



Starna

Pathlengths from 0.01mm to 100mm

Volumes from 0.6ul to 35ml

Far UV & NIR Quartz

Glass & Borosilicate

The Spectroscopy Specialists



Introduction to Starna®

The wide variety of Starna® products in this catalogue are manufactured in the Starna Scientific Ltd (formerly Optiglass Ltd) factory founded in 1964, whose lineage of optical expertise is traceable to the early part of the last century.

Starna Scientific is the manufacturing division of the international group of Starna® companies, who have a recognised world-wide reputation for quality, service, innovation and co-operation in the production and supply of spectrophotometer cells, optical components and certified reference materials.

During the 1950s, the founding members of the company developed and perfected the technique of fully fusing optically polished component parts by heat alone, without distortion. This major advance transformed the design and production of spectrophotometer cells and associated products. Continual development and improvement is reflected in the high quality world class Starna® products.

All manufacturing processes are carried out in an ISO 9000 certified production facility, from design and development of product to customised production machinery. The unique blend of skills including: cutting, slicing, grinding, polishing, conventional drilling, ultrasonic drilling and fusing as well as metallic, multi-layer and anti-reflection coating in one of many coating plants, achieves a complete vertically integrated manufacturing process.

During manufacture of all component parts, special care is taken to avoid contamination by the use of stringent cleaning processes. Together with mandatory inspection procedures these stringent cleaning processes ensure all products leave the factory in a pristine contamination-free condition, with an unconditional guarantee against faulty workmanship. This special treatment of cells together with internally profiled cells reduces bubble adhesion, particularly important in flow cell applications. In addition to the ISO 9001 certified manufacturing facility, the Starna Reference Material Calibration Laboratory which has been UKAS accredited to ISO 17025 since 2001, also achieved ISO guide 34 in 2006, the highest level of accreditation, recognised world-wide. The unique combination of manufacturing, application and laboratory skills, permits full traceability throughout the whole production process, making Starna Scientific a unique partner to instrument manufacturers, dealers and retail customers worldwide who require completely independent guaranteed validation reference materials for analytical equipment.

Cell specifications

Starna spectrophotometer cells and other quartz and glass assemblies, unless precluded by design, are assembled using a fully fused method of construction. This technique, pioneered and used by Starna Scientific since the mid 1950s, ensures that cells are fused into a single homogeneous entity using heat alone, without intermediate bonding materials. All cells are then carefully annealed to remove any residual strain from the fusing process. This ensures maximum physical strength as well as resistance to solvents. With few exceptions, most cells can be used safely with pressure differentials of up to 3 x 10⁵Pa (3 Bar) and some up to 10x10⁵Pa (10 Bar).

General specifications

Windows parallel to: better than 3 minutes of arc
 Window flatness to: better than 4 Newton fringes
 Window polish, standard: 60/40 scratch/dig
 Window polish, laser: 20/10 scratch/dig

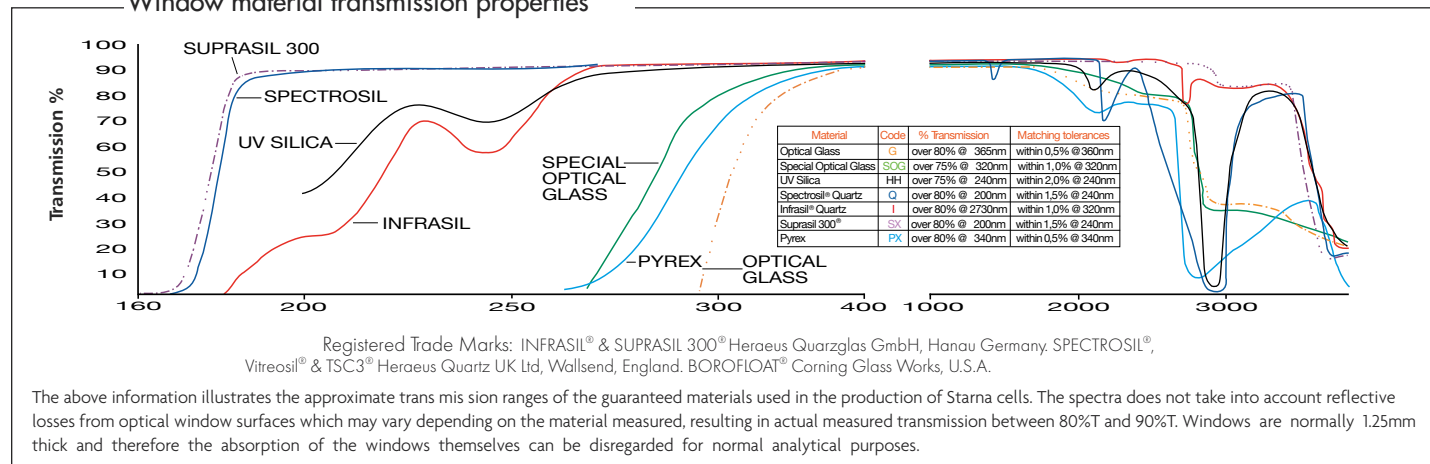
| Material | Path lengths | Tolerance |
|-----------------------|----------------|-----------|
| Glass | less than 10mm | ± 0.02mm |
| Glass | 10 to 30mm | ± 0.1mm |
| Glass | 40 to 100mm | ± 0.2mm |
| Special Optical Glass | up to 20mm | ± 0.01mm |
| Special Optical Glass | 30 to 100mm | ± 0.02mm |
| Quartz | 0.01 to 0.05mm | ± 0.003mm |
| Quartz | 0.1 to 0.4mm | ± 0.005mm |
| Quartz | 0.5 to 30mm | ± 0.01mm |
| Quartz | 40 to 100mm | ± 0.02mm |

