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Hellma Catalogus 2011

www.elscolab.nl

Hellma® Analytics
High Precision in Spectro-Optics

Hellma. Where precision becomes an art.

Product Catalogue BestCellers 2011

Cells

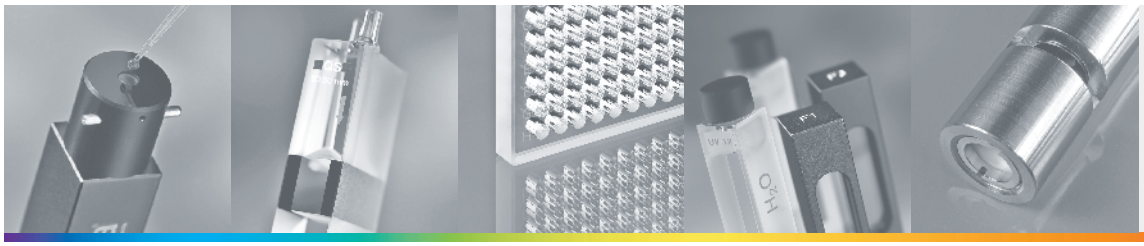
Micro Volume Analysis

Fibre Optical Systems

Calibration Standards

Microplates

www.hellma-analytics.com



2011

Hellma® Analytics
High Precision in Spectro-Optics

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

Hellma® Analytics

Product Brochures

Product Catalogue
BestCellers 2011

TrayCell
Ultra-Micro-Cell

UV/VIS Calibration
Standards

Fibre optical Systems

Microplates

Hellmanex III
Cleaning Concentrate

Thematic information

Micro Flow
Cahnnels

Technology Expertise

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Hellma® Optics

Product Brochures

Cylinder Optics
Toric Optics

Flat Optics
Special Optics

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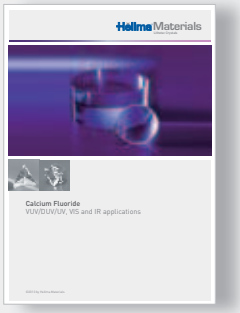
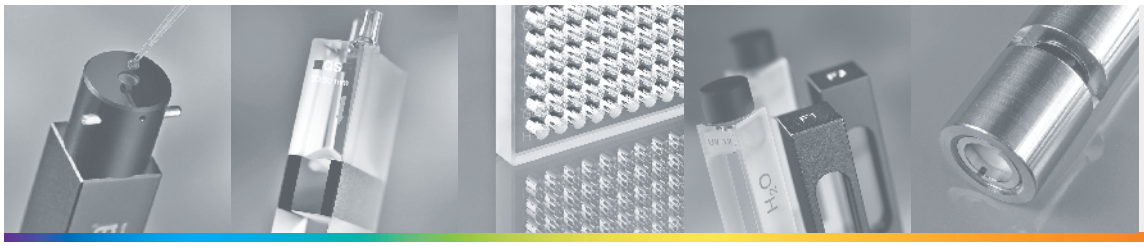
Hellma® Materials

Product Brochures



Calcium Fluoride
Raw material and optical components

Download: www.hellma-materials.com/download



BestCellers
Product Catalogue 2011

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

On our website **www.hellma-analytics.com/download** detailed information about our company and about our products can be found where all product specifications of **product catalogue 2011** are available to download. There is also the possibility to order some more product brochures.

If you have measuring applications and Hellma Analytics 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.

Ordering

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

Option 1	Option 2
Type	**Order number**
Type of material	Quantity required
Light path	Transmission matching requirements
Centre height	Polarimetric certification requirements
Quantity required	Antireflection or reflective coatings, if required
Transmission matching requirements	Type of packaging required (standard packaging or a separate case)
Polarimetric certification requirements	
Antireflection or reflective coatings, if required	
Type of packaging required (standard packaging or a separate case)	

2011

Spectral and polarimetric checking

On request all cells can be **spectrally calibrated** and assembled into sets of equal transmission values (measuring uncertainty ± 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° 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 drawing from **Hellma Analytics** 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	30 mm to 100 mm	± 0.02 mm
Special optical glass	0.1 mm to 20 mm	± 0.01 mm
Special optical glass	30 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:

