

Hellma. Where precision becomes an art.

## Product Catalogue BestCellers 2010



Cells

TrayCell

Fibre-optical systems

Calibration standards

Microplates



# 2010

## Even better informed!

Our BestCellers Product Catalogue gives you an overview of our well-established and very quick to deliver articles from our range of products.

Our brochures provide detailed information about the appropriate product groups and in addition, offer thematic information as well as handling advice.

Fax number:  
**+49 7631 13546**

All brochures are also available to download:  
[www.hellma.com/download](http://www.hellma.com/download)

Please copy this page and request brochures by fax!

TrayCell  
Ultra-Micro Cell



UV/Vis Calibrations  
Standards



Fibre-optical Systems



Microplates



Hellmanex  
Cleaning concentrate



Special edition  
Micro Flow Channels



Special edition  
Technology / Expertise

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Last name, first name

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Company

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Street

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Postal code, City

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Country

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Email



## BestCellers 2010

In this product catalogue you will find **Hellma** cells and fibre-optical probes which are normally available ex stock, including some important technical information on our products.

Detailed information about our company and about **Hellma** products can be found on our website [www.hellma.com](http://www.hellma.com), where all product specifications of **product catalogue 2010** are available to download. There is also the possibility to order some more product brochures.

If you have measuring applications and Hellma's standard selection of cells and fibre-optical systems has not yet been able to offer you the right solution: Talk to us.

In collaboration with our customers we develop individual and tailor-made solutions.

Our specialists will gladly take the time to discuss and answer any questions you might have.

To contact us  
Phone: +49 7631 182-0  
Fax: +49 7631 135-46  
e-mail: [info@hellma.com](mailto:info@hellma.com)

## Ordering

On request we will gladly send you a current price list or if you want we will tell you the price of individual products. When ordering from **Hellma** we will need to know a few things. Please check that your **order** is complete using one of the following **two options**:

### Option 1

Type
Type of material
Light path
Centre height
Quantity required
Transmission matching requirements
Polarimetric certification requirements
Antireflection or reflective coatings, if required
Type of packaging required <small>(standard packaging or a separate case)</small>

### Option 2

Order number
Quantity required
Transmission matching requirements
Polarimetric certification requirements
Antireflection or reflective coatings, if required
Type of packaging required <small>(standard packaging or a separate case)</small>

# 2010

## Spectral and polarimetric checking

On request all cells can be **spectrally calibrated** and assembled into sets of equal transmission values (measuring uncertainty  $\pm 1\%$ ).

These cells are provided with a three digit calibration code number containing coded data about the material and the transmission at

a wavelength typical for the cell material. Some cells can be **polarimetrically checked** on request. They are marked with a »P« and

are delivered together with a certificate confirming that the predetermined limit for the rotation angle of  $0.01^\circ$  is not exceeded.

## Special designs

Within the scope of technical possibilities we will be pleased to make specially designed cells and immersion probes according to

your needs and specifications. For price reasons we endeavour to use standard cells or probes as the basis for these whenever possible.

If you are interested in special designs please send us a technical drawing. Before manufacture commences, you will then receive a draw-

ing from **Hellma** and once you acknowledge approval, this drawing will serve as an agreed specification for manufacture.

## Light path and tolerances

The light path is a particularly important parameter for some photometric applications.

Please note the following data for tolerances, shown in relation to light path and material of the cells:

Material	Light path	Tolerance
Quartz glass	0.01 mm to 0.05 mm	± 0.003 mm
Quartz glass	0.1 mm to 0.2 mm	± 0.005 mm
Quartz glass	0.5 mm to 20 mm	± 0.01 mm
Quartz glass	40 mm to 100 mm	± 0.02 mm
Special optical glass	0.1 mm to 20 mm	± 0.01 mm
Special optical glass	40 mm to 100 mm	± 0.02 mm
Optical glass	10 mm to 30 mm	± 0.1 mm
Optical glass	40 mm to 100 mm	± 0.2 mm

These light path tolerances apply to absorption cells.  
For fluorescence cells, both for the direction of excitation and emission the tolerance is ± 0.05 mm.

## Material and transmission curves

Regarding the transmission curves, please note that the measurements were carried out on empty cells. The maximum transmission values (80 % - 90 %) are caused in the main by reflection losses at the four glass/air boundaries. As the losses

by reflection depend solely on the refractive index, the reflection losses of the empty cells can be calculated for each wavelength. For example, at a wavelength of 588 nm we obtain the following values:

Window material	Refractive index	Reflection losses	Transmission theoretical	Transmission measured
SUPRASIL <sup>®</sup>				
HOQ 310H	1.458	13 %	87 %	87 % ± 1 %
Borofloat <sup>®</sup>	1.473	14 %	86 %	85 % ± 1 %
UK 5/B 270	1.523	16 %	84 %	84 % ± 1 %

The table shows that the measured transmission values within the measuring uncertainty accord with the theoretical values. From this it can be concluded that the absorption in the material at a window thickness of 1.25 mm can be disregarded.

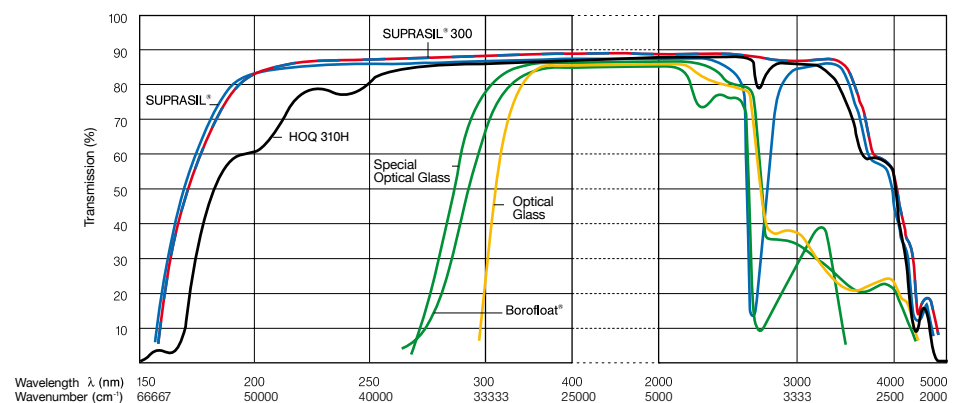
When comparing transmission data, it is absolutely essential that identical measuring conditions prevail. Should a measurement with a clean, empty cell yield significantly higher transmission values, it is likely that this is due to a measuring error.

Material	Trademarks	Wavelength
Optical glass	■ OG ■	360 nm – 2500 nm
Borofloat <sup>®</sup>	■ BF ■	330 nm – 2500 nm
Special optical glass	■ OS ■	320 nm – 2500 nm
HOQ 310H	■ UV ■	260 nm – 2500 nm
Quartz SUPRASIL <sup>®</sup>	■ QS ■	200 nm – 2500 nm
Quartz SUPRASIL <sup>®</sup> 300	■ QX ■	200 nm – 3500 nm

We can supply, on request, data sheets detailing the physical and chemical properties of the materials used.

SUPRASIL<sup>®</sup> is a registered trademark of Heraeus Quarzglas GmbH & Co. KG. DURAN<sup>®</sup> and Borofloat<sup>®</sup> are registered trademarks of Schott AG.

Transmission of empty cells made of different materials





TrayCell: Awarded at  
Innovationspreis 2008  
Baden Württemberg

## TrayCell

Fibre-Optic Ultra-Micro Measuring Cell for Sample Volumes of 0.7 µl – 5 µl



Width and depth of the TrayCell are equivalent to a standard cell.

Typical applications are:

- Nucleic acid analysis
- Protein analysis (A280, BCA, Lowry etc.)
- Determination of the incorporation frequency of fluorescent dye labels (FOI)
- All UV/Vis analysis utilizing the wavelength range of 190 nm – 1100 nm

Type	Order Number	Window Material	Light Path mm	Centre Height mm*	External Height mm*	Volume µl
105.800-UVS	105800-A3-V1-46	Quartz SUPRASIL®	0.2 (±0.02) (Faktor 50)	8.5	68.5	0.7 – 4
				15	75	
				20	80	
105.810-UVS	105810-A3-V1-46	Quartz SUPRASIL®	0.2 (±0.02) (Faktor 50)	8.5	53.0	0.7 – 4
				15	59.5	
				20	64.5	
105.800-UVS	105800-A3-V1-46	Quartz SUPRASIL®	1 (±0.02) (Faktor 10)	8.5	68.5	3 – 5
				15	75	
				20	80	
105.810-UVS	105810-A3-V1-46	Quartz SUPRASIL®	1 (±0.02) (Faktor 10)	8.5	53.0	3 – 5
				15	59.5	
				20	64.5	



105.800-UVS



105.810-UVS

The TrayCell is supplied as standard with caps for both 0.2 mm and 1 mm light path and adapters for 8.5 mm, 15 mm and 20 mm centre height.