Standard window thickness is 1.25mm, polished to better than 4 Newton Fringes per centimetre in the viewing area, typically flat to better than 1 micron (0.001mm) over the window area. Although cells can be used with most solvents and acidic solutions, fluorinated acids such as Hydrofluoric Acid (HF) in all concentrations should be avoided as they will attack the quartz itself. Strong basic solutions (pH 9.0 and above) will also degrade the surface of the windows and shorten the useful life of the cells.

Flow cells with path lengths of less than 0.5mm are measured by an interference method both before and after final fusing. Calculation on this measurement provides an uncertainty of path length better than 0.2 microns (0.0002mm). Path length certification can be supplied for individual cells for a small additional charge. This should be requested at the time of ordering.

Water absorption band OH content ppm (mg/g) Infrasil ≤ 8, Suprasil 300 ≤ 1.

Window material transmission properties



Contents

| | | | |
|--|---------|---|---------|
| Absorption cells..... | 27 | Sub-micro, de-bubbler | 19 |
| Accessories..... | 28 | Ultra-micro | 19 & 20 |
| Caps | | Long aperture | 15 - 17 |
| Cell holders | | Round aperture | 19 & 20 |
| Cell spacers | | Wide aperture | 15 - 17 |
| Funnels | | Medium aperture | 15 & 16 |
| Lids | | Fluorescence reference materials | 30 |
| Magnetic stir bars | | Fluorimeter cells..... | 21 - 25 |
| Mirror coatings | | Standard rectangular | 21 |
| Quartz block inserts | | Micro & semi-micro, with & without stopper..... | 21 & 22 |
| Stoppers | | Micro cell adaptors - FCAs | 21 |
| Anaerobic cells..... | 12 | Sub-micro | 22 |
| Aspiration cells, micro and semi-micro..... | 18 | Flow cells, all types | 14 & 24 |
| CD matching..... | 4 | Triangular open top/stopper | 23 |
| Cell matching..... | 4 & 2 | Constant temperature | 25 |
| Cell specifications | 2 | Gel boat cells | 27 |
| Cell stirrer (Spinette)..... | 30 | Magnetic stirring cells | 26 |
| Colorimeter cells..... | 27 | Micro cells / Micro Cells short with lid or stopper | 7 |
| Connector fittings | 29 | Micro cells self-masking with lid or stopper | 7 |
| Constant temperature cells | 25 | Mixing cells | 23 |
| Cube cells | 23 | NIST traceable certified reference materials | 30 |
| Cylindrical cells..... | 10 | Polarimeter cells | 26 |
| Constant temperature..... | 25 | Quartz/Borofloat graded seals fused to cells | 11 |
| Short path..... | 10 | Rectangular cells with small screw caps | 12 |
| Short path, micro..... | 10 | Reference materials, liquid and glass | 30 |
| Standard | 10 | Refractometer cells | 25 |
| Large diameter..... | 10 | Screw cap & septum cap cells GL14 | 12 |
| With tube..... | 10 | Semi-micro cells with lid or stopper | 6 |
| With graded seal | 11 | Semi-micro cells self-masking with lid or stopper..... | 6 |
| Demountable cells, short path length..... | 13 | Semi Micro cells short | 6 |
| Dissolution cell construction..... | 16 | Semi Micro cells short, self-masking | 6 |
| Divided cells | 23 | Small screw cap & septum cap cells | 12 |
| Dual path length cells..... | 23 | Standard rectangular cells with lid or stopper..... | 5 |
| Dye laser cells..... | 26 | Sub-micro cells with lid or vaned stopper | 8 |
| Flow cells | 14-20 | Sub-micro and multi-micro cells short | 8 |
| Dissolution cells..... | 15-17 | Sub-micro cells, low headspace | 9 |
| Fittings..... | 29 | Sub-micro cells with stopper | 9 |
| Fluorimeter..... | 24 | Suction cells | 18 |
| Fluorimeter HPLC..... | 24 | Tandem cells | 23 |
| HPLC | 18 | Terms of sale | 30 |
| Short path..... | 14 & 17 | Transmission specifications..... | 2-4 |
| Short path, demountable..... | 14 | Ultra-micro cells..... | 9 |
| In-line and Microscope analysis, in line | 13-14 | Ultra-micro lens cell | 9 & 23 |
| Standard & Semi-micro | 15 | UHV cells with stopcock | 11 |
| Sub-micro | 16 | Z Height dimension | 4 |