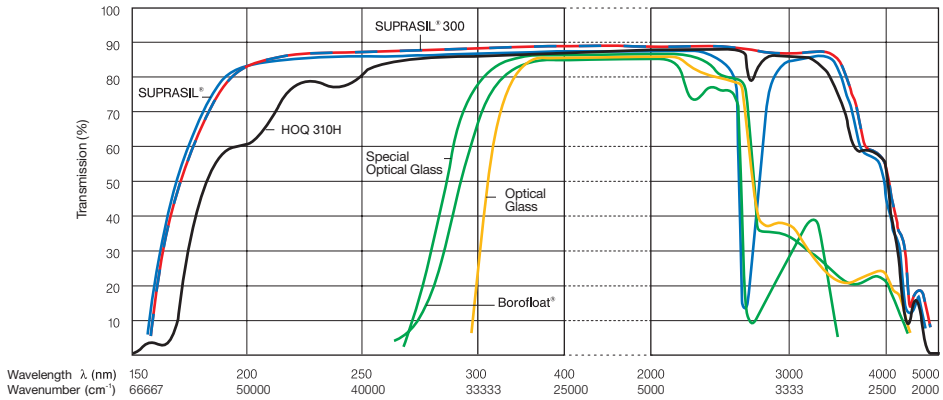
Window material	Refractive index	Reflection losses	Transmission theoretical	Transmission measured
SUPRASIL®	1,458	13 %	87 %	87 % ± 1 %
HOQ 310H	1,458	13 %	87 %	87 % ± 1 %
Borofloat®	1,473	14 %	86 %	85 % ± 1 %
UK 5/B 270	1,523	16 %	84 %	84 % ± 1 %

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®	BF	330 nm – 2500 nm
Special optical glass	OS	320 nm – 2500 nm
HOQ 310H	UV	260 nm – 2500 nm
Quartz SUPRASIL®	QS	200 nm – 2500 nm
Quartz SUPRASIL® 300	QX	200 nm – 3500 nm

Transmission of empty cells made of different materials



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

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

TrayCell: Awarded at Innovationspreis 2008 Baden Württemberg

TrayCell

Fibre-Optic Ultra-Micro Measuring Cell for Sample Volumes of **0.5 µl** – 5 µl

Typical applications are:

- Nucleic acid analysis
- Determination of the incorporation frequency of fluorescent dye labels (FOI)
- Protein analysis (A280, BCA, Lowry etc.)
- 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 15 20	68.5 75 80	0.7 – 4
			1 (±0.02) (Faktor 10)	8.5 15 20	68.5 75 80	3 – 5
105.810-UVS	105810-A3-V1-46	Quartz SUPRASIL®	0.2 (±0.02) (Faktor 50)	8.5 15 20	53.0 59.5 64.5	0.7 – 4
			1 (±0.02) (Faktor 10)	8.5 15 20	53.0 59.5 64.5	3 – 5

105.800-UVS 105.810-UVS

Width and depth of the TrayCell are equivalent to a standard cell. It 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) 3 bis 5 µl	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) 0,7 bis 4 µl	
665.705	665-705-2-40	Cap with mirror made of Quartz SUPRASIL® with aluminium mirror layer	2 (Faktor 5) 6 bis 10 µl	
665.706	665-706-0,1-40	Cap with mirror made of Quartz SUPRASIL® with aluminium mirror layer	0.1 (Faktor 100) 0,5 - 3 µl	

665.703 665.704 665.705 665.706

Additional light paths on request in special manufacture
For detailed information please visit **www.hellma-analytics.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	402-10-10	Optical Glass	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	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	

100 10 mm | 100 50 mm | 100 100 mm | 402.000 10 mm | 110 10 mm | 110 50 mm | 110 100 mm