\*Please state the centre height you require so that we can adjust the TrayCell to fit your photometer. Please check which external height you require. If you are uncertain, please tell us the make and model of your instrument and we will then recommend the suitable TrayCell.

## Caps for TrayCell

Available individually – flexible selection of the light path

Type	Order Number	Material	Light Path mm	Remark
665.703	665-703-1-40	Cap with mirror made of Quartz SUPRASIL® with aluminium mirror layer	1 (Faktor 10)	for 105.800-UVS and 105.810-UVS
665.704	665-704-0.2-40	Cap with mirror made of Quartz SUPRASIL® with aluminium mirror layer	0.2 (Faktor 50)	
665.705	665-705-2-40	Cap with mirror made of Quartz SUPRASIL® with aluminium mirror layer	2 (Faktor 5)	
665.706	665-706-0,1-40	Cap with mirror made of Quartz SUPRASIL® with aluminium mirror layer	0.1 (Faktor 100)	



665.703



665.704



665.705



665.706

Additional light paths on request in special manufacture  
For detailed information please visit [www.hellma.com/traycell](http://www.hellma.com/traycell)

## Macro Cells with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume µl	Remarks
100-OS	100-1-20	Special Optical Glass	1	45 x 12.5 x 3.5	9.5	1.5	350	glass lid
	100-2-20		2	45 x 12.5 x 4.5	9.5	1.5	700	glass lid
	100-5-20		5	45 x 12.5 x 7.5	9.5	1.5	1750	
	100-10-20		10	45 x 12.5 x 12.5	9.5	1.5	3500	
	100-20-20		20	45 x 12.5 x 22.5	9.5	1.5	7000	
	100-40-20		40	45 x 12.5 x 42.5	9.5	1.5	14000	
	100-50-20		50	45 x 12.5 x 52.5	9.5	1.5	17500	
	100-100-20		100	45 x 12.5 x 102.5	9.5	1.5	35000	
100-QS	100-1-40	Quartz SUPRASIL®	1	45 x 12.5 x 3.5	9.5	1.5	350	glass lid
	100-2-40		2	45 x 12.5 x 4.5	9.5	1.5	700	glass lid
	100-5-40		5	45 x 12.5 x 7.5	9.5	1.5	1750	
	100-10-40		10	45 x 12.5 x 12.5	9.5	1.5	3500	
	100-20-40		20	45 x 12.5 x 22.5	9.5	1.5	7000	
	100-40-40		40	45 x 12.5 x 42.5	9.5	1.5	14000	
	100-50-40		50	45 x 12.5 x 52.5	9.5	1.5	17500	
	100-100-40		100	45 x 12.5 x 102.5	9.5	1.5	35000	
100-QX	100-1-46	Quartz SUPRASIL® 300	1	45 x 12.5 x 3.5	9.5	1.5	350	glass lid
	100-2-46		2	45 x 12.5 x 4.5	9.5	1.5	700	glass lid
	100-5-46		5	45 x 12.5 x 7.5	9.5	1.5	1750	
	100-10-46		10	45 x 12.5 x 12.5	9.5	1.5	3500	
	100-20-46		20	45 x 12.5 x 22.5	9.5	1.5	7000	
	100-40-46		40	45 x 12.5 x 42.5	9.5	1.5	14000	
	100-50-46		50	45 x 12.5 x 52.5	9.5	1.5	17500	
	100-100-46		100	45 x 12.5 x 102.5	9.5	1.5	35000	
402.000-OG	402-5-10	Optical Glass	5	40 x 23.6 x 10	18,5	2	2250	
	402-10-10		10	40 x 23.6 x 15	18,5	2	4500	
	402-20-10		20	40 x 23.6 x 25	18,5	2	9000	
	402-50-10		50	40 x 23.6 x 55	18,5	2	22500	
110-OS	110-1-20	Special Optical Glass	1	52 x 12.5 x 3.5	9.5	1.5	350	
	110-2-20		2	52 x 12.5 x 4.5	9.5	1.5	700	
	110-5-20		5	46 x 12.5 x 7.5	9.5	1.5	1750	
	110-10-20		10	46 x 12.5 x 12.5	9.5	1.5	3500	
	110-20-20		20	46 x 12.5 x 22.5	9.5	1.5	7000	
	110-40-20		40	46 x 12.5 x 42.5	9.5	1.5	14000	from 40 mm
	110-50-20		50	46 x 12.5 x 52.5	9.5	1.5	17500	with 2 stoppers
110-QS	110-1-40	Quartz SUPRASIL®	1	52 x 12.5 x 3.5	9.5	1.5	350	
	110-2-40		2	52 x 12.5 x 4.5	9.5	1.5	700	
	110-5-40		5	46 x 12.5 x 7.5	9.5	1.5	1750	
	110-10-40		10	46 x 12.5 x 12.5	9.5	1.5	3500	
	110-20-40		20	46 x 12.5 x 22.5	9.5	1.5	7000	
	110-40-40		40	46 x 12.5 x 42.5	9.5	1.5	14000	from 40 mm
	110-50-40		50	46 x 12.5 x 52.5	9.5	1.5	17500	with 2 stoppers
	110-100-40		100	46 x 12.5 x 102.5	9.5	1.5	35000	
110-QX	110-1-46	Quartz SUPRASIL® 300	1	52 x 12.5 x 3.5	9.5	1.5	350	
	110-2-46		2	52 x 12.5 x 4.5	9.5	1.5	700	
	110-5-46		5	46 x 12.5 x 7.5	9.5	1.5	1750	
	110-10-46		10	46 x 12.5 x 12.5	9.5	1.5	3500	
	110-20-46		20	46 x 12.5 x 22.5	9.5	1.5	7000	



# Absorption Cells

## Macro Cells with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu\text{l}$	Remarks
<b>404.000-QX</b>	404-1-46	Quartz	1	47.5 x 23.6 x 3.5	18.5	2.5	700	with 2 stoppers
	404-2-46	SUPRASIL® 300	2	47.5 x 23.6 x 4.5	18.5	2.5	1400	
	404-10-46		10	47.5 x 23.6 x 12.5	18.5	2.5	7000	
<b>6030-OG</b>	6030-10-10	Optical Glass	10	45 x 12.5 x 12.5	9.5	1.5	3500	without lid
	6030-20-10		20	45 x 12.5 x 22.5	9.5	1.5	7000	
	6030-40-10		40	45 x 12.5 x 42.5	9.5	1.5	14000	
	6030-50-10		50	45 x 12.5 x 52.5	9.5	1.5	17500	
<b>6030-UV</b>	6030-UV-10-531	HOQ 310H	10 ( $\pm 0.05$ )	45 x 12.5 x 12.5	9.5	1.5	3500	without lid

## Semi-Micro Cells with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu\text{l}$	Remarks
<b>6040-OG</b>	6040-10-10	Optical Glass	10	45 x 12.5 x 12.5	4	3.2	1400	without lid
<b>6040-UV</b>	6040-UV-10-531	HOQ 310H	10 ( $\pm 0.05$ )	45 x 12.5 x 12.5	4	3.2	1400	without lid
<b>104-OS</b>	104-10-20	Special Optical Glass	10	45 x 12.5 x 12.5	4	3.2	1400	
	104-50-20		50	45 x 12.5 x 52.5	4	3.2	7000	
<b>104-QS</b>	104-5-40	Quartz SUPRASIL®	5	45 x 12.5 x 7.5	4	3.2	700	
	104-10-40		10	45 x 12.5 x 12.5	4	3.2	1400	
	104-50-40		50	45 x 12.5 x 52.5	4	3.2	7000	
<b>104-QX</b>	104-10-46	Quartz SUPRASIL® 300	10	45 x 12.5 x 12.5	4	3.2	700	



