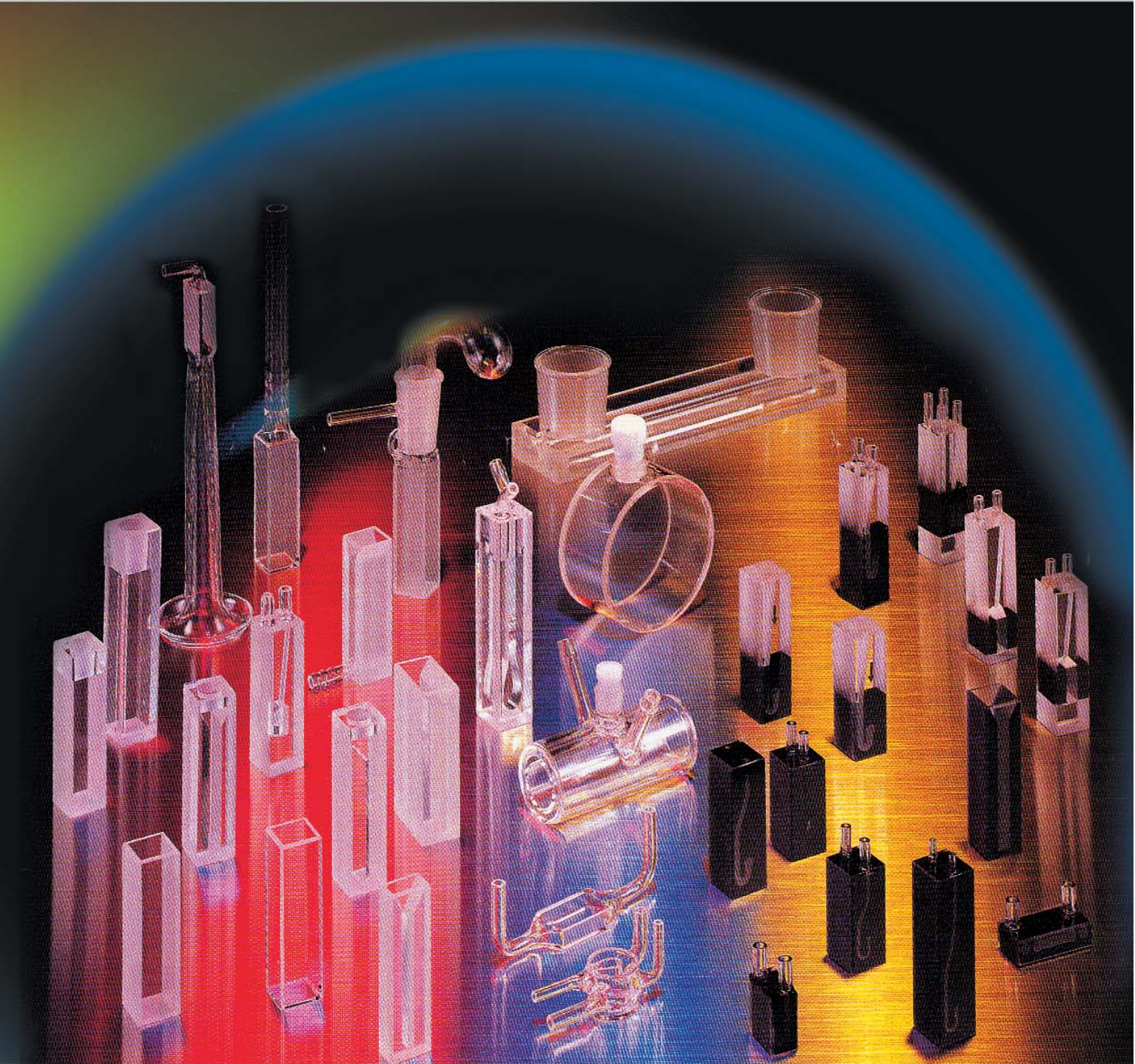


OPTTECH SPECTROPHOTOMETER CELLS



TECHNICAL SPECIFICATIONS

METHOD OF MANUFACTURE:

The **OPTECH** range of standard cells is manufactured using the thermal fusion technique.

This method results in a cell which is very strong and, as no adhesives are used in its construction, it is immune from solvent attack. Annealing of the assembled cell effectively removes residual strain, resulting in excellent long-term dimensional stability and providing the capability of most of the range to operate with pressure differentials of three atmospheres.

CLEANING OF CELLS:

Cells must be scrupulously cleaned. Optical surfaces should not be touched, as oil smudges are difficult to remove.

The solvent purity of both the sample and for cleaning is important for protection of cells; only distilled water or spectrophotometric grade solvents should be used.