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
404.000-QX	404-1-46 404-2-46 404-10-46	Quartz SUPRASIL® 300	1 2 10	47.5 x 23.6 x 3.5 47.5 x 23.6 x 4.5 47.5 x 23.6 x 12.5	18.5 18.5 18.5	2.5 2.5 2.5	700 1400 7000	with 2 stoppers
6030-OG	6030-10-10 6030-20-10 6030-40-10 6030-50-10	Optical Glass	10 20 40 50	45 x 12.5 x 12.5 45 x 12.5 x 22.5 45 x 12.5 x 42.5 45 x 12.5 x 52.5	9.5 9.5 9.5 9.5	1.5 1.5 1.5 1.5	3500 7000 14000 17500	without lid
6030-UV	6030-UV-10-531	HOQ 310H	10 (± 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 µl	Remarks
6040-OG	6040-10-10	Optical Glass	10	45 x 12.5 x 12.5	4	3.2	1400	without lid
6040-UV	6040-UV-10-531	HOQ 310H	10 (± 0.05)	45 x 12.5 x 12.5	4	3.2	1400	without lid
104-OS	104-10-20 104-50-20	Special Optical Glass	10 50	45 x 12.5 x 12.5 45 x 12.5 x 52.5	4 4	3.2 3.2	1400 7000	
104-QS	104-5-40 104-10-40 104-50-40	Quartz SUPRASIL®	5 10 50	45 x 12.5 x 7.5 45 x 12.5 x 12.5 45 x 12.5 x 52.5	4 4 4	3.2 3.2 3.2	700 1400 7000	
104-QX	104-10-46	Quartz SUPRASIL® 300	10	45 x 12.5 x 12.5	4	3.2	1400	

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 µl	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 µl	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-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

Micro Cells
with PTFE lid or stopper

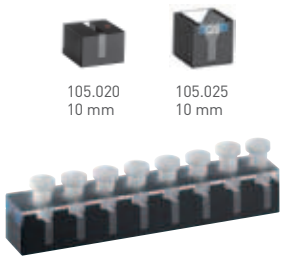
Type	Order Number	Window Material	Light Path mm	Outside Dim. H x W x D mm	Inside Width mm	Base Thickn. mm	Volume µl	Remarks
108.002B-QS	108002B-10-40	Quartz SUPRASIL®	10	45 x 12.5 x 12.5	2	9	500	black side walls and base
115-QS	115-10-40	Quartz SUPRASIL®	10	40 x 12.5 x 12.5	2	1.25	400	
115B-QS	115B-10-40	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 µl	Filling Volume µl
105.200-QS	105-200-15-40 105-200-85-40	Quartz SUPRASIL®	10 10	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	8 x 2 8 x 2	160 160	180 180
105.201-QS	105-201-15-40 105-201-85-40	Quartz SUPRASIL®	10 10	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
105.202-QS	105-202-15-40 105-202-85-40	Quartz SUPRASIL®	10 10	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	2.5 x 2 2.5 x 2	50 50	70 70
105.203-QS	105-203-1015-40 105-203-1085-40	Quartz SUPRASIL®	10 10	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	Ø 2.5 Ø 2.5	50 50	70 70
105.204-QS	105-204-1015-40 105-204-1085-40	Quartz SUPRASIL®	10 10	15 8.5	45 x 12.5 x 12.5 45 x 12.5 x 12.5	Ø 1.5 Ø 1.5	20 20	40 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 105210-585-40 1052101015-40 1052101085-40	Quartz SUPRASIL®	5 5 10 10	15 8.5 15 8.5	40 x 12.5 x 12.5 40 x 12.5 x 12.5 40 x 12.5 x 12.5 40 x 12.5 x 12.5	Ø 0.8 Ø 0.8 Ø 0.8 Ø 0.8	2.5 2.5 5 5	5 5 10 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)

108.002B 10 mm | 115 10 mm | 115B 10 mm

105.200 10 mm | 105.201 10 mm | 105.202 10 mm | 105.203 10 mm | 105.204 10 mm | 105.210 10 mm



105.020 10 mm | 105.025 10 mm

660.236 10 mm

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 µl	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 µl	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 Ø 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 µl	Remarks
220-QS	220-10-40	Quartz SUPRASIL®	10	40 x 12.5 x 12.5	9.5	1.5	3500	Quartz DURAN® tube

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

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
120-OS	120-10-20 120-50-20 120-100-20	Special Optical Glass	10 50 100	22 22 22	19 19 19	12.5 52.5 102.5	2800 14000 28000	from 50 mm with 2 stoppers
120-QS	120-000-1-40 120-000-2-40 120-5-40 120-10-40 120-20-40 120-50-40 120-100-40	Quartz SUPRASIL®	1 2 5 10 20 50 100	22 22 22 22 22 22 22	19 19 19 19 19 19 19	3.5 4.5 7.5 12.5 22.5 52.5 102.5	280 560 1400 2800 5600 14000 28000	from 50 mm with 2 stoppers
120-QX	120-10-46	Quartz SUPRASIL® 300	10	22	19	12.5	2800	
121.000-QS	121-0.10-40 121-0.20-40 121-0.50-40 121-1-40	Quartz SUPRASIL®	0.1 0.2 0.5 1	22 22 22 22	13 13 13 13	20 20 20 20	160 170 210 280	2 ports and stoppers

