EG	NN	NN	NN	EE	EE	–
Methylene Chloride	FN	FN	FN	FN	NN	EE	EE	EE	GG	GG	NN	NN	NN	NN	FN	NN
Nitric Acid, 10%	EE	EE	EE	EE	G -	EE	EE	EE	EE	EE	EG	EF	GN	EE	EE	GN
Nitric Acid, 20%	EG	GF	FF	GF	G -	EE	EE	EE	EE	EE	GF	GF	NN	EF	GF	FN
Nitric Acid, 50%	GN	GN	FN	FN	G -	EE	EE	EE	EE	EE	GF	GF	NN	EG	FN	NN
Nitric Acid, 70%	FN	GN	NN	NN	NN	EE	EE	EE	EE	EE	NN	NN	NN	GF	FN	NN
Nitrobenzene	NN	FN	NN	NN	NN	EE	EE	EE	EG	EG	NN	NN	NN	EN	NN	GN
Nitromethane	NN	FN	FN	FN	NN	EE	EE	EE	EF	EF	NN	NN	NN	GF	EF	–
n-Amyl Acetate	GF	EG	GF	GF	–	EE	EE	EE	EE	EE	NN	NN	NN	EE	GF	E -
n-Butanol	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	GF	GF	EG	EE	EG	EN
n-Butyl Acetate	GF	EG	GF	GF	–	EE	EE	EE	EG	EG	NN	NN	NN	EE	GF	–
n-Decane	FN	FN	FN	FN	–	EE	EE	EE	EE	EE	FN	GF	FN	EE	FN	–
n-Heptane	FN	GF	FF	FF	–	EE	EE	EE	EE	EE	EG	EG	NN	EE	FF	E -
n-Octane	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	GF	GF	NN	EE	EE	–
Oil, Mineral	GN	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	EE	EE	EE	EG	EE
Oxalic Acid, 10%	EE	EE	EE	EE	–	EE	EE	EE	EG	EE	EE	EE	EE	EF	EE	EN
Ozone	EG	EE	EG	EG	–	EE	EE	EE	EE	EE	EG	EE	FF	EE	EE	–
o-Dichlorobenzene	FN	FF	FN	FN	NN	EE	EE	EE	EF	EF	NN	NN	NN	EE	FN	G -
Perchloric Acid	GN	GN	GN	GN	–	GF	GF	GF	EG	EG	NN	NN	GF	EE	GN	–
Perchloric Acid, 70%	GN	GN	GN	GN	–	GF	GF	GF	EG	EG	NN	NN	GF	EE	GN	–
Perchloroethylene	NN	NN	NN	NN	–	EE	EE	EE	EE	EE	NN	NN	NN	EE	NN	GN
Phenol, 100%	NN	NN	NN	NN	NN	EE	EE	EE	EE	EE	NN	NN	NN	GN	NN	NN
Phenol, 50%	NN	NN	NN	NN	NN	EE	EE	EE	EF	EF	NN	NN	FN	EE	NN	E -
Phenol, Crystals	GN	GF	GN	GN	NN	EE	EE	EE	EE	EE	NN	FF	NN	EE	FG	–
Phenol, Liquid	NN	NN	NN	NN	NN	EE	EE	EE	EF	EF	NN	NN	FN	EE	NN	–
Phosphoric Acid, 5%	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EE	EE	GG	EE	EE	GN
Phosphoric Acid, 85%	EE	EE	EG	EG	–	EE	EE	EE	EE	EE	EG	EE	EG	EE	EG	NN
Picric Acid	NN	NN	NN	NN	–	EE	EE	EE	GF	GF	NN	NN	GF	EE	EE	–
Potassium Hydroxide, 1%	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	FN	EE	GG	EE	EE	GN
Potassium Hydroxide, 30%	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	NN	EE	GG	GF	EE	NN
Potassium Hydroxide, Concentrated	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	NN	EE	GG	EG	EE	NN
Potassium Permanganate	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EE	EE	GF	EE	EE	–
Propane	NN	FN	NN	NN	–	EE	EE	EE	EE	EE	FN	FF	NN	EE	NN	–
Propionic Acid	FN	EF	EG	EG	–	EE	EE	EE	EF	EF	NN	GG	GN	EE	EF	–
Propylene Glycol	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	GF	GG	EE	EE	EE	–
Propylene Oxide	EG	EE	EG	EG	–	EE	EE	EE	FN	FN	GF	GG	NN	FN	EG	–
Pyridine	NN	NN	NN	NN	–	EE	EE	EE	NN	EG	NN	NN	NN	NN	NN	GN
p-Chloroacetophenone	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	NN	NN	NN	NN	EE	–
p-Dichlorobenzene	FN	GF	GF	GF	–	EE	EE	EE	EF	EE	NN	NN	NN	EE	GF	G -
Resorcinol, 5%	EE	EE	EE	EE	–	EE	EE	EE	EF	EF	GF	NN	GF	EE	EE	E -
Resorcinol, Sat.	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	GF	NN	GF	EE	EE	E -
Salicylaldehyde	EG	EE	EG	EG	–	EE	EE	EE	EN	EN	GF	FF	NN	EG	EG	–

E-No damage after 30 days of constant exposure. G-Little or no damage after 30 days of constant exposure.