404.000  
10 mm



6030  
10 mm



6030-UV  
10 mm



6040  
10 mm



6040-UV  
10 mm



104  
10 mm

## Semi-Micro Cells

with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	Remarks
104B-OS	104B-10-20	Special Optical Glass	10	45 x 12.5 x 12.5	4	3.2	1400	black side walls and base
104B-QS	104-B-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	4	3.2	1400	black side walls and base
108-OS	108-000-10-20	Special Optical Glass	10	45 x 12.5 x 12.5	4	9	1000	
108-QS	108-000-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	4	9	1000	
108B-QS	108B-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	4	9	1000	black side walls and base
114-OS	114-10-20	Special Optical Glass	10	46 x 12.5 x 12.5	4	3.2	1400	
114-QS	114-10-40	Quartz SUPRASIL®	10	46 x 12.5 x 12.5	4	3.2	1400	
114B-QS	114B-10-40	Quartz SUPRASIL®	10	46 x 12.5 x 12.5	4	3.2	1400	black side walls and base

## Micro Cells

with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	Remarks
104.002-OS	104-002-10-20	Special Optical Glass	10	45 x 12.5 x 12.5	2	3.2	700	
104.002-QS	104-002-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	2	3.2	700	
104.002B-OS	104002B-10-20	Special Optical Glass	10	45 x 12.5 x 12.5	2	3.2	700	black side walls and base
104.002B-QS	104002B-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	2	3.2	700	black side walls and base
105-QS	105-10-40	Quartz SUPRASIL®	10	25 x 12.5 x 12.5	2	1.5	300	
105B-QS	105-B-10-40	Quartz SUPRASIL®	10	25 x 12.5 x 12.5	2	1.5	300	black side walls and base
108.002-OS	108-002-10-20	Special Optical Glass	10	45 x 12.5 x 12.5	2	9	500	
108.002-QS	108-002-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	2	9	500	



104B  
10 mm



108  
10 mm



108B  
10 mm



114  
10 mm



114B  
10 mm



104.002  
10 mm



104.002B  
10 mm



105  
10 mm



105B  
10 mm



108.002  
10 mm

# Absorption Cells

## Micro Cells with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu\text{l}$	Remarks
108.002B-OS	108002B-10-20	Special Optical Glass	10	45 x 12.5 x 12.5	2	9	500	black side walls and base
108.002B-QS	108002B-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	2	9	500	black side walls and base
115-QS	115-10-40	Quartz SUPRASIL®	10	40 x 12.5 x 12.5	2	1.25	400	
115B-QS	115B-10-40	Quartz SUPRASIL®	10	40 x 12.5 x 12.5	2	1.25	400	black side walls and base

## Ultra-Micro Cells with PE stopper or open with pipette tips

Type	Order Number	Window Material	Light Path mm	Centre Height mm	Outside Dim. H x W x D mm	Aperture H x W mm	Chamber Volume $\mu\text{l}$	Filling Volume $\mu\text{l}$
105.200-QS	105-200-15-40	Quartz SUPRASIL®	10	15	45 x 12.5 x 12.5	8 x 2	160	180
	105-200-85-40		10	8.5	45 x 12.5 x 12.5	8 x 2	160	180
105.201-QS	105-201-15-40	Quartz SUPRASIL®	10	15	45 x 12.5 x 12.5	5 x 2	100	120
	105-201-85-40		10	8.5	45 x 12.5 x 12.5	5 x 2	100	120
105.202-QS	105-202-15-40	Quartz SUPRASIL®	10	15	45 x 12.5 x 12.5	2.5 x 2	50	70
	105-202-85-40		10	8.5	45 x 12.5 x 12.5	2.5 x 2	50	70
105.203-QS	105-203-1015-40	Quartz SUPRASIL®	10	15	45 x 12.5 x 12.5	$\emptyset$ 2.5	50	70
	105-203-1085-40		10	8.5	45 x 12.5 x 12.5	$\emptyset$ 2.5	50	70
105.204-QS	105-204-1015-40	Quartz SUPRASIL®	10	15	45 x 12.5 x 12.5	$\emptyset$ 1.5	20	40
	105-204-1085-40		10	8.5	45 x 12.5 x 12.5	$\emptyset$ 1.5	20	40
105.020-QS	105-020-40	Quartz SUPRASIL®	10	4.5	8.1 x 12.6 x 12.6	6 x 2	120	130
105.025-QS	105-025-40	Quartz SUPRASIL®	10	4.5	12 x 12.5 x 12.5	5 x 2	120	320
105.210-QS	105210-515-40	Quartz SUPRASIL®	5	15	40 x 12.5 x 12.5	$\emptyset$ 0.8	2.5	5
	105210-585-40		5	8.5	40 x 12.5 x 12.5	$\emptyset$ 0.8	2.5	5
	1052101015-40		10	15	40 x 12.5 x 12.5	$\emptyset$ 0.8	5	10
	1052101085-40		10	8.5	40 x 12.5 x 12.5	$\emptyset$ 0.8	5	10
660.236-QS	660-236-40	Quartz SUPRASIL®	10	4,5	12 x 74,5 x 12,5	2 x 6	120 (8 x)	120 (8 x)



## Cells for Magnetic Stirrers

macro, semi-micro, with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	Remarks
109.000-QS	109-000-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	9.5	5	3500	
109.004-QS	109-004-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	4	5	1500	
119.000-QS	119-10-40	Quartz SUPRASIL®	10	49.5 x 12.5 x 12.5	9.5	5	3500	
119.004-QS	119-004-10-40	Quartz SUPRASIL®	10	49.5 x 12.5 x 12.5	4	5	1500	

## Sealable Cells

macro, semi-micro, for anaerobic applications

(with ISO thread GL 14 and screw cap with silicone rubber seal)

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	Remarks
117.100-QS	117-100-10-40	Quartz SUPRASIL®	10	56 x 12.5 x 12.5	9.5	1.5	3500	
117.104-QS	117-104-10-40	Quartz SUPRASIL®	10	56 x 12.5 x 12.5	4	1.25	1400	

## Cells with Tubes

macro, tube  $\varnothing$  8 mm, tube length 80 mm

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	Remarks
220-QS	220-1-40	Quartz SUPRASIL®	1	40 x 12.5 x 3.5	9.5	1.5	350	Quartz/DURAN® tube
	220-2-40		2	40 x 12.5 x 4.5	9.5	1.5	700	
	220-5-40		5	40 x 12.5 x 7.5	9.5	1.5	1750	
	220-10-40		10	40 x 12.5 x 12.5	9.5	1.5	3500	



109.000  
10 mm



109.004  
10 mm



119.000  
10 mm



119.004  
10 mm



117.100  
10 mm



117.104  
10 mm



220  
10 mm

# Absorption Cells

## Cylindrical Cells

macro, with PTFE stopper

Type	Order Number	Window Material	Light Path mm	Outside Ø mm	Inside Ø mm	Outside Depth mm	Volume µl	Remarks
<b>120-OS</b>	120-10-20	Special Optical Glass	10	22	19	12.5	2800	from 50 mm with 2 stoppers
	120-20-20		20	22	19	22.5	5600	
	120-50-20		50	22	19	52.5	14000	
	120-100-20		100	22	19	102.5	28000	
<b>120-QS</b>	120-000-1-40	Quartz SUPRASIL®	1	22	19	3.5	280	from 50 mm with 2 stoppers
	120-000-2-40		2	22	19	4.5	560	
	120-5-40		5	22	19	7.5	1400	
	120-10-40		10	22	19	12.5	2800	
	120-20-40		20	22	19	22.5	5600	
	120-50-40		50	22	19	52.5	14000	
	120-100-40		100	22	19	102.5	28000	
<b>120-QX</b>	120-10-46	Quartz SUPRASIL® 300	10	22	19	12.5	2800	from 50 mm with 2 stoppers
	120-50-46		50	22	19	52.5	14000	
<b>121.000-QS</b>	121-0.10-40	Quartz SUPRASIL®	0.1	22	13	20	160	2 ports and stoppers
	121-0.20-40		0.2	22	13	20	170	
	121-0.50-40		0.5	22	13	20	210	
	121-1-40		1	22	13	20	280	

## Temperature Controlled Cells

macro

Type	Order Number	Window Material	Light Path mm	Outside Ø mm	Inside Ø mm	Outside Depth mm	Volume µl	Remarks
165-QS	165-1-40	Quartz SUPRASIL®	1	22	9	30	160	2 stoppers
	165-10-40		10	22	10	12.5	800	

## Cell with two Chambers

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume µl	Remarks
<b>238-QS</b>	238-000-40	Quartz SUPRASIL®	2 x 4.375	46 x 12.5 x 12.5	9.5	1.5	2 x 1000	with 2 stoppers