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	165-1-40 165-10-40	Quartz SUPRASIL®	1 10	22 22	9 10	30 12.5	160 800	2 stoppers 1 port and stopper

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
238-QS	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

120
1 mm

120
10 mm

120
50 mm

121.000
1 mm

165
10 mm

165
1 mm

238
2 x 4.375 mm

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 µl	Remarks
130-QS	130-10-40	Quartz SUPRASIL®	10		45 x 12.5 x 12.5	33 x 9.5	3200	
137-QS	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	
170-OS	170-000-1-20	Special Optical Glass	1	all dim.	35 x 12.5 x 12.5	17.5 x 6.5	120	
170-QS	170-000-1-40 170-000-2-40	Quartz SUPRASIL®	1 2	all dim.	35 x 12.5 x 12.5 35 x 12.5 x 12.5	17.5 x 6.5 17.5 x 6.5	120 240	
175.000-OS	175-85-10-20 175-000-10-20	Special Optical Glass	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	
175.000-QS	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 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
170.700-QS	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 µl	Remarks
174-QS	174-10-40	Quartz SUPRASIL®	10		48 x 12.5 x 12.5	36 x 4	1500	
176.000-QS	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
176.700-QS	1767005-15-40 1767005-85-40 1767001510-40 1767008510-40 1767001550-40 1767008550-40	Quartz SUPRASIL®	5 5 10 10 50 50	15 8.5 15 8.5 15 8.5	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 35 x 12.5 x 52.5 35 x 12.5 x 52.5	11 x 3.5 11 x 3.5 11 x 3.5 11 x 3.5 11 x 3.5 11 x 3.5	195 195 390 390 1950 1950	
176.703-QS	176703-Z15-40 176703-10-85-40	Quartz SUPRASIL®	10 10	15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5	8 x 2 8 x 2	160 160	

micro, ultra-micro, with in/outlet tubes

178.010-OS	1780101015-20 178010-85-20	Special Optical Glass	10 10	15 8.5	45 x 12.5 x 12.5 38.5 x 12.5 x 12.5	Ø 3 Ø 3	80 80	light path 50 mm on request
178.010-QS	1780101015-40 178-010-10-40 178-010-50-40 178010-50-85-40	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	Ø 3 Ø 3 Ø 3 Ø 3	80 80 370 370	
178.011-OS	178011-15-20 178011-85-20	Special Optical Glass	10 10	15 8.5	45 x 12.5 x 12.5 38.5 x 12.5 x 12.5	Ø 2 Ø 2	30 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)

178.710-OS	178-710-20 178-710-10-20	Special Optical Glass	10 10	15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5	Ø 3 Ø 3	80 80	
178.710-QS	178-710-10-40 1787108510-40 1787101550-40 178-710-50-40	Quartz SUPRASIL®	10 10 50 50	15 8.5 15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5 35 x 12.5 x 52.5 35 x 12.5 x 52.5	Ø 3 Ø 3 Ø 3 Ø 3	80 80 370 370	
178.711-OS	178-711-10-20 1787118510-20	Special Optical Glass	10 10	15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5	Ø 2 Ø 2	30 30	
178.712-OS	178-712-10-20 178712-10-20	Special Optical Glass	10 10	15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5	Ø 1,5 Ø 1,5	18 18	
178.712-QS	1787121510-40 1787128510-40	Quartz SUPRASIL®	10 10	15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5	Ø 1,5 Ø 1,5	18 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. µl	No. of win-dows	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. µl	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. µl	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. µl	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

Fluorescence Cells

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 µl	Filling Volume µl	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

101.015 3 x 3 mm | 101.016 5 x 5 mm | 101.057 5 x 5 mm | 111.057 5 x 5 mm | 013.011 013.013 013.016