MATERIAL SPECIFICATIONS:

Two different window materials are available, according to the wavelength ranges to be covered:

G Visible: Optical Glass

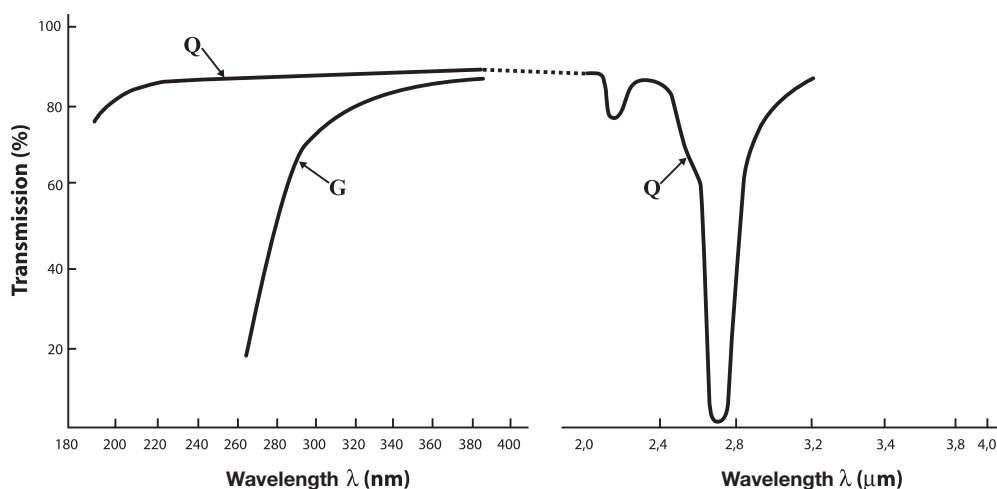
Q Far UV: Quartz (silica)

The materials shown are guaranteed to provide transmissions in excess of 80% over the following wavelength ranges:

Optical Glass: 335 to 2500 nm

Quartz: 200 to 2700 nm

Transmission measured on empty cells



OPTECH cells are suitable for use with most organic and aqueous samples. Acid media (with the exception of HF which attacks glass and quartz) will not damage the cells, but strongly alkaline solutions (pH 9.0 and above) may attack the cell surface, resulting in a shortened working life.

TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS:

Window parallelism: Better than 3 minutes of arc

Window flatness: Less than 4 Newton fringes

Finish quality: 20/10 Scratch or Dig

The standard window thickness is 1.25mm, polished to a surface finish giving better than 4 Newton fringes per centimetre in the beam area, and with a flatness better than 1 micron (0.001mm) over the whole window area. The scratch and dig specification for surface polish is 20/10.

MATERIAL

Glass

Glass

Quartz

PATH LENGTH

up to 20 mm

30 up to 100 mm

1 to 100 mm

TOLERANCE

± 0.1 mm

± 0.2 mm

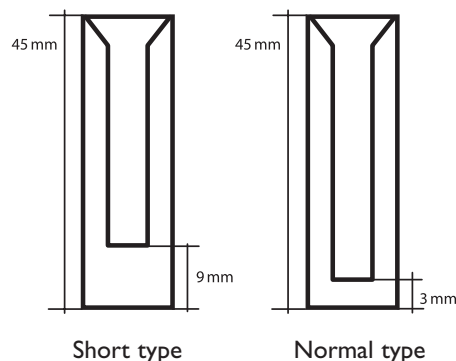
± 0.01 mm

BEAM CENTRE HEIGHT

This is the distance between the base of the cell and the optical centre-line of the instrument, as illustrated.

This will normally be the height from the base of the cell holder to the centre of the incident light beam of the instrument used.

This dimension is critical when using small volume cells of any design, to ensure that the beam travels in correct alignment.



CELL MATCHING

The high uniformity maintained in the production of **OPTECH** cells results in a standard path length tolerance of ± 0.01 mm, and parallelism of the windows is better than 3 minutes of arc. This results in very small variation in transmission values for Quartz cells. In glass cells very slight differences in transmission may result from variations in raw material transmission qualities.

When **OPTECH** cells are supplied as matched pairs or sets, the transmission is measured at the factory, and each cell is given a match code. These codes are applicable only when comparing new cells, because the optical characteristics will change as a result of surface contamination or damage in use. So it is important to realize that a used cell with a particular match code will not necessarily match the performance of a new cell with the same match code.

WINDOW MATERIAL

Optical Glass

Quartz

MATCHING TOLERANCE

0.5%

1.5%

MEASURED AT:

350 nm

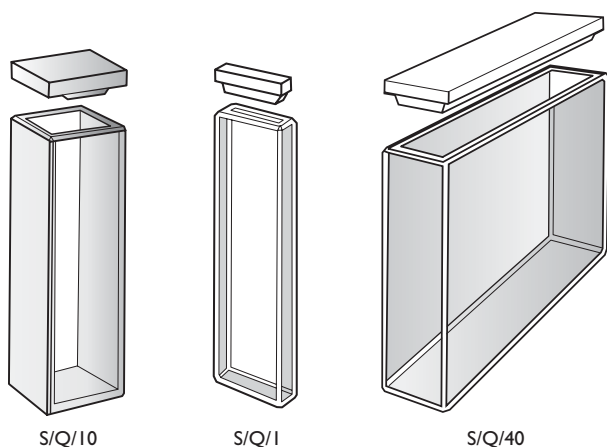
200 nm



STANDARD TYPE CELLS

OPTECH Standard Type cells are most frequently used in analytical laboratories. They have two clear windows, two side walls, and an open top. The walls and the base are polished inside and frosted outside. The thickness of the windows and the base is 1.25 mm. The overall height of standard type cells is 45 mm or 48 mm for those fitted with a stopper. Each cell in this range is supplied with either a teflon or glass cover and stoppers, where applicable, teflon.