## Cells for Flow-Through Measurements macro, with in/outlet tubes

Type	Order Number	Window Material	Light Path mm	Centre Height mm	Outside Dim. H x W x D mm	Aperture H x W mm	Volume $\mu$ l	Remarks
<b>130-QS</b>	130-10-40	Quartz SUPRASIL®	10		45 x 12.5 x 12.5	33 x 9.5	3200	
<b>137-QS</b>	137-1-40 137-2-40 137-5-40 137-10-40	Quartz SUPRASIL®	1 2 5 10		45 x 12.5 x 3.5 45 x 12.5 x 4.5 45 x 12.5 x 7.5 45 x 12.5 x 12.5	20 x 9 20 x 9 20 x 9 20 x 9	260 520 1300 2600	
<b>170-OS</b>	170-000-1-20	Special Optical Glass	1	all dim.	35 x 12.5 x 12.5	17.5 x 6.5	120	
<b>170-QS</b>	170-0.10-40 170-000-1-40 170-000-2-40	Quartz SUPRASIL®	0.1 1 2	all dim.	35 x 12.5 x 12.5 35 x 12.5 x 12.5 35 x 12.5 x 12.5	17.5 x 3.5 17.5 x 6.5 17.5 x 6.5	6.2 120 240	
<b>175.000-QS</b>	175-15-10-40 175-85-10-40	Quartz SUPRASIL®	10 10	15 8.5	45 x 12.5 x 12.5 38.5 x 12.5 x 12.5	11 x 6.5 11 x 6.5	750 750	

## compact, with 2 screw connectors M 6 x 1 and FEP tubes (outside $\varnothing$ 1.9 mm, inside $\varnothing$ 1.1 mm, 500 mm long)

Type	Order Number	Window Material	Light Path mm	Centre Height mm	Outside Dim. H x W x D mm	Aperture H x W mm	Volume $\mu$ l	Remarks
<b>170.700-QS</b>	170700-0.1-40 170700-0.2-40 170700-0.5-40 170-700-1-40 170-700-2-40	Quartz SUPRASIL®	0.1 0.2 0.5 1 2	all dim.	35 x 12.5 x 12.5 35 x 12.5 x 12.5 35 x 12.5 x 12.5 35 x 12.5 x 12.5 35 x 12.5 x 12.5	17.5 x 3.5 17.5 x 3.5 17.5 x 3.5 17.5 x 3.5 17.5 x 3.5	6.2 12.4 31 62 124	up to 0.5 mm with bypass

## semi-micro, with in/outlet tubes

Type	Order Number	Window Material	Light Path mm	Centre Height mm	Outside Dim. H x W x D mm	Aperture H x W mm	Volume $\mu$ l	Remarks
<b>174-QS</b>	174-10-40	Quartz SUPRASIL®	10		48 x 12.5 x 12.5	36 x 4	1500	
<b>176.000-QS</b>	176-15-10-40 176-85-10-40 176-50-40 176-50-85-40	Quartz SUPRASIL®	10 10 50 50	15 8.5 15 8.5	45 x 12.5 x 12.5 38.5 x 12.5 x 12.5 45 x 12.5 x 52.5 38.5 x 12.5 x 52.5	11 x 4 11 x 4 11 x 4 11 x 4	450 450 2250 2250	



130  
10 mm



137  
10 mm



170  
1 mm



175.000  
10 mm



170.700  
1 mm



174  
10 mm



176.000  
10 mm

## Cells for Flow-Through Measurements

compact, with 2 screw connectors M 6 x 1 and FEP tubes

(outside Ø 1.9 mm, inside Ø 1.1 mm, 500 mm long)

Type	Order Number	Window Material	Light Path mm	Centre Height mm	Outside Dim. H x W x D mm	Aperture H x W mm	Volume µl	Remarks
<b>176.700-QS</b>	1767005-15-40	Quartz SUPRASIL®	5	15	35 x 12.5 x 12.5	11 x 3.5	195	
	1767005-85-40		5	8.5	35 x 12.5 x 12.5	11 x 3.5	195	
	1767001510-40		10	15	35 x 12.5 x 12.5	11 x 3.5	390	
	1767008510-40		10	8.5	35 x 12.5 x 12.5	11 x 3.5	390	
	1767001550-40		50	15	35 x 12.5 x 52.5	11 x 3.5	1950	
	1767008550-40		50	8.5	35 x 12.5 x 52.5	11 x 3.5	1950	
<b>176.703-QS</b>	176703-Z15-40	Quartz SUPRASIL®	10	15	35 x 12.5 x 12.5	8 x 2	160	
	176703-10-85-40		10	8.5	35 x 12.5 x 12.5	8 x 2	160	

micro, ultra-micro, with in/outlet tubes

<b>178.010-OS</b>	1780101015-20	Special Optical Glass	10	15	45 x 12.5 x 12.5	Ø 3	80	light path 50 mm on request
	178010-85-20		10	8.5	38.5 x 12.5 x 12.5	Ø 3	80	
<b>178.010-QS</b>	1780101015-40	Quartz SUPRASIL®	10	15	45 x 12.5 x 12.5	Ø 3	80	
	178-010-10-40		10	8.5	38.5 x 12.5 x 12.5	Ø 3	80	
	178-010-50-40		50	15	45 x 12.5 x 52.5	Ø 3	370	
	178010-50-85-40		50	8.5	38.5 x 12.5 x 52.5	Ø 3	370	
<b>178.011-OS</b>	178011-15-20	Special Optical Glass	10	15	45 x 12.5 x 12.5	Ø 2	30	
	178011-85-20		10	8.5	38.5 x 12.5 x 12.5	Ø 2	30	

compact, with 2 screw connectors M 6 x 1 and FEP tubes

(outside Ø 1.9 mm, inside Ø 1.1 mm, 500 mm long)

<b>178.710-OS</b>	178-710-20	Special Optical Glass	10	15	35 x 12.5 x 12.5	Ø 3	80	
	178-710-10-20		10	8.5	35 x 12.5 x 12.5	Ø 3	80	
<b>178.710-QS</b>	178-710-10-40	Quartz SUPRASIL®	10	15	35 x 12.5 x 12.5	Ø 3	80	
	1787108510-40		10	8.5	35 x 12.5 x 12.5	Ø 3	80	
	1787101550-40		50	15	35 x 12.5 x 52.5	Ø 3	370	
	178-710-50-40		50	8.5	35 x 12.5 x 52.5	Ø 3	370	
<b>178.711-OS</b>	178-711-10-20	Special Optical Glass	10	15	35 x 12.5 x 12.5	Ø 2	30	
	1787118510-20		10	8.5	35 x 12.5 x 12.5	Ø 2	30	
<b>178.712-OS</b>	178-712-10-20	Special Optical Glass	10	15	35 x 12.5 x 12.5	Ø 1,5	18	
	178712-10-20		10	8.5	35 x 12.5 x 12.5	Ø 1,5	18	
<b>178.712-QS</b>	1787121510-40	Quartz SUPRASIL®	10	15	35 x 12.5 x 12.5	Ø 1,5	18	
	1787128510-40		10	8.5	35 x 12.5 x 12.5	Ø 1,5	18	



176.700  
10 mm

176.700  
50 mm

176.703  
10 mm

178.010  
10 mm

178.010  
50 mm

178.011  
10 mm

178.710  
10 mm

178.710  
50 mm

178.711  
10 mm

178.712  
10 mm

## Macro Cells

with PTFE lid or stopper, triangular cell

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Vol. $\mu$ l	No. of windows	Remarks
101-OS	101-10-20	Special Optical Glass	10 x 10	45 x 12.5 x 12.5	10	1.25	3500	4	on request with a polished base
101-QS	101-10-40 101-20-40	Quartz SUPRASIL®	10 x 10 10 x 20	45 x 12.5 x 12.5 45 x 12.5 x 22.5	10 10	1.25 1.25	3500 7000	4 4	on request with a polished base
111-OS	111-10-20	Special Optical Glass	10 x 10	46 x 12.5 x 12.5	10	1.25	3500	4	on request with a polished base
111-QS	111-10-40	Quartz SUPRASIL®	10 x 10	46 x 12.5 x 12.5	10	1.25	3500	4	on request with a polished base
111.061-QS	111-061-40	Quartz SUPRASIL®		46 x 12.4 x 12.4	10	1.25	1750	3	on request with a polished base

## Semi-Micro Cells

with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Vol. $\mu$ l	Remarks
104F-OS	104F-10-20	Special Optical Glass	10 x 4	45 x 12.5 x 12.5	4	1.25	1400	on request with a polished base
104F-QS	104F-10-40	Quartz SUPRASIL®	10 x 4	45 x 12.5 x 12.5	4	1.25	1400	on request with a polished base
108F-QS	108-F-10-40	Quartz SUPRASIL®	10 x 4	45 x 12.5 x 12.5	4	9	1000	on request with a polished base
114F-QS	114F-10-40	Quartz SUPRASIL®	10 x 4	46 x 12.5 x 12.5	4	1.25	1400	on request with a polished base