105.250 10 x 2 mm | 105.251 3 x 3 mm | 105.252 1.5 x 1.5 mm | 105.253 10 x 2 mm | 105.254 3 x 3 mm

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 µl	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 µl	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 Ø 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 µl	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

117.104F
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 µl	No. of win-dows	Remarks
131-QS	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 µl	No. of win-dows
176.050-QS	176-050-40 176050-10-85-40	Quartz SUPRASIL®	10 x 4 10 x 4	15 8.5	45 x 12.5 x 12.5 38.5 x 12.5 x 12.5	11 x 4 11 x 4	450 450	3 3

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	No. of win-dows
176.751-QS	176-751-15-40 176-751-85-40	Quartz SUPRASIL®	3 x 3 3 x 3	15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5	11 x 3 11 x 3	100 100	3 3
176.754-QS	176-754-10-15-40 176-754-10-85-40	Quartz SUPRASIL®	10 x 2.5 10 x 2.5	15 8.5	35 x 12.5 x 12.5 35 x 12.5 x 12.5	11 x 2.5 11 x 2.5	275 275	4 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 µl	No. of win-dows	Remarks
111.070-QS	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 µl	Remarks
131.050-QS	131-050-40	Quartz SUPRASIL®	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 Ø mm	Inside Dim. H x Ø mm	Volume µl	Remarks
540.110-QS	540-110-80	Quartz SUPRASIL®	75 x 10	74 x 8	2800	
540.111-QS	540-111-80	Quartz SUPRASIL®	75 x 10	74 x 8	2800	polished outer cylinder
540.114-QS	540-114-80	Quartz SUPRASIL®	75 x 25	73 x 22.6	22000	
540.115-QS	540-115-80	Quartz SUPRASIL®	75 x 25	73 x 22.6	22000	polished outer cylinder
540.135-QS	540-135-20-40	Quartz SUPRASIL®	75 x 20	74 x 18	14000	

131.050

540.110

540.111

540.114

540.115

540.135

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 µl	Remarks
402.013-OG	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 Ø mma	Inside Dim. H x Ø mm	Volume µl	Remarks
692.091-OG	692-091-12	Optical Glass	25 x 34	23 x 31.6	12000	
692.103-BF	692-103-23	Borofloat®	30 x 50	27.5 x 45	32000	
692.104-BF	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
700.000-OG	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	
700.010-OG	700-010-20-10	Optical Glass	20 ± 0.2	82 x 44.4 x 24.4	80 x 40 x 20	56000	without lid
700.015-OG	700-015-10	Optical Glass	28 ± 0,2	35 x 35 x 32	33 x 31 x 28	22000	without lid
700.016-OG	700-016-10	Optical Glass	18 ± 0.2	38 x 22 x 22	36 x 18 x 18	10000	without lid
700.019-OG	700-019-10	Optical Glass	10 ± 0.2	55 x 55 x 15	52.5 x 50 x 10	20000	
704.000-OG	704-000-20-10	Optical Glass	20 ± 0.2	22.5 x 25 x 25	20 x 20 x 20	6000	
704.001-OG	704-001-30-10	Optical Glass	30 ± 0.2	32.5 x 35 x 35	30 x 30 x 30	22500	
704.002-OG	704-002-40-10	Optical Glass	40 ± 0.2	42.5 x 45 x 45	40 x 40 x 40	56000	
704.003-OG	704-003-50-10	Optical Glass	50 ± 0.5	52.5 x 55 x 55	50 x 50 x 50	88000	
740.000-OG	740-000-10	Optical Glass	34.5 ± 0.2	100 x 50 x 39.5	97 x 44 x 34.5	100000	without lid

700.000
10 mm

700.010
20 mm

700.015
30 mm

700.016
18 mm

700.019
10 mm

704.000
20 mm

704.001
30 mm

704.002
40 mm

704.003
50 mm

740.000
34.5 mm

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 µl	Remarks
106-QS	106-0.01-40 106-0.10-40 106-0.20-40 106-0.50-40	Quartz SUPRASIL®	0,01 ± 0,003 0,1 ± 0,005 0,2 ± 0,005 0,5 ± 0,010	45 x 12,5 45 x 12,5 45 x 12,5 45 x 12,5	2,5 2,6 2,7 3	9 9 9 9	2,6 26 52 130	
013.000	013-000-71			45 x 12,5 x 12,5				holder for cells with detachable windows, for cell type 106
124-QS	124-0.1-40	Quartz SUPRASIL®	0,1 ± 0,005	Ø 22	2.6	Ø 15	18	
020.001	020-001-761	Spring clamp	0,01 - 1					for cell type 124 and 201