F-Some effect after 7 days of constant exposure. N-Immediate damage may occur. Not recommended for continuous use.

Chemical Resistance Classifications are given at the bottom of the following charts.

First letter of each pair applies to conditions at 20°C; the second to those at 50°C. At 20°C →EG← at 50°C.

Chemical	LDPE	HDPE	PP	PPCO	PETG	FEP	TFE	PFA	ECTFE	ETFE	PC	PSF	PS	PVDF	PMX	TMX
Salicylic Acid, Sat.	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	EE	EG	EE	EE	–
Salt Solutions, Metallic	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EE	EE	GG	EE	EE	EF
Silicone Oil	EG	EE	EE	EE	NN	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	–
Silver Nitrate	EG	EE	EG	EG	–	EE	EE	EE	EE	EE	EE	EE	GF	EE	EE	GN
Sodium Dichromate	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EE	EE	EE	EE	EE	–
Sodium Hydroxide, 1%	EE	GF	EE	EE	E-	EE	EE	EE	EE	EE	FN	EE	EE	EE	EE	GN
Sodium Hydroxide, 10%	EE	GF	EE	EE	E-	EE	EE	EE	EE	EE	NN	EG	EE	EF	EE	NN
Sodium Hydroxide, 50%	GG	GF	EE	EE	NN	EE	EE	EE	EE	EE	NN	EG	EG	EG	EE	NN
Sodium Hypochlorite, 15%	EE	EE	GF	GF	G-	EE	EE	EE	EE	EE	GF	EE	EE	EE	EE	NN
Stearic Acid	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	GG	EG	EE	EE	–
Sulfur dioxide	NN	FN	NN	NN	–	EE	EE	EE	EG	EG	GN	GG	NN	EE	NN	–
Sulfur Dioxide, wet or dry	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	GG	FN	GE	EE	–
Sulfur Salts	FN	GF	FN	FN	–	EE	EE	EE	EG	EG	FN	GG	NN	GF	FN	–
Sulfuric Acid, 6%	EE	EE	EE	EE	E-	EE	EE	EE	EE	EE	EE	EE	EG	EE	EE	GN
Sulfuric Acid, 20%	EE	EE	EG	EG	E-	EE	EE	EE	EE	EE	EG	EE	EG	EE	EG	GN
Sulfuric Acid, 30%	EE	EE	GG	EG	G-	EE	EE	EE	EE	EE	GF	EE	GN	EE	EG	NN
Sulfuric Acid, 60%	EG	EE	EG	EG	–	EE	EE	EE	EE	EE	GF	EE	GN	EE	EG	NN
Sulfuric Acid, 98%	GG	GG	FN	FN	NN	EE	EE	EE	EE	EE	NN	NN	NN	EG	GG	NN
Sulfuric Acid, (96%)	GG	GG	FN	FN	NN	EE	EE	EE	EE	EE	NN	NN	NN	EG	GG	NN
Tartaric Acid	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	EE	GG	EE	EE	–
Tetrahydrofuran	FN	GF	GF	GF	–	EE	EE	EE	GF	GF	NN	NN	NN	FN	FF	–
Thionyl Chloride	NN	NN	NN	NN	–	EE	EE	EE	EE	EE	NN	NN	NN	NN	NN	–
Tincture of Iodine	EG	EG	GG	GG	–	EE	EE	EE	EE	EE	NN	–	GF	EG	NN	–
Toluene	FN	FN	FN	GF	FN	EE	EE	EE	EE	EE	FN	NN	NN	EE	FF	GN
Tributyl Citrate	GF	EG	GF	GF	–	EE	EE	EE	EG	EG	NN	FF	NN	EF	GF	–
Trichloroacetic Acid (TCA)	FN	FF	FN	FN	–	EE	EE	EE	EF	EF	FN	GG	FN	EG	EE	NN
Trichloroethane	NN	FN	NN	NN	–	EG	EG	EG	NN	NN	NN	NN	NN	EE	NN	GN
Trichloroethylene	NN	FN	NN	NN	–	EE	EE	EE	EG	EG	NN	NN	NN	EE	NN	GN
Triethylene Glycol	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	EE	EG	–	EE	–
Tripropylene Glycol	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	EG	EE	EE	–	EE	–
Tris Buffer, Solution	EG	EG	EG	EG	GG	EE	EE	EE	EE	EE	GF	GF	GN	EG	EG	EE
Urea	EE	EE	EE	EE	–	EE	EE	EE	EE	EE	NN	FF	EG	EE	EE	EE
Xylene	GN	GF	FN	FN	–	EE	EE	EE	EG	EG	NN	NN	NN	EE	NN	GG

**E**-No damage after 30 days of constant exposure. **G**-Little or no damage after 30 days of constant exposure.

**F**-Some effect after 7 days of constant exposure. **N**-Immediate damage may occur. Not recommended for continuous use.