## Micro Cells

with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Vol. $\mu$ l	Remarks
104.002F-QS	104002F-10-40	Quartz SUPRASIL®	10 x 2	45 x 12.5 x 12.5	2	1.25	700	on request with a polished base
108.002F-QS	108002F-10-40	Quartz SUPRASIL®	10 x 2	45 x 12.5 x 12.5	2	9	500	on request with a polished base
115F-QS	115-F-10-40	Quartz SUPRASIL®	10 x 2	40 x 12.5 x 12.5	2	1.25	400	on request with a polished base



101  
10x10mm



111  
10x10mm



111.061



104F  
10x4mm



108F  
10x4mm



114F  
10x4mm



104.002F  
10x2mm



108.002F  
10x2mm



115F  
10x2mm

## Micro Cells with and without PTFE stopper

Type	Order Number	Window Material	Light Path mm	Centre Height mm*	Outside Dim. H x W x D mm	Inside Dim. H x W x D mm	Base Thickn. mm	Vol. $\mu$ l	No. of windows	Remarks
101.015-QS	101-015-40	Quartz SUPRASIL®	3 x 3		21 x 5.4 x 5.4	19.9 x 3 x 3	1.1	130	5	
013.013	013-013-15-71 013-013-85-71			15 8.5	50.5 x 12.5 x 12.5 44 x 12.5 x 12.5					holder for cell type 101.015
101.016-QS	101-016-40	Quartz SUPRASIL®	5 x 5		33.5 x 6.9 x 6.9	32.7 x 5 x 5	0.8	600	5	
013.016	013-016-71				44 x 12.5 x 12.5					holder for cell type 101.016
101.057-QS	101-057-40	Quartz SUPRASIL®	5 x 5		45 x 7.5 x 7.5	43.75 x 5 x 5	1.25	850	5	
111.057-QS	111-057-40	Quartz SUPRASIL®	5 x 5		46 x 7.5 x 7.5	38.75 x 5 x 5	1.25	850	5	
013.011	013-011-71				44 x 12.5 x 12.5					holder for cell type 111.057 and 101.057

## Micro Cells with PE stopper

Type	Order Number	Window Material	Light Path mm	Centre Height mm*	Outside Dim. H x W x D mm	Aperture H x W mm	Camber Volume $\mu$ l	Filling Volume $\mu$ l	No. of windows
105.250-QS	105-250-15-40 105-250-85-40	Quartz SUPRASIL®	10 x 2 10 x 2	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	5 x 2 5 x 2	100 100	120 120	3 3
105.251-QS	105-251-15-40 105-251-85-40	Quartz SUPRASIL®	3 x 3 3 x 3	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	5 x 3 5 x 3	45 45	70 70	3 3
105.252-QS	105-252-15-40 105-252-85-40	Quartz SUPRASIL®	1.5 x 1.5 1.5 x 1.5	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	5 x 1.5 5 x 1.5	12 12	30 30	3 3
105.253-QS	105-253-15-40 105-253-85-40	Quartz SUPRASIL®	10 x 2 10 x 2	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	5 x 2 5 x 2	100 100	120 120	3 3
105.254-QS	105-254-15-40 105-254-85-40	Quartz SUPRASIL®	3 x 3 3 x 3	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	5 x 3 5 x 3	45 45	70 70	3 3



## Fluorescence Cells for Magnetic Stirrers

macro, semi-micro, with PTFE lid or stopper

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	No. of windows
109.000F-QS	109000F-10-40	Quartz SUPRASIL®	10 x 10	45 x 12.5 x 12.5	10	5	3500	4
119.000F-QS	119F-10-40	Quartz SUPRASIL®	10 x 10	49.5 x 12.5 x 12.5	10	5	3500	4
109.004F-QS	109004F-10-40	Quartz SUPRASIL®	10 x 4	45 x 12.5 x 12.5	4	5	1500	4
119.004F-QS	119004F-10-40	Quartz SUPRASIL®	10 x 4	49.5 x 12.5 x 12.5	4	5	1500	4

## Sealable Cells

macro, semi-micro, for anaerobic applications

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	No. of windows
117.100F-QS	117100F-10-40	Quartz SUPRASIL®	10 x 10	56 x 12.5 x 12.5	10	1.25	3500	4
117.104F-QS	117104F-10-40	Quartz SUPRASIL®	10 x 4	56 x 12.5 x 12.5	4	1.25	1400	4

With ISO thread GL 14 and screw cap with silicone rubber seal.

## Cells with Tubes Quartz/DURAN®

macro, tube  $\varnothing$  8 mm, tube length 80 mm

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume $\mu$ l	No. of windows
221-QS*	221-10-40	Quartz SUPRASIL®	10 x 10	40 x 12.5 x 12.5	10	1.25	3500	4
221.001-QS**	221001-10-80	Quartz SUPRASIL®	10 x 10 Tol.+/- 0.2	40 x 12.5 x 12.5	10	1.25	3500	4

\* on request with a polished base

\*\* for measurements at high and low temperatures



109.000F  
10 x 10 mm



119.000F  
10 x 10 mm



109.004F  
10 x 4 mm



119.004F  
10 x 4 mm



117.100F  
10 x 10 mm



119.004F  
10 x 4 mm



221  
10 x 10 mm



221.001  
10 x 10 mm

## Cells for Flow-Through Measurements

macro, with in/outlet tubes

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Aperture H x W mm	Volume $\mu\text{l}$	No. of windows	Remarks
<b>131-QS</b>	131-10-40	Quartz SUPRASIL®	10 x 10	45 x 12.5 x 12.5	33 x 10	3300	4	base and lid 6 mm

semi-micro, with in/outlet tubes

Type	Order Number	Window Material	Light Path mm	Centre Height mm*	Outside Dim. H x W x D mm	Aperture H x W mm	Volume $\mu\text{l}$	No. of windows
<b>176.050-QS</b>	176-050-40	Quartz SUPRASIL®	10 x 4	15	45 x 12.5 x 12.5	11 x 4	450	3
	176050-10-85-40		10 x 4	8.5	38.5 x 12.5 x 12.5	11 x 4	450	3

compact, with 2 screw connectors M 6 x 1 and FEP tubes

(outside  $\varnothing$  1.9 mm, inside  $\varnothing$  1.1 mm, 500 mm long)

Type	Order Number	Window Material	Light Path mm	Centre Height mm*	Outside Dim. H x W x D mm	Aperture H x W mm	Volume $\mu\text{l}$	No. of windows
<b>176.751-QS</b>	176-751-15-40	Quartz SUPRASIL®	3 x 3	15	35 x 12.5 x 12.5	11 x 3	100	3
	176-751-85-40		3 x 3	8.5	35 x 12.5 x 12.5	11 x 3	100	3
<b>176.754-QS</b>	176-754-10-15-40	Quartz SUPRASIL®	10 x 2.5	15	35 x 12.5 x 12.5	11 x 2.5	275	4
	176-754-10-85-40		10 x 2.5	8.5	35 x 12.5 x 12.5	11 x 2.5	275	4

## Dye-Laser Cell

macro, with PTFE stoppers

Type	Order Number	Window Material	Outside Dim. H x W x D mm	Inside cross section mm	Volume $\mu\text{l}$	No. of windows	Remarks
<b>111.070-QS</b>	111-070-40	Quartz SUPRASIL®	46 x 12.5 x 12.5	10 x 10	3500	4	on request with a polished base



131  
10 x 10 mm



176.050  
10 x 4 mm



176.751  
3 x 3 mm



176.754  
10 x 2,5 mm



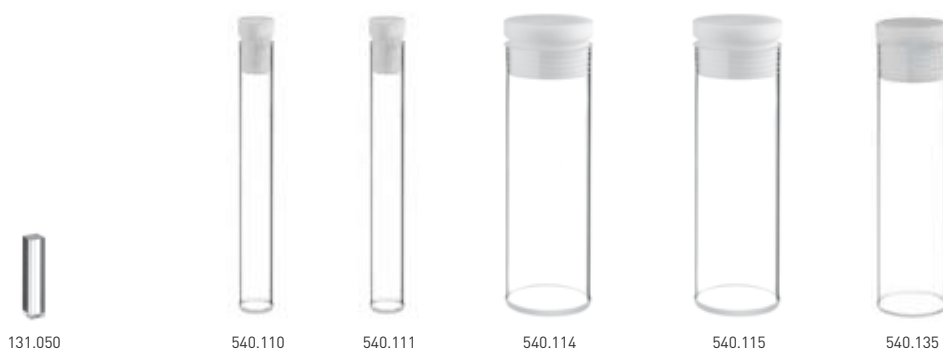
111.070  
10 x 10 mm

## Cell for Cytometry

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside cross section mm	Volume $\mu$ l	Remarks
131.050-QS	131-050-40	Quartz SUPRASIL <sup>®</sup>	0.25 x 0.25	20.3 x 4.2 x 4.2	0.25 x 0.25	1.3	flow channel surfaces polished