Flat Optics

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

Other Accessories

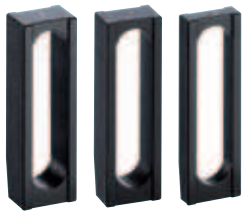
Type	Order Number	Description	Remarks
013.101	013-101-71	Aluminium spacer 38 x 12,5 x 9 mm	to fit cells with 1 mm light path into 10 mm cell holder
013.102	013-102-71	Aluminium spacer 38 x 12,5 x 8 mm	to fit cells with 2 mm light path into 10 mm cell holder
013.105	013-105-71	Aluminium spacer 38 x 12,5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

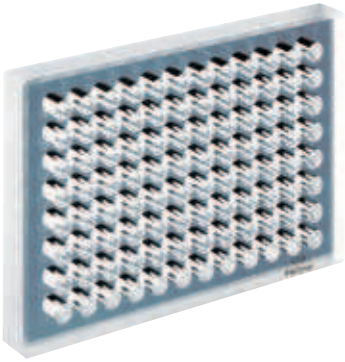
Quartz Microplates

Type	Order Number	Description	Outside Dim. H x W x D mm	Base mm	Diameter mm	Wells Depth mm	Volume µl
730.009-QG	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
730.009B-QG	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® on request.

Cleaning
of cells and optical components

Type	Order Number	Description
320.003	9-307-011-4-507	Hellmanex® 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

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 glass filters made for testing spectro-photometers. 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.

DKD-K-42701

DIN EN ISO 17025

NIST

Glass Filters
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-F202	666-000F202-36	To check the photometric accuracy (nominal absorbance 1,5)	Neutral Density Glass Filter NG 3	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-F202 666-F203 666-F7

Liquid Filters

for spectrophotometers

Type	Order Number	Usage	Consisting of	Content	Wavelength nm
667.003-UV	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 $HClO_4$ + 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
667.100-UV	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)
667.200-UV	667-200-UV-40	Set to check spectral resolution according to Pharm.Eur.	667-UV6 667-UV9	Toluene in n-Hexane n-Hexane (blank)	266, 269
667.305-UV	667-305-UV-40	Set to check photometric accuracy according to Pharm. Eur.	667-UV60 667-UV600 667-UV14	60 mg Potassium Dichromate in $HClO_4$ 600 mg Potassium Dichromate in $HClO_4$ Perchloric Acid (blank)	235, 257, 313, 350 430
667-UV5	667-005-UV-40	Filter to check the wavelength accuracy according wto Pharm. Eur.	667-UV5	Holmium Perchlorate in Perchloric Acid	241.15; 287.15; 361.5; 536.3
667.101-UV	667-101-UV-40	Set to check for stray light	667-UV10 667-UV12	Sodium Iodide Ultrapure Water (blank)	259 (Cut-Off) 220 (certified)
667.102-UV	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)
667.400-UV	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
667.301-UV	667-301-UV-40	Set to check photometric accuracy	667-UV60 667-UV14	60 mg Potassium Dichromate in $HClO_4$ Perchloric Acid (blank)	235 nm; 257 nm; 313 nm; 350 nm
667.307-UV	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 $HClO_4$* 40 mg Potassium Dichromate in $HClO_4$* 60 mg Potassium Dichromate in $HClO_4$* 80 mg Potassium Dichromate in $HClO_4$* 100 mg Potassium Dichromate in $HClO_4$* 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

667.100-UV

667-UV 1 667-UV 12

667.200-UV

667-UV 6 667-UV 9

667.305-UV

667-UV 60 667-UV 600 667-UV 14

667-UV 5

Recalibration Recommendation

Like any measuring device, photometric standards also have to be recalibrated at regular intervals; otherwise frequently requested demands e.g. high and regulated quality requirements as well as a precise and secure measurement cannot be adhered to.

Hellma Analytics recommends a recalibration of glass filters every 12 months for the first two years of use, after that every 24 months. A recalibration of the liquid filters should be carried out not later than every 12 months.