# Chemical Resistance Thermanox™

## Chemical Resistance for Nunc™ Cell Culture Thermanox™ Coverslips

Nunc™ Brand Thermanox™, or TMX coverslips, are made of a polymer that is highly resistant to most chemicals. Thermanox™ is resistant to alcohols, aldehydes, hydrocarbons, dilute acids (<10%) and dilute alkalis (<2%). Thermanox has limited resistance to chlorinated hydrocarbons; but it is not resistant to concentrated acids or bases. It is a flexible, transparent polymer that can be sectioned using a microtome and is able to withstand a wide temperature range (-70°C to +150°C).

**Thermanox™ Coverslips are available in two formats:**

### Rectangular:

10.5 x 22 mm (Cat. # 174934)  
22 x 60 mm (Cat. # 174942)  
24 x 30 mm (Cat. # 150067)

### Round:

13 mm diameter (Cat. # 174950)  
15 mm diameter (Cat. # 174969)  
22 mm diameter (Cat. # 174977)  
25 mm diameter (Cat. # 174985)

Thermanox™ Coverslips are culture treated on one side for enhanced cell attachment and growth. The treated side is packaged face up towards the label. The following tables list the chemical resistance for Thermanox™ Coverslips.

### Chemicals having no effect

1,2-dichloroethane	dimethylsulfoxide	isopropyl alcohol
1,4-dioxane	ethanol	methanol
1-bromonaphthalene	ethanolamine	methyl alcohol
acetone	ethyl acetate (RT)	methyl ethyl ketone
acetonitrile	ethyl alcohol	methyl isoamyl ketone
ammonium hydroxide (2%)	ethylene glycol	methyl isobutyl ketone
benzene	monomethyl ether acetate	n-heptane
butyl cellosolve	formamide	nitric acid (10%)
cellosolve	glacial acetic acid	n-butyl alcohol
cellosolve acetate	glycerol	n-propyl alcohol
cyclohexane	heptane	sec-butyl alcohol
cyclohexanol	hexyl alcohol	sodium hydroxide (2%)
cyclohexanone	hydrochloric acid (10%)	sulfuric acid (20%)
diacetone alcohol	isobutyl alcohol	trichloroethylene
diethylene glycol	isopropanol	xylene
diethylenetriamine	isopropyl acetate	

### Chemicals that attack Thermanox™ plastic

1,1,2,2-tetrachloroethane	ethylenediamine	n-butylamine
acetic acid	hexafluoroisopropanol	n-propyl acetate
acetic anhydride	hydrochloric acid (conc.)	n-propylamine
ammonium hydroxide (10%)	methyl cellosolve	o-chlorophenol
benzene	methyl cellosolve acetate	o-dichlorobenzene
carbon tetrachloride	methyl n-amyl ketone	phenol/tetrachloroethane
chloroform	methylene chloride	sodium hydroxide (10%)
dichloroacetic acid	m-cresol	sulfuric acid (50%)
dimethylformamide	nitric acid (35%)	
ethyl acetate (50°C)	n-butyl acetate	



## Bulletins

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Edge Effect in MicroWell™ ELISA/Adsorption Geometry in Nunc Products for Solid Phase Assays

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### Bulletin No. 2

Evaporation from Tissue Culture Plates/Vibration Patterns in Tissue Culture Vessels

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### Bulletin No. 3

Incubator Shelf "Images" in Monolayer Culture/Aspects of Cryo Preservation

[www.nuncbrand.com/go/b03](http://www.nuncbrand.com/go/b03)

### Bulletin No. 4

Aspects of Nunc MaxiSorp™ MicroWell™ Certification/Negative Edge Effect in MicroWell ELISA

[www.nuncbrand.com/go/b04](http://www.nuncbrand.com/go/b04)

### Bulletin No. 5

pH and Pressure in Closed Tissue Culture Vessels

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### Bulletin No. 6

Principles in Adsorption to Polystyrene/Stability of Nunc-Immuno MaxiSorp Surfaces

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Comparison of Blocking Agents for ELISA/Nunc-Immuno™ Stick Methods