## Cells for Light-Scattering Measurements with PTFE stoppers

Type	Order Number	Window Material	Outside Dim. H x $\emptyset$ mm	Inside Dim. H x $\emptyset$ mm	Volume $\mu$ l	Remarks
540.110-QS	540-110-80	Quartz SUPRASIL <sup>®</sup>	75 x 10	74 x 8	2800	
540.111-QS	540-111-80	Quartz SUPRASIL <sup>®</sup>	75 x 10	74 x 8	2800	polished outer cylinder
540.114-QS	540-114-80	Quartz SUPRASIL <sup>®</sup>	75 x 25	73 x 22.6	22000	
540.115-QS	540-115-80	Quartz SUPRASIL <sup>®</sup>	75 x 25	73 x 22.6	22000	polished outer cylinder
540.135-QS	540-135-20-40	Quartz SUPRASIL <sup>®</sup>	75 x 20	74 x 18	14000	



131.050

540.110

540.111

540.114

540.115

540.135

# Cells and Optical Elements for Special Applications

## Cell for Turbidity Measurements

rectangular cell

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Dim. H x W x D mm	Volume $\mu\text{l}$	Remarks
<b>402.013-OG</b>	402-013-10	Optical Glass	25 x 25	70 x 30 x 30	67 x 25 x 25	25000	25 ml marking, 5 windows

## Cells for Reflection Measurements

cylindrical cells, without lids

Type	Order Number	Window Material	Outside Dim. H x $\emptyset$ mma	Inside Dim. H x $\emptyset$ mm	Volume $\mu\text{l}$	Remarks
<b>692.091-OG</b>	692-091-12	Optical Glass	25 x 34	23 x 31.6	12000	
<b>692.103-BF</b>	692-103-23	Borofloat®	30 x 50	27.5 x 45	32000	
<b>692.104-BF</b>	692-104-23	Borofloat®	40.5 x 60	39 x 55.6	73000	



402.013



692.091



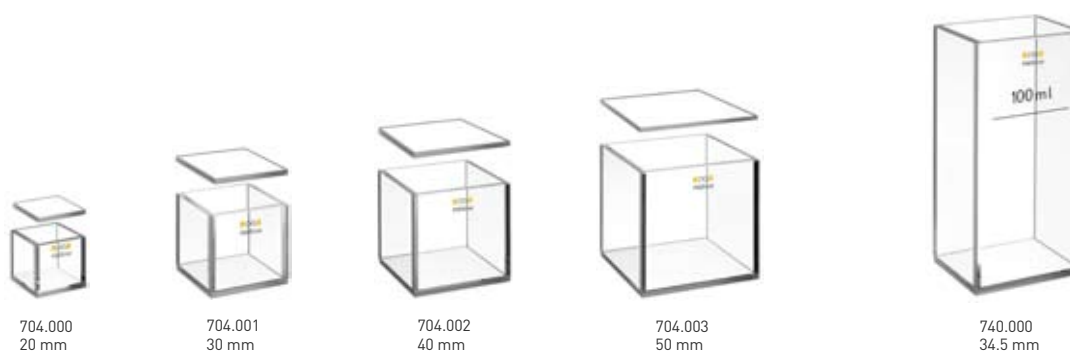
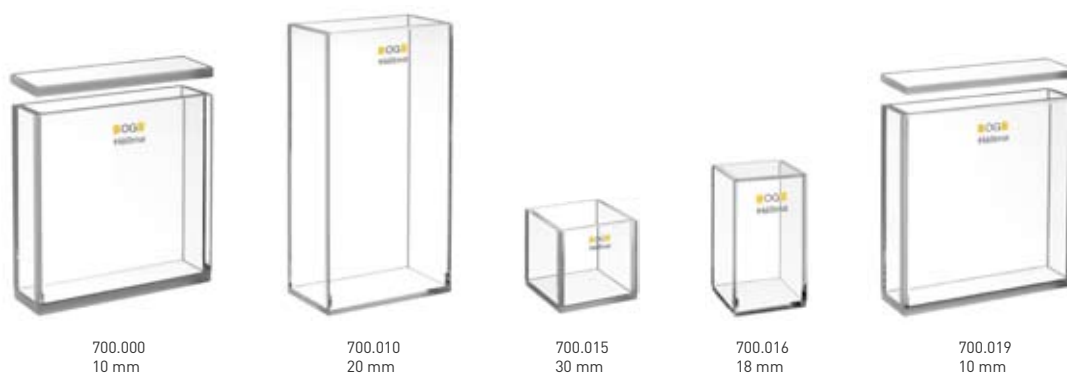
692.103



692.104

## Large Cells with glass lids

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Dim. H x W x D mm	Volume μl	Remarks
<b>700.000-OG</b>	700-000-10-10 700-000-20-10	Optical Glass	10 ± 0.2 20 ± 0.2	53 x 55 x 15 53 x 55 x 25	50 x 50 x 10 50 x 50 x 20	20000 40000	
<b>700.010-OG</b>	700-010-20-10	Optical Glass	20 ± 0.2	82 x 44.4 x 24.4	80 x 40 x 20	56000	without lid
<b>700.015-OG</b>	700-015-10	Optical Glass	28 ± 0.2	35 x 35 x 32	33 x 31 x 28	22000	without lid
<b>700.016-OG</b>	700-016-10	Optical Glass	18 ± 0.2	38 x 22 x 22	36 x 18 x 18	10000	without lid
<b>700.019-OG</b>	700-019-10	Optical Glass	10 ± 0.2	55 x 55 x 15	52.5 x 50 x 10	20000	
<b>704.000-OG</b>	704-000-20-10	Optical Glass	20 ± 0.2	22.5 x 25 x 25	20 x 20 x 20	6000	
<b>704.001-OG</b>	704-001-30-10	Optical Glass	30 ± 0.2	32.5 x 35 x 35	30 x 30 x 30	22500	
<b>704.002-OG</b>	704-002-40-10	Optical Glass	40 ± 0.2	42.5 x 45 x 45	40 x 40 x 40	56000	
<b>704.003-OG</b>	704-003-50-10	Optical Glass	50 ± 0.5	52.5 x 55 x 55	50 x 50 x 50	88000	
<b>740.000-OG</b>	740-000-10	Optical Glass	34.5 ± 0.2	100 x 50 x 39.5	97 x 44 x 34.5	100000	without lid



## Demountable Cells cells with detachable windows

Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Thick- ness mm	Inside Width mm	Volume $\mu$ l	Remarks
<b>106-QS</b>	106-0.01-40	Quartz SUPRASIL®	0,01 ± 0,003	45 x 12,5	2,5	9	2,6	
	106-0.10-40		0,1 ± 0,005	45 x 12,5	2,6	9	26	
	106-0.20-40		0,2 ± 0,005	45 x 12,5	2,7	9	52	
	106-0.50-40		0,5 ± 0,010	45 x 12,5	3	9	130	
<b>013.000</b>	013-000-71			45 x 12,5 x 12,5				holder for cells with detachable windows, for cell type 106
<b>124-QS</b>	124-0.1-40	Quartz SUPRASIL®	0,1 ± 0,005	∅ 22	2.6	∅ 15	18	
<b>020.001</b>	020-001-761	Spring clap	0,01 - 1					for cell type 124 and 201

## Flat Optics

Type	Order Number	Window Material	Thickness mm	Outside ∅ mm	Dimension H x W mm	Remarks
<b>201</b>	201-1-23	Duran	1 ± 0,01	∅ 21		for Spring clap 020.001
<b>201</b>	201-2.5-23	Duran	2,5 ± 0,01	∅ 21		for Spring clap 020.002
<b>202-QS</b>	202-40	Quartz SUPRASIL®	1,25	∅ 22		
<b>202-QX</b>	202-46	Quartz SUPRASIL® 300	1,25	∅ 22		
<b>020.001</b>	020-001-761	Spring clap	0,01 - 1			for cell type 124 + 201/202
<b>020.002</b>	020-002-761	Spring clap	2 - 2,5			for cell type 201/202
<b>665.000-QS</b>	665-000-40	Quartz SUPRASIL®	1,25		45 x 12,5	
<b>665.000-QX</b>	665-000-46	Quartz SUPRASIL® 300	1,25		45 x 12,5	