The periods indicated are reference values and depend on how often the filters are used, the abrasion and your demand for accuracy.

Please refer to the yellow seal and the respective calibration certificate for the date of the last recalibration.

Hellma Analytics Calibration Laboratory

DAR DKD-K-42701 Accredited to DIN EN ISO 17025

Recalibration
Glass Filters

Type	Order Number
666.000 Recalibration	666-000-RE
666-F1 Recalibration	666-F1-RE-339
666-F2 Recalibration	666-F2-RE-39
666-F3 Recalibration	666-F3-RE-38
666-F4 Recalibration	666-F4-RE-37
666-F202 Recalibration	666-F202-RE-36
666-F203 Recalibration	666-F203-RE-36
666-F7 Recalibration	666-F7-RE-323

Recalibration
Liquid Filters

Type	Order Number
667.003-UV Recalibration	667003-UV-RE-40
667.100-UV Recalibration	667100-UV-RE-40
667.200-UV Recalibration	667200-UV-RE-40
667.305-UV Recalibration	667305-UV-RE-40
667-UV5 Recalibration	667-005UV-RE-40
667.101-UV Recalibration	667101-UV-RE-40
667.102-UV Recalibration	667102-UV-RE-40
667.400-UV Recalibration	667400-UV-RE-40
667.301-UV Recalibration	667301-UV-RE-40
667.307-UV Recalibration	667-307-UV-RE-40

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	**UV/Vis** approx. 40 % in air above 300 nm **NIR** 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 31).

661.000
10 mm

Ultra-Mini Immersion Probes

Type	Order Number	Optical Fibre Connector
661.622-UV*	661-622-UV-46	SMA
	On request	Collimators for Fibre-Optic Cable Interface
661.622-NIR*	661-622-NIR-46	SMA
	On request	Collimators for Fibre-Optic Cable Interface
661.622-UVS*	On request	SMA
	On request	Collimators for Fibre-Optic Cable Interface

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

* without tips
** Fibre-optic cables available in various lengths.

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

661.622
(with tip 665.622)

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

All-Quartz Immersion Probes

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

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

661.302
10 mm

Immersion probe with variable light path

Type	Order Number	Optical Fibre Connector
661.682-UV *	661682-V1-M1-UV-2m-46	SMA Collimators for Fibre-Optic Cable Interface
661.682-NIR *	661682-V1-M1-NIR-2m-46	SMA Collimators for Fibre-Optic Cable Interface

Mirror material**	Quartz glass SUPRASIL® 300 with aluminium reflective layer
Window material**	Quartz glass SUPRASIL® 300
Probe barrel material***	Stainless steel 1.4435 (316L)
Probehead seal	Perfluorelastomer FFKM (ASTM 01418)
Outer Ø	12 mm
Total length	260 mm
Max. immersion depth	215 mm
Removable tips	Typ 665.764
Max. pressure	15 bar
Max. temperature	180 °C
Optical fibre connections	FSMA Typ 905
Optical fibres****	Built in, not exchangeable **UV** Length: 1,8 m 240 nm – 1100 nm (41667 cm^{-1} – 9100 cm^{-1}) **NIR** Length: 1,8 m 400 nm – 2300 nm (25000 cm^{-1} – 4348 cm^{-1}) UV/Vis and UV/Vis low solarisation upon request

*without tips **Sapphire on request ***other materials on request ****other fibre length optional

Type	Order Number	Light Path mm
665.764	665-764-1-V1-40	1
	665-764-2-V1-40	2
	665-764-5-V1-40	5
	665-764-10-V1-40	10
	665-764-20-V1-40	20

661.682
(with tip 665.764)

665.764
1 mm, 2 mm, 5 mm, 10 mm, 20 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	0410022UVres-46 0410022US-20-46	1-10 20	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	0411022UVres-46 0411022US-20-46	1-10 20	Collimators for Fibre-Optic Cable Interface

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

041.002-NIR 041.002-UV 041.002-UVS 041.102-NIR 041.102-UV 041.102-UVS

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

Wavelength range	**UV/NIR** 190 nm – 2300 nm (52632 cm^{-1} – 4348 cm^{-1})
Aperture Ø	4 mm

662.000-UV/NIR