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### Bulletin No. 8

Detergents in Polystyrene ELISA

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Covalent Binding of DNA to CovaLink™ NH, Methods and Applications/The Surface/Volume Ratio in Solid Phase Assays

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### Tech Note, Vol. 1 No. 3

Non-enzymatic Methods for Cell Harvesting

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### Tech Note, Vol. 1 No. 6

FluoroNunc™ Modules and Plates - Nunc Q.C. Procedure and the Principle Behind

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### Tech Note, Vol. 1 No. 9

Coupling of Oligosaccharides to Nunc CovaLink™ NH Modules

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### Tech Note, Vol. 1 No. 10

Performance of Nunc-Immuno™ C8 StarWell™

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### Tech Note, Vol. 2 No. 11

DIAPOPS using CovaLink™ BreakApart™ Modules

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### Tech Note, Vol. 2 No. 12

FluoroNunc™ Plates and Modules: A Solid Phase for Fluorescent Immuno Assays

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Thermal Profiles of Liquid in NucleoLink™ and TopYield™ Strips and Perkin Elmer thin wall Tubes in the Perkin Elmer 9600 Thermal Cycler

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Picking and Arraying Libraries with the Nunc Replication System

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Cell Counting and Dye Exclusion Viability Assays Using a Hemacytometer  
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## Tech Note, Vol. 4 No. 35

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C8 Black LockWell Fluoronunc MaxiSorp and PolySorp for Fluorescence Detection  
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Odor from irradiated polystyrene has no effect on embryo and sperm survival  
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## Tech Note No. 61

Imaging of intracellular oxygen consumption for assessment of mitochondrial function in live suspension cell lines: Novel application using Luxcel MitoXpress™ probes and the Nunc LiveCell Array™ slide  
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## Plate Guide

NEW

Choosing the right plate surface can give you the best possible results, as well as save time and money. Nunc Brand's plate guide has been made to help you to select the best possible plate for your application. Simply enter your selected criteria and you will see the range of Nunc plates matching your request.

*Technical drawings of the plates are also available.*

### Example

<p><b>Format</b></p> <p><input checked="" type="radio"/> <b>Any</b></p> <p><input type="radio"/> 6 Well    <input type="radio"/> 24 Well</p> <p><input type="radio"/> 8 Well    <input type="radio"/> 48 Well</p> <p><input type="radio"/> 12 Well    <input type="radio"/> 96 Well</p> <p><input type="radio"/> 16 Well    <input type="radio"/> 384 Well</p> <p><input type="radio"/> 1536 Well</p>	<p><b>Sterile</b></p> <p><input checked="" type="radio"/> <b>Any</b></p> <p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p><b>Surface</b></p> <p><input checked="" type="radio"/> <b>Any</b></p> <p><input type="radio"/> Non-treated    <input type="radio"/> Streptavidin Covalent</p> <p><input type="radio"/> MultiSorp    <input type="radio"/> Streptavidin Passive</p> <p><input type="radio"/> MaxiSorp    <input type="radio"/> Amino</p> <p><input type="radio"/> MediSorp    <input type="radio"/> Collagen I</p> <p><input type="radio"/> PolySorp    <input type="radio"/> CC<sup>2</sup></p> <p><input type="radio"/> NucleoLink    <input type="radio"/> Cell Culture</p> <p><input type="radio"/> Glutathione    <input type="radio"/> Silent Screen</p> <p><input type="radio"/> Nickel-Chelate</p>
<p><b>Polymer</b></p> <p><input checked="" type="radio"/> <b>Any</b></p> <p><input type="radio"/> PP (Polypropylene)</p> <p><input type="radio"/> PS (Polystyrene)</p>	<p><b>Bottom</b></p> <p><input checked="" type="radio"/> <b>Any</b></p> <p><input type="radio"/> Conical</p> <p><input type="radio"/> Flat</p> <p><input type="radio"/> Round</p> <p><input type="radio"/> C-shaped</p>	
<p><b>Type</b></p> <p><input checked="" type="radio"/> <b>Any</b></p> <p><input type="radio"/> Solid</p> <p><input type="radio"/> Strip</p> <p><input type="radio"/> OBP (Optical Bottom Plate)</p>	<p><b>Color</b></p> <p><input checked="" type="radio"/> <b>Any</b></p> <p><input type="radio"/> Natural</p> <p><input type="radio"/> Clear    <input type="radio"/> Red</p> <p><input type="radio"/> White    <input type="radio"/> Blue</p> <p><input type="radio"/> Black    <input type="radio"/> Yellow</p>	

- Save time
- Save money
- Better results



The Plate Guide is also accessible via direct links:  
[www.nuncplateguide.com](http://www.nuncplateguide.com)  
[www.plateguide.com](http://www.plateguide.com)