## Other Accessories

Type	Order Number	Description	Remarks
<b>013.101</b>	013-101-71	Aluminium spacer 38 x 12,5 x 9 mm	to fit cells with 1 mm light path into 10 mm cell holder
<b>013.102</b>	013-102-71	Aluminium spacer 38 x 12,5 x 8 mm	to fit cells with 2 mm light path into 10 mm cell holder
<b>013.105</b>	013-105-71	Aluminium spacer 38 x 12,5 x 5 mm	to fit cells with 5 mm light path into 10 mm cell holder



106 013.000



020.001 124-QS



020.002 201 Duran 202



665.000



013.101 013.102 013.105

## Quartz Microplates

Type	Order Number	Description	Outside Dim. H x W x D mm	Base mm	Diameter mm	Wells Depth mm	Volume μl
<b>730.009-QG</b>	730-009-44	Quartz Microplate** with 96 wells Base: Synthetic Quartz Glass	14.5 x 127 x 85.5	2*	6.6	12.5	300
<b>730.009B-QG</b>	730009-B-44	Black Quartz Microplate** with 96 wells Base: Synthetic Quartz Glass	14.5 x 127 x 85.5	2*	6.6	12.5	300

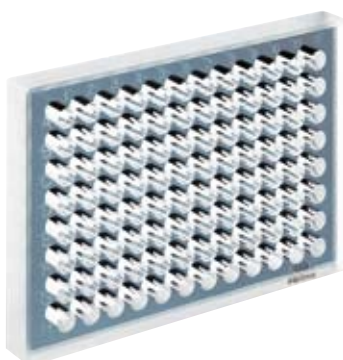
QG is synthetic quartz glass with a transmission over 80% between 200 nm and 2500 nm for an empty cell.

\* On request base with reduced thickness down to 0.5 mm.

\*\* Available made of Borofloat<sup>®</sup> on request.

## Cleaning of cells and optical components

Type	Order Number	Description
<b>320.003</b>	9-307-011-4-507	Hellmanex <sup>®</sup> III Liquid cleaning concentrate, for glass, quartz cells and optical components Selling unit: 1.3 kg PE bottle (1.0 l)



730.009-QG



730.009B-QG



320.003

# Calibration Standards

With the accreditation according to DIN EN ISO 17025, Hellma GmbH & Co KG has the only accredited calibration laboratory in Germany that produces and certifies liquid and solid calibration filters made for

testing spectrophotometers. Thus users ensure the traceability of their calibrations carried out to references of the NIST, by which an international comparability of measurement results is assured.

As a result, procedures in laboratories gain greater transparency and improved protection of the measurement results.



DIN EN ISO 17025



## Solid Calibration Standards for spectrophotometers

Type	Order Number	Usage	Consisting of	Material	Wavelength nm
666.000	666-000	Checking the wavelength and photometric accuracy	666-F1 666-F2 666-F3 666-F4 666-F0	Holmium Oxide Glass Filter Neutral Density Glass Filter NG 11 Neutral Density Glass Filter NG 5 Neutral Density Glass Filter NG 4 Empty Filter Mount	279, 361, 454, 536, 638 440; 465; 546.1; 590; 635 440; 465; 546.1; 590; 635 440; 465; 546.1; 590; 635

### available individually

Type	Order Number	Usage	Material	Wavelength nm
666-F1	666-000F1-339	To check the wavelength accuracy	Holmium Oxide Glass Filter	279, 361, 454, 536, 638
666-F2	666-000F2-39	To check the photometric accuracy (nominal absorbance 0.25)	Neutral Density Glass Filter NG 11	440; 465; 546.1; 590; 635
666-F3	666-000F3-38	To check the photometric accuracy (nominal absorbance 0.5)	Neutral Density Glass Filter NG 5	440; 465; 546.1; 590; 635
666-F4	666-000F4-37	To check the photometric accuracy (nominal absorbance 1.0)	Neutral Density Glass Filter NG 4	440; 465; 546.1; 590; 635
666-F203	666-000F203-36	To check the photometric accuracy (nominal absorbance 2,0)	Neutral Density Glass Filter NG 4	440; 465; 546,1; 590; 635
666-F7	666-000F7-323	To check the photometric accuracy To check the wavelength accuracy	Didymium Glass Filter BG 36	270, 280, 300, 320, 340 329, 472, 512, 681, 875
666-F0	666-F0-71	Empty Filter Mount		

Outside dimensions: H x W x D: 48 mm x 12,5 mm x 12,5 mm

Complete Set 666.000



666-F0

666-F1

666-F2

666-F3

666-F4

666-F203

666-F7

## Liquid Calibration Standards for spectrophotometers

Type	Order Number	Usage	Consisting of	Content	Wavelength nm
<b>667.003-UV</b>	667-003-UV-40	Checking the photometer according to Pharm. Eur.	667.100-UV 667.200-UV 667.305-UV 667-UV5	Potassium Chloride + blank Toluene in Hexane + blank Potassium Dichromate in HClO <sub>4</sub> + blank Holmium Perchlorate in Perchloric Acid	198, 200 (certified) 266, 269 235, 257, 313, 350, 430 241.15; 287.15; 361.5; 536.3

### available individually

Type	Order Number	Usage	Consisting of	Content	Wavelength nm
<b>667.100-UV</b>	667-100-UV-40	Set to check for stray light according to Pharm. Eur.	667-UV1 667-UV12	Potassium Chloride Ultrapure Water (blank)	200 (Cut-Off) 198, 200 (certified)
<b>667.200-UV</b>	667-200-UV-40	Set to check spectral resolution according to Pharm. Eur.	667-UV6 667-UV9	Toluene in n-Hexane Hexane (blank)	266, 269
<b>667.305-UV</b>	667-305-UV-40	Set to check photometric accuracy according to Pharm. Eur.	667-UV60 667-UV600 667-UV14	60 mg Potassium Dichromate in HClO <sub>4</sub> 600 mg Potassium Dichromate in HClO <sub>4</sub> Perchloric Acid (blank)	235, 257, 313, 350 430
<b>667-UV5</b>	667-005-UV-40	Filter to check the wavelength accuracy according to Pharm. Eur.	667-UV5	Holmium Perchlorate in Perchloric Acid	241.15; 287.15; 361.5; 536.3
<b>667.101-UV</b>	667-101-UV-40	Set to check for stray light	667-UV10 667-UV12	Sodium Iodide Ultrapure Water (blank)	259 (Cut-Off) 220 (certified)
<b>667.102-UV</b>	667-102-UV-40	Set to check for stray light	667-UV11 667-UV12	Sodium Nitrite Ultrapure Water (blank)	385 (Cut-Off) 340, 370 (certified)
<b>667.400-UV</b>	667-400-UV-40	Set to check the wavelength accuracy	667-UV5 667-UV14	Holmium Perchlorate in Perchloric Acid Perchloric Acid (blank)	241.15; 287.15; 361.5; 536.3
<b>667.301-UV</b>	667-301-UV-40	Set to check photometric accuracy	667-UV60 667-UV14	60 mg Potassium Dichromate in HClO <sub>4</sub> Perchloric Acid (blank)	235 nm; 257 nm; 313 nm; 350 nm
<b>667.307-UV</b>	667-307-UV-40	Set to check the linearity of absorption	667-UV20 667-UV40 667-UV60 667-UV80 667-UV100 667-UV14	20 mg Potassium Dichromate in HClO <sub>4</sub> * 40 mg Potassium Dichromate in HClO <sub>4</sub> * 60 mg Potassium Dichromate in HClO <sub>4</sub> * 80 mg Potassium Dichromate in HClO <sub>4</sub> * 100 mg Potassium Dichromate in HClO <sub>4</sub> * Perchloric Acid (blank)	235 nm; 257 nm; 313 nm; 350 nm

Outside dimensions: H x W x D: 48 mm x 12,5 mm x 12,5 mm

\* in Perchloric Acid

Complete Set 667.003-UV



## Standard Immersion Probe

Type	Order Number	Light Path mm
661.000	661-1-46	1
	661-2-46	2
	661-5-46	5
	661-10-46	10
	661-20-46	20

Probe head material	Quartz SUPRASIL® 300
Probe barrel material	Stainless steel 1.4404 (316 L)
Protective sleeve material	Stainless steel 1.4404 (316 L) / 1.4571 (316 Ti)
Probe head seal	FFPM (DIN ISO 1629) FFKM (ASTM D1418)
Protective sleeve seal	FPM (DIN ISO 1629) FKM (ASTM D1418)
Outside Ø probe head	15 mm
Outside Ø probe shaft	20 mm
Outside Ø probe barrel	18 mm
Outside Ø protective sleeve	20 mm
Total length	approx. 180 mm (10 mm light path)
Max. immersion depth	100 mm (10 mm light path)
Typ. transmission	<b>UV/Vis</b> approx. 40 % in air above 300 nm <b>NIR</b> approx. 40 % in air above 400 nm
Max. pressure	6 bar
Max. temperature	150 °C
Fibre-optic cables	Not included, available separately for UV/Vis and NIR ranges (page 25).