With LID

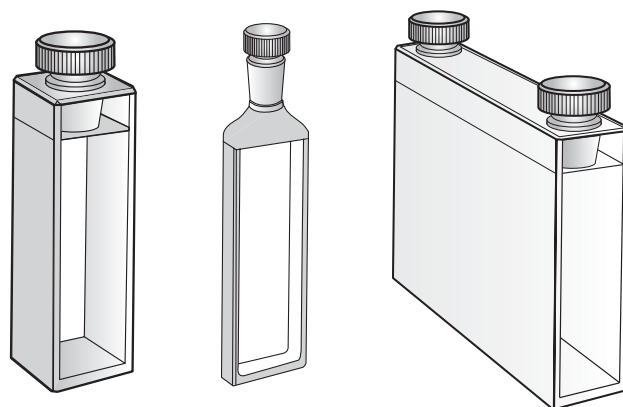


S/Q/10

S/Q/1

S/Q/40

With Stopper



SS/Q/10

SS/Q/1

SS/Q/40

Optical Glass windows 335/2500 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
K94001	S/G/1	1	12.5	3.5	45	0.4	2
K94002	S/G/2	2	12.5	4.5	45	0.7	2
K94003	S/G/5	5	12.5	7.5	45	1.7	2
K94004	S/G/10	10	12.5	12.5	45	3.5	2
K94005	S/G/20	20	12.5	22.5	45	7.0	2
K94006	S/G/40	40	12.5	42.5	45	14.0	2
K94007	S/G/50	50	12.5	52.5	45	17.5	2
K94008	S/G/100	100	12.5	102.5	45	35.0	2

Optical Glass windows 335/2500 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	No. of stoppers	Polished Windows
			W	L	H			
K94017	SS/G/1	1	12.5	3.5	48	0.4	1	2
K94018	SS/G/2	2	12.5	4.5	48	0.7	1	2
K94019	SS/G/5	5	12.5	7.5	48	1.7	1	2
K94020	SS/G/10	10	12.5	12.5	48	3.5	1	2
K94021	SS/G/20	20	12.5	22.5	48	7.0	1	2
K94022	SS/G/40	40	12.5	42.5	48	14.0	1	2
K94023	SS/G/50	50	12.5	52.5	48	17.5	2	2
K94024	SS/G/100	100	12.5	102.5	48	35.0	2	2

Quartz windows 200/2700 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
K94009	S/Q/1	1	12.5	3.5	45	0.4	2
K94010	S/Q/2	2	12.5	4.5	45	0.7	2
K94011	S/Q/5	5	12.5	7.5	45	1.7	2
K94012	S/Q/10	10	12.5	12.5	45	3.5	2
K94013	S/Q/20	20	12.5	22.5	45	7.0	2
K94014	S/Q/40	40	12.5	42.5	45	14.0	2
K94015	S/Q/50	50	12.5	52.5	45	17.5	2
K94016	S/Q/100	100	12.5	102.5	45	35.0	2

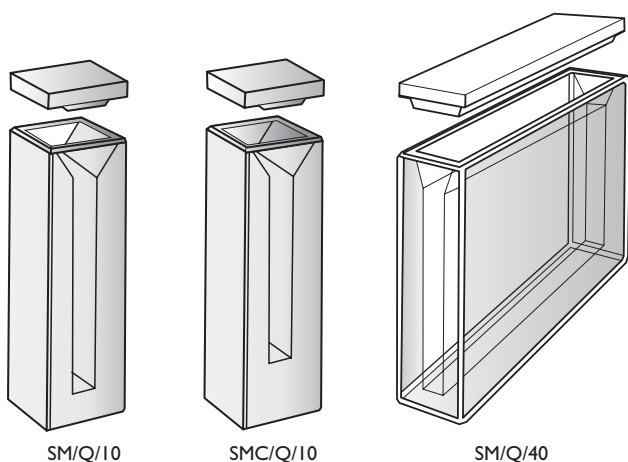
Quartz windows 200/2700 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	No. of stoppers	Polished Windows
			W	L	H			
K94025	SS/Q/1	1	12.5	3.5	48	0.4	1	2
K94026	SS/Q/2	2	12.5	4.5	48	0.7	1	2
K94027	SS/Q/5	5	12.5	7.5	48	1.7	1	2
K94028	SS/Q/10	10	12.5	12.5	48	3.5	1	2
K94029	SS/Q/20	20	12.5	22.5	48	7.0	1	2
K94030	SS/Q/40	40	12.5	42.5	48	14.0	1	2
K94031	SS/Q/50	50	12.5	52.5	48	17.5	2	2
K94032	SS/Q/100	100	12.5	102.5	48	35.0	2	2

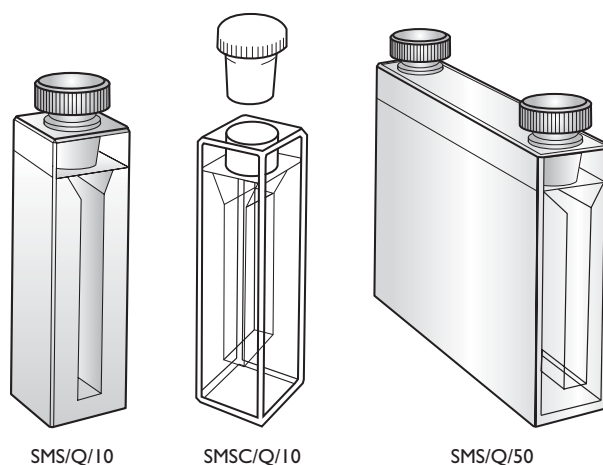
SEMI - MICRO CELLS

The purpose of Semi - Micro cells is to reduce the sample volume necessary to make a measurement. The volume of a Semi - Micro cell is approximately 40% of an equivalent path length Standard Type cell. These cells have two clear windows, two side walls and an open top. The walls and the base are polished inside and frosted outside. The thickness of the polished windows is typically 1.25 mm and the base is 3 mm and 9 mm in the SMC and SMSC types, respectively, in order to further reduce the sample volumes. The overall height of Semi - Micro cells is 45 mm or 48 mm for those fitted with a stopper. The interior sample compartment width of Semi - Micro cells is reduced to 4 mm, therefore it is essential to determine that the light beam from the instrument passes centrally through the sample compartment, this is especially important for long path length cells. Each cell in this range is supplied with either a teflon or glass cover and stoppers, where applicable, are in teflon.

With LID



With Stopper



Optical Glass windows 335/2500 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
K94033	SM/G/5	5	12.5	7.5	45	0.70	2
K94034	SM/G/10	10	12.5	12.5	45	1.40	2
K94035	SMC/G/10	10	12.5	12.5	45	1.16	2
K94036	SM/G/20	20	12.5	22.5	45	2.80	2
K94037	SM/G/40	40	12.5	42.5	45	5.60	2
K94038	SM/G/50	50	12.5	52.5	45	7.00	2

Optical Glass windows 335/2500 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	No. of stoppers	Polished Windows
			W	L	H			
K94045	SMS/G/5	5	12.5	7.5	48	0.70	1	2
K94046	SMS/G/10	10	12.5	12.5	48	1.40	1	2
K94047	SMSC/G/10	10	12.5	12.5	48	1.16	1	2
K94048	SMS/G/20	20	12.5	22.5	48	2.80	1	2
K94049	SMS/G/40	40	12.5	42.5	48	5.60	1	2
K94050	SMS/G/50	50	12.5	52.5	48	7.00	2	2

Quartz windows 200 / 2700 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
K94039	SM/Q/5	5	12.5	7.5	45	0.70	2
K94040	SM/Q/10	10	12.5	12.5	45	1.40	2
K94041	SMC/Q/10	10	12.5	12.5	45	1.16	2
K94042	SM/Q/20	20	12.5	22.5	45	2.80	2
K94043	SM/Q/40	40	12.5	42.5	45	5.60	2
K94044	SM/Q/50	50	12.5	52.5	45	7.00	2

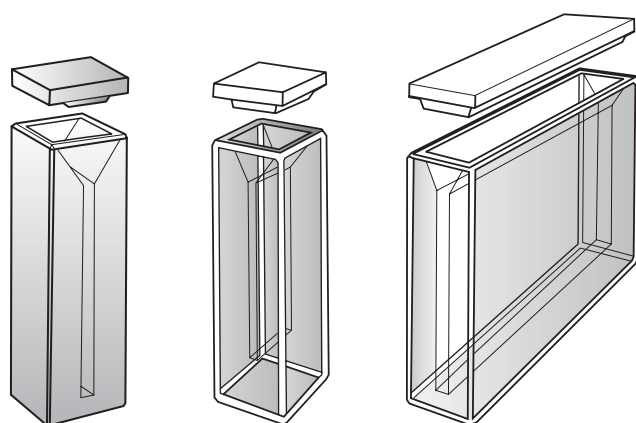
Quartz windows 200/2700 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	No. of stoppers	Polished Windows
			W	L	H			
K94051	SMS/Q/5	5	12.5	7.5	48	0.70	1	2
K94052	SMS/Q/10	10	12.5	12.5	48	1.40	1	2
K94053	SMSC/Q/10	10	12.5	12.5	48	1.16	1	2
K94054	SMS/Q/20	20	12.5	22.5	48	2.80	1	2
K94055	SMS/Q/40	40	12.5	42.5	48	5.60	1	2
K94056	SMS/Q/50	50	12.5	52.5	48	7.00	2	2

MICRO CELLS

The purpose of Micro cells is to use a very small sample volume to make a measurement. The volume of a Micro cell is approximately 20% of an equivalent path length standard type cell. These cells have two clear windows, two walls and an open top. The walls and the bottom are polished inside and frosted outside. The thickness of the polished windows is typically 1.25 mm and the base is 3 mm and 9 mm in the MC and MSC type, in order to further reduce the sample volumes. The overall height of Micro cells is 45 mm or 48 mm for those fitted with a stopper. The interior sample compartment width of Micro cells is reduced to 2 mm and therefore it is crucial to ensure that the light beam from the instrument passes centrally through the sample compartment; this is especially important for long path length cells. Each cell in this range is supplied with a teflon or glass cover and stoppers, where applicable, are in teflon.