661.000  
10 mm

## Standard Fibre-Optic Cables

Type	Order Number	Light Path mm	Optical Fibre Connector
041.002-UV	041-002-2-UV-46 041002-2U-20-46	1-10 20	SMA
041.002-NIR	041002-2-NIR-46 041002-2N-20-46	1-10 20	SMA
041.002-UVS	On request		SMA
041.102-UV	041-102-2-UV-46 041102-2-UV-46	1-10 20	Collimators for Fibre-Optic Cable Interface
041.102-NIR	041102-2-NIR-46 0411022-N-20-46	1-10 20	Collimators for Fibre-Optic Cable Interface
041.102-UVS	On request		Collimators for Fibre-Optic Cable Interface

<b>Wavelength range</b>	<b>UV/Vis</b> 240 nm – 1100 nm (41667 cm <sup>-1</sup> – 9100 cm <sup>-1</sup> ) <b>NIR</b> 400 nm – 2300 nm (25000 cm <sup>-1</sup> – 4348 cm <sup>-1</sup> ) <b>UV/Vis – low solarisation</b> 190 nm – 1100 nm (52632 cm <sup>-1</sup> – 9100 cm <sup>-1</sup> )
<b>Core Ø</b>	600 µm
<b>Numerical aperture</b>	0.22
<b>Beam Ø (lens)</b>	4 mm
<b>Length</b>	2 m (other lengths available on request)
<b>Max. temperature</b>	150 °C



## Fibre-Optic Cable Interface

Type	Order Number	Centre Height mm	Outside Dim. mm
662.000-UV/NIR	662-85-UVNIR-46 662-15-UVNIR-46 662-20-UVNIR-46	8.5 15 20	54.5 x 12.5 x 12.5 61 x 12.5 x 12.5 66 x 12.5 x 12.5
<b>Wavelength range</b>	<b>UV/NIR</b> 190 nm – 2300 nm (52632 cm <sup>-1</sup> – 4348 cm <sup>-1</sup> )		
<b>Aperture Ø</b>	4 mm		



662.000-UV/NIR

## Ultra-Mini Immersion Probes

Type	Order Number	Light Path mm
<b>661.622-UV*</b>	661-622-UV-46	SMA
	On request	Collimators for Fibre-Optic Cable Interface
<b>661.622-NIR*</b>	661-622-NIR-46	SMA
	On request	Collimators for Fibre-Optic Cable Interface
<b>661.622-UVS*</b>	On request	SMA
	On request	Collimators for Fibre-Optic Cable Interface

<b>Mirror material</b>	Quartz SUPRASIL <sup>®</sup> 300 with aluminium mirror layer
<b>Window material</b>	Quartz SUPRASIL <sup>®</sup> 300
<b>Barrel material</b>	Stainless steel 1.4435 (316 L)
<b>Probe head seal</b>	Epoxy glue
<b>Outside Ø</b>	6 mm
<b>Total length</b>	235 mm
<b>Max. immersion depth</b>	175 mm
<b>Removeable tips</b>	<b>Catalogue Number 665.622</b>
<b>Max. pressure</b>	6 bar
<b>Max. temperature</b>	150 °C
<b>Fibre-optic cables</b>	Built-in, not exchangeable <b>UV/Vis – 2 m*</b> 240 nm – 1100 nm (41667 cm <sup>-1</sup> – 9100 cm <sup>-1</sup> ) <b>NIR – 2 m*</b> 400 nm – 2300 nm (25000 cm <sup>-1</sup> – 4348 cm <sup>-1</sup> ) <b>UV/Vis – low solarisation – 2 m*</b> 190 nm – 1100 nm (52632 cm <sup>-1</sup> – 9100 cm <sup>-1</sup> ) * Fibre-optic cables available in various lengths.

\* without tips

Type	Order Number	Light Path mm
<b>665.622</b>	665-622-1-40 665-622-2-40 665-622-5-40 665-622-10-40 665-622-20-40	1 2 5 10 20



661.622  
with tip 665.622



665.622  
20 mm, 10 mm, 5 mm, 2 mm, 1 mm

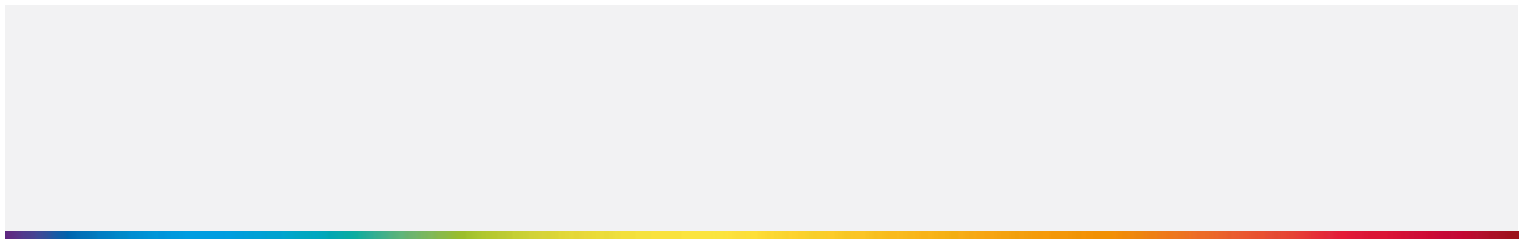
## All-Quartz Immersion Probes

Type	Order Number	Light Path mm	Optical Fibre Connector
<b>661.302-UV</b>	661302U-1-2m-46	1	SMA
	661302U-2-2m-46	2	
	661302U-5-2m-46	5	
	661302U10-2m-46	10	
	661302U20-2m-46	20	
	661302U50-2m-46	50	
	On request		Collimators for Fibre-Optic Cable Interface
<b>661.302-NIR</b>	661302N-1-2m-46	1	SMA
	661302N-2-2m-46	2	
	661302N-5-2m-46	5	
	661302N10-2m-46	10	
	661302N20-2m-46	20	
	661302N50-2m-46	50	
	On request		Collimators for Fibre-Optic Cable Interface
<b>661.302-UVS</b>	On request		SMA
	On request		Collimators for Fibre-Optic Cable Interface

<b>Probe head material</b>	Quartz SUPRASIL <sup>®</sup> 300
<b>Barrel material</b>	Quartz
<b>Probe head seal</b>	directly fused
<b>Outside Ø probe head</b>	15 mm
<b>Outside Ø quartz barrel</b>	18 mm
<b>Total length</b>	approx. 270 mm (10 mm light path)
<b>Max. immersion depth</b>	200 mm (10 mm light path)
<b>Typ. transmission</b>	<b>UV/Vis</b> approx. 40 % in air above 300 nm <b>NIR</b> approx. 40 % in air above 400 nm
<b>Max. pressure</b>	6 bar
<b>Max. temperature</b>	150 °C
<b>Fibre-optic cables</b>	Built-in and only replaceable by manufacturer <b>UV/Vis – 2 m*</b> 240 nm – 1100 nm (41667 cm <sup>-1</sup> – 9100 cm <sup>-1</sup> ) <b>NIR – 2 m*</b> 400 nm – 2300 nm (25000 cm <sup>-1</sup> – 4348 cm <sup>-1</sup> ) <b>UV/Vis – low solarisation – 2 m*</b> 190 nm – 1100 nm (52632 cm <sup>-1</sup> – 9100 cm <sup>-1</sup> ) * Fibre-optic cables available in various lengths.
 <b>Upgrade for lowest temperatures</b>	Modification to 661.202 with vacuum jack down to -180 °C



661.302  
10 mm



2010

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