With LID

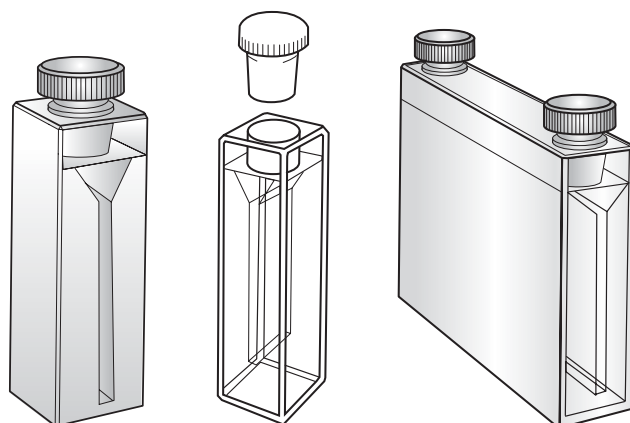


M/Q/10

MC/Q/10

M/Q/40

With Stopper



MS/Q/10

MSC/Q/10

MS/Q/50

Optical Glass windows 335/2500 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
K94057	M/G/5	5	12.5	7.5	45	0.35	2
K94058	M/G/10	10	12.5	12.5	45	0.70	2
K94059	MC/G/10	10	12.5	12.5	45	0.58	2
K94060	M/G/20	20	12.5	22.5	45	1.40	2
K94061	M/G/40	40	12.5	42.5	45	2.80	2
K94062	M/G/50	50	12.5	52.5	45	3.50	2

Optical Glass windows 335/2500 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	No. of stoppers	Polished Windows
			W	L	H			
K94069	MS/G/5	5	12.5	7.5	48	0.35	1	2
K94070	MS/G/10	10	12.5	12.5	48	0.70	1	2
K94071	MSC/G/10	10	12.5	12.5	48	0.58	1	2
K94072	MS/G/20	20	12.5	22.5	48	1.40	1	2
K94073	MS/G/40	40	12.5	42.5	48	2.80	1	2
K94074	MS/G/50	50	12.5	52.5	48	3.50	2	2

Quartz windows 200/2700 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
K94063	M/Q/5	5	12.5	7.5	45	0.35	2
K94064	M/Q/10	10	12.5	12.5	45	0.70	2
K94065	MC/Q/10	10	12.5	12.5	45	0.58	2
K94066	M/Q/20	20	12.5	22.5	45	1.40	2
K94067	M/Q/40	40	12.5	42.5	45	2.80	2
K94068	M/Q/50	50	12.5	52.5	45	3.50	2

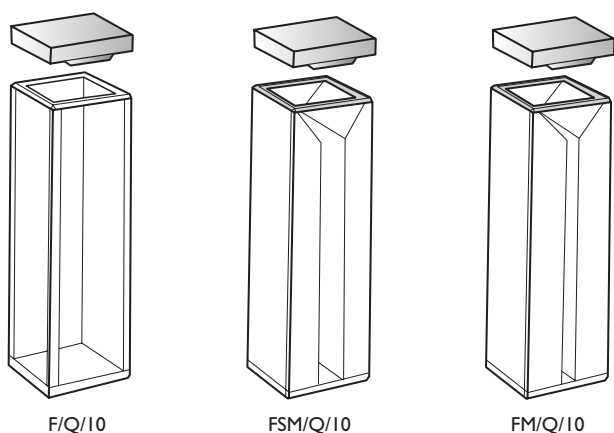
Quartz windows 200/2700 nm

Code	Type	Path Length mm	Exterior mm			Volume ml	No. of stoppers	Polished Windows
			W	L	H			
K94075	MS/Q/5	5	12.5	7.5	48	0.35	1	2
K94076	MS/Q/10	10	12.5	12.5	48	0.70	1	2
K94077	MSC/Q/10	10	12.5	12.5	48	0.58	1	2
K94078	MS/Q/20	20	12.5	22.5	48	1.40	1	2
K94079	MS/Q/40	40	12.5	42.5	48	2.80	1	2
K94080	MS/Q/50	50	12.5	52.5	48	3.50	2	2

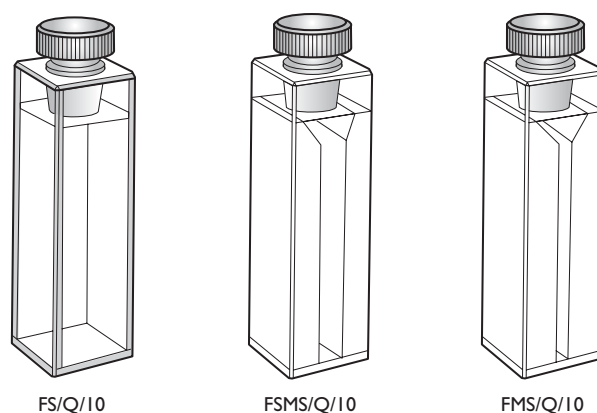
FLUORIMETER CELLS

Fluorimeter cells have been developed for general fluorescence measurements. These cells have four windows and an open top. All four windows and the bottom are polished both inside and outside. The thickness of the polished windows is typically 1.25 mm and the base is 3 mm. The overall height is 45 mm or 48 mm for those fitted with a stopper. The interior sample compartment width is reduced to 4 mm in Semi - Micro type and 2 mm in Micro type, therefore it is crucial to ensure that the light beam from the instrument passes centrally through the sample compartment, which is especially important for long path length cells. Each cell in this range is supplied with either a teflon or a glass cover and stoppers, where applicable, are in teflon.

With LID



With Stopper



Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows	Base
MACRO TYPE								
Optical Glass windows 335/2500 nm								
K94081	F/G/5	5	12.5	7.5	45	1.7	4	I
K94082	F/G/10	10	12.5	12.5	45	3.5	4	I
K94083	F/G/20	20	12.5	22.5	45	7.0	4	I
K94084	F/G/40	40	12.5	42.5	45	14.0	4	I
Quartz windows 200/2700 nm								
K94085	F/Q/5	5	12.5	7.5	45	1.7	4	I
K94086	F/Q/10	10	12.5	12.5	45	3.5	4	I
K94087	F/Q/20	20	12.5	22.5	45	7.0	4	I
K94088	F/Q/40	40	12.5	42.5	45	14.0	4	I
SEMI - MICRO TYPE								
Optical Glass windows 335/2500 nm								
K94089	FSM/G/10	10	12.5	12.5	45	1.4	4	I
Quartz windows 200/2700 nm								
K94090	FSM/Q/10	10	12.5	12.5	45	1.4	4	I
MICRO TYPE								
Optical Glass windows 335/2500 nm								
K94091	FM/G/10	10	12.5	12.5	45	0.7	4	I
Quartz windows 200/2700 nm								
K94092	FM/Q/10	10	12.5	12.5	45	0.7	4	I

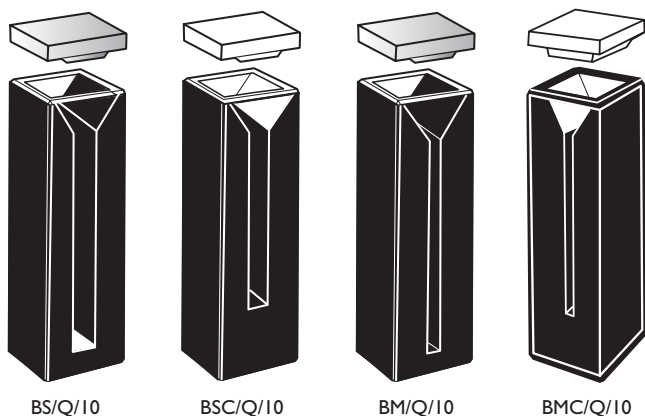
Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows	Base
MACRO TYPE								
Optical Glass windows 335/2500 nm								
K94093	FS/G/5	5	12.5	7.5	48	1.7	4	I
K94094	FS/G/10	10	12.5	12.5	48	3.5	4	I
K94095	FS/G/20	20	12.5	22.5	48	7.0	4	I
K94096	FS/G/40	40	12.5	42.5	48	14.0	4	I
Quartz windows 200/2700 nm								
K94097	FS/Q/5	5	12.5	7.5	48	1.7	4	I
K94098	FS/Q/10	10	12.5	12.5	48	3.5	4	I
K94099	FS/Q/20	20	12.5	22.5	48	7.0	4	I
K94100	FS/Q/40	40	12.5	42.5	48	14.0	4	I
SEMI - MICRO TYPE								
Optical Glass windows 335/2500 nm								
K94101	FSMS/G/10	10	12.5	12.5	48	1.4	4	I
Quartz windows 200/2700 nm								
K94102	FSMS/Q/10	10	12.5	12.5	48	1.4	4	I
MICRO TYPE								
Optical Glass windows 335/2500 nm								
K94103	FMS/G/10	10	12.5	12.5	48	0.7	4	I
Quartz windows 200/2700 nm								
K94104	FMS/Q/10	10	12.5	12.5	48	0.7	4	I

SELF MASKING CELLS

The Self Masking cells have two non-transmitting black walls which improve sensitivity by eliminating stray light from measurements. The types available are Semi - Micro and Micro with cover or stopper.

The thickness of the polished windows is 1.25 mm and the base is 3 mm and 9 mm in the BSC, BCM, BSCS and BMCS type, in order to further reduce the sample volumes. The interior sample compartment width of Semi - Micro is reduced to 4 mm, and 2 mm in the Micro types. These cells have an overall height of 45 mm or 48 mm for those with a stopper, two clear windows and an open top. Each cell in this range is supplied with either a teflon or glass cover and stoppers, where applicable, are in teflon.

With LID



BS/Q/10

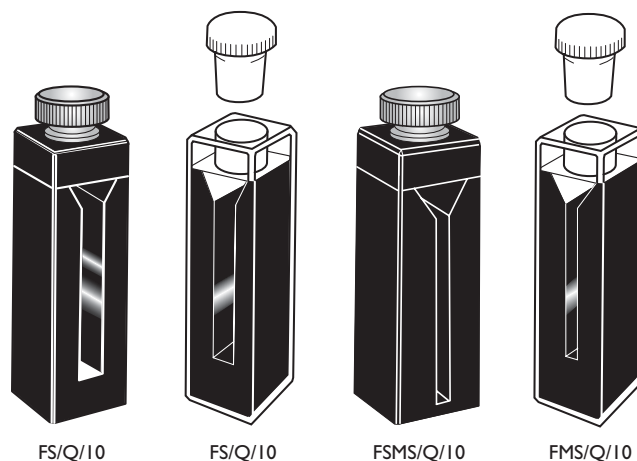
BSC/Q/10

BM/Q/10

BMC/Q/10

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
SEMI - MICRO TYPE							
Optical Glass windows 335/2500 nm							
K94105	BS/G/5	5	12.5	7.5	45	0.70	2
K94106	BS/G/10	10	12.5	12.5	45	1.40	2
K94107	BSC/G/10	10	12.5	12.5	45	1.16	2
K94108	BS/G/20	20	12.5	22.5	45	2.80	2
K94109	BS/G/40	40	12.5	42.5	45	5.60	2
Quartz windows 200/2700 nm							
K94110	BS/Q/5	5	12.5	7.5	45	0.70	2
K94111	BS/Q/10	10	12.5	12.5	45	1.40	2
K94112	BSC/Q/10	10	12.5	12.5	45	1.16	2
K94113	BS/Q/20	20	12.5	22.5	45	2.80	2
K94114	BS/Q/40	40	12.5	42.5	45	5.60	2
MICRO TYPE							
Optical Glass windows 335/2500 nm							
K94115	BM/G/5	5	12.5	7.5	45	0.35	2
K94116	BM/G/10	10	12.5	12.5	45	0.70	2
K94117	BMC/G/10	10	12.5	12.5	45	0.58	2
K94118	BM/G/20	20	12.5	22.5	45	1.40	2
K94119	BM/G/40	40	12.5	42.5	45	2.80	2
Quartz windows 200/2700 nm							
K94120	BM/Q/5	5	12.5	7.5	45	0.35	2
K94121	BM/Q/10	10	12.5	12.5	45	0.70	2
K94122	BMC/Q/10	10	12.5	12.5	45	0.58	2
K94123	BM/Q/20	20	12.5	22.5	45	1.40	2
K94124	BM/Q/40	40	12.5	42.5	45	2.80	2

With Stopper



FS/Q/10

FS/Q/10

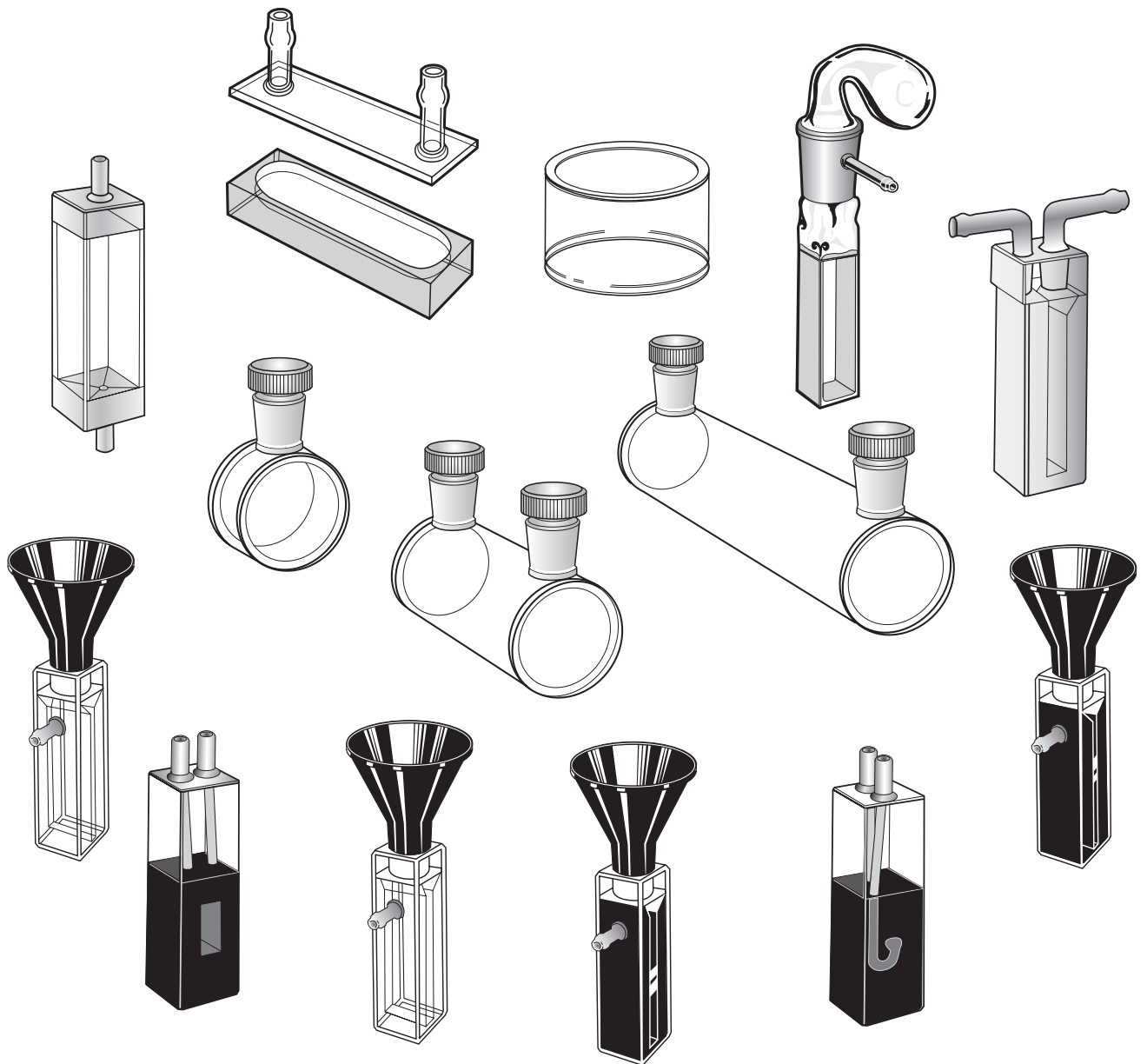
FSMS/Q/10

FMS/Q/10

Code	Type	Path Length mm	Exterior mm			Volume ml	Polished Windows
			W	L	H		
SEMI - MICRO TYPE							
Optical Glass windows 335/2500 nm							
K94125	BSS/G/5	5	12.5	7.5	48	0.70	2
K94126	BSS/G/10	10	12.5	12.5	48	1.40	2
K94127	BSCS/G/10	10	12.5	12.5	48	1.16	2
K94128	BSS/G/20	20	12.5	22.5	48	2.80	2
K94129	BSS/G/40	40	12.5	42.5	48	5.60	2
Quartz windows 200/2700 nm							
K94130	BSS/Q/5	5	12.5	7.5	48	0.70	2
K94131	BSS/Q/10	10	12.5	12.5	48	1.40	2
K94132	BSCS/Q/10	10	12.5	12.5	48	1.16	2
K94133	BSS/Q/20	20	12.5	22.5	48	2.80	2
K94134	BSS/Q/40	40	12.5	42.5	48	5.60	2
MICRO TYPE							
Optical Glass windows 335/2500 nm							
K94135	BMS/G/5	5	12.5	7.5	48	0.35	2
K94136	BMS/G/10	10	12.5	12.5	48	0.70	2
K94137	BMCS/G/10	10	12.5	12.5	48	0.58	2
K94138	BMS/G/20	20	12.5	22.5	48	1.40	2
K94139	BMS/G/40	40	12.5	42.5	48	2.80	2
Quartz windows 200/2700 nm							
K94140	BMS/Q/5	5	12.5	7.5	48	0.35	2
K94141	BMS/Q/10	10	12.5	12.5	48	0.70	2
K94142	BMCS/Q/10	10	12.5	12.5	48	0.58	2
K94143	BMS/Q/20	20	12.5	22.5	48	1.40	2
K94144	BMS/Q/40	40	12.5	42.5	48	2.80	2

TAILOR - MADE CELLS

We are able to produce a wide variety of other cell types, both in glass and in quartz, to satisfy customer's particular technical requirements. However, minimum order quantity restrictions may apply. Details on request.



ACCESSORIES

CELL LIDS



Glass

Cell Path Length	Code
5 mm	K94145
10 mm	K94146
20 mm	K94147
40 mm	K94148
50 mm	K94149
100 mm	K94150

Teflon

Cell Path Length	Code
5 mm	not available
10 mm	K94151
20 mm	K94152
40 mm	K94153
50 mm	not available
100 mm	not available

TEFLON STOPPERS

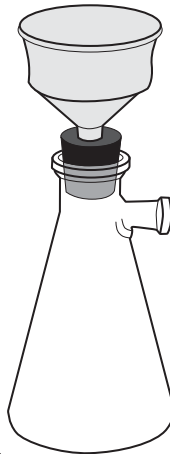


	Code
bottom Ø 5 mm	K94154
bottom Ø 7,5 mm	K94155
bottom Ø 9,5 mm	K94156



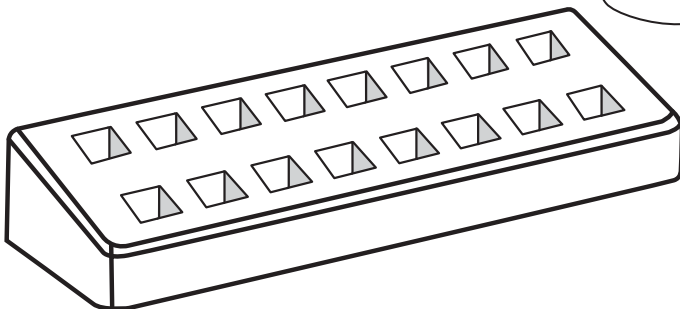
CELL HOLDER short path length

The cell holder is designed for use with path lengths of 5 mm or less. Exterior dimensions are 12.5x12.5x52 mm.
Code K94157



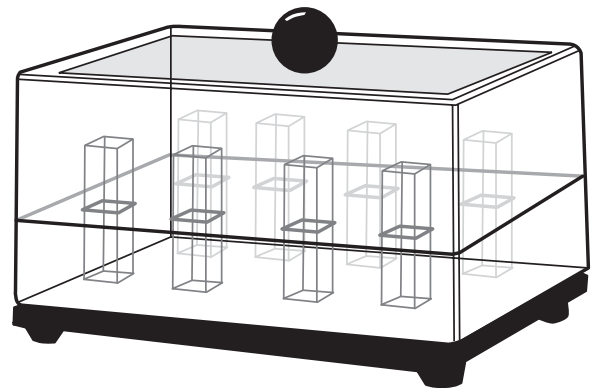
CELL CLEANER

Made of PE. Practically unbreakable. For rinsing drying cells in a few seconds in one process. The only requirements are a filter flask fitted with a rubber stopper with hole bored to take the funnel, vacuum tubing and a slight vacuum.
Code K94158



CELL STAND

PP. 16 numbered places.
Colour: grey. Stream-sterilizable (121 °C)
Size : (LxWxH) mm 210x70x38
Code K94159



CELL STORAGE CONTAINER

For dust-free and protective storage of clean cuvettes. For cuvettes up to 55 mm high. Handy storage at the workplace. KUVIBOX1 holds 16 cuvettes with 10 mm path lengths. KUVIBOX2 holds 8 cuvettes with 10 mm and 4 cuvettes with 20 mm path lengths.

Type	Code
KUVIBOX1	K94160
KUVIBOX2	K94161

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