How to order

Essential ordering information is shown under the Blue column headings throughout the catalogue. Detail shown under the black headings is additional descriptive and dimensional information and need not be included.

eg. to order Type **1/I/10** (Standard Rectangular, Infrasil, 10mm Path length)

| Type No. | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|----------|--------------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| 1 | G, SOG, PX, HH, Q, I, SX | 10 | 10 | 12.5 | 12.5 | 45 | 3.500 |
| ▲ | ▲ | ▲ | | | | | |

eg. to order Type **19.01/Q/1/Z8.5** (Ultra-micro, Spectrosil, 1mm path length, 8.5mm Z dimension)

| Type No. | Window Materials | Path Length | Z Height | Sample chamber | | External | | | Nominal Vol. ml |
|----------|------------------|-------------|-------------|----------------|---|----------|------|------|-----------------|
| | | | | W | H | L | W | H | |
| 19.01 | SOG, Q | 1 | 8.5, 15, 20 | 5 | 1 | 12.5 | 12.5 | 40.5 | 0.0050 |
| ▲ | ▲ | ▲ | | | | | | | |

Material specifications

Starna Scientific offer the following window materials: Optical Glass (G), Special Optical Glass (SOG), & Borofloat® (PX) for the Visible range; UV Silica Quartz(HH) for UV; Spectrosil® Quartz (Q) or equivalent for FarUV & Visible, Infrasil® Quartz (I) or equivalent for UV through Near Infra-red (IR); Suprasil 300® Quartz (SX) or equivalent for FarUV through Near IR

If a specific window material is required and is not shown in this catalogue please contact us for availability. The following table shows the Usable Range (UR) and the range over which the transmission guaranteed better than 80%.

| Material | UR From | >80% From | Nm |
|-----------------------|---------|-----------|---------------------|
| Optical Glass | G | 334 nm | 360 through 2500 nm |
| Special Optical Glass | SOG | 320 nm | 320 through 2500 nm |
| Borofloat | PX | 325 nm | 330 through 2500 nm |
| UV Silica | HH | 220 nm | 260 through 2500 nm |
| Spectrosil® Quartz | Q | 190 nm | 200 through 2500 nm |
| Infrasil® | I | 220 nm | 220 through 3800 nm |
| Suprasil 300® Quartz | SX | 190 nm | 200 through 3500 nm |

For fluorescent applications Spectrosil® is the recommended window material, as it does not exhibit any background fluorescence. Some other materials, especially glass and lower grades of quartz may have some background fluorescence.

The meticulous care taken in the quality of the polishing and unique construction of regular Starna® quartz fluorescent cells brings them within tolerances which are sufficiently stringent for them to be used in laser applications. These techniques are particularly relevant in the manufacture of much larger Ultra High Vacuum (UHV) cells.

Cell matching

Modern production and fusing techniques, together with consistent raw materials, have virtually eliminated the need for transmission matching in regular standard high grade quartz cells.

The extremely accurate physical path length tolerances used in production, stated on page 2, are essential especially on very short path lengths, for instance in dissolution measurements where multiple short path length cells may be used. Such flow cells Types 73, 74, 75, 583, 584 and 585 each have a unique fully traceable serial number engraved on the window. Cells with path lengths less than 0.5mm are measured using an interference method both before and after final fusing to provide a path length uncertainty calculation better than 0.2 microns (0.0002 mm). A certificate of path length and full production traceability can be provided for each individual cell on request, for a small additional charge.

Cells manufactured for Circular Dichroism(CD) must have strain-free oriented windows and the complete cell carefully annealed. This process incurs an additional charge for each cell. Cells required for CD must have this suffix CD added to the part number e.g. 34/Q/50/CD.

Z Height dimension - IMPORTANT!

The 'Z' height is the distance from the bottom of the cell holder cavity to the centre of the incident light beam profile, which can be round, rectangular or curved. For the most efficient use of energy and sample volume the sample chamber aperture should ideally encompass the light beam with a small extra margin to avoid beam clipping.

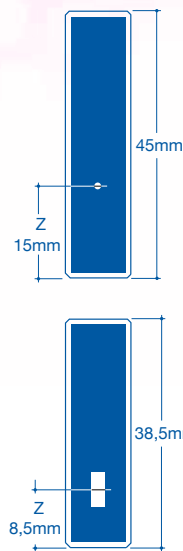
The 'Z' height of the cell, the distance from the centre of the cell sample chamber aperture to the base of the cell, should match to that of the instrument.

Manufacturers have generally designed their instruments with 'Z' dimensions ranging from 5 to 20mm with 8.5 or 15mm being the most popular.

Choosing the correct cell 'Z' height is very important when the aperture in the cell is very small, as in sub-micro cells and micro flow cells.

The standard 'Z' heights for any cell, where this information is critical, are shown in a separate column in the information tables, headed 'Z' Height. Other 'Z' dimensions can be supplied on request.

The correct 'Z' height should be added to the part number e.g. if 8.5mm is required it should be shown as follows 73.4/SOG/10/Z8.5. As a double check at the time of ordering, it is beneficial to state the instrument make and model number for which the cell is required.



ALL dimensions stated in this catalogue are in millimetres unless otherwise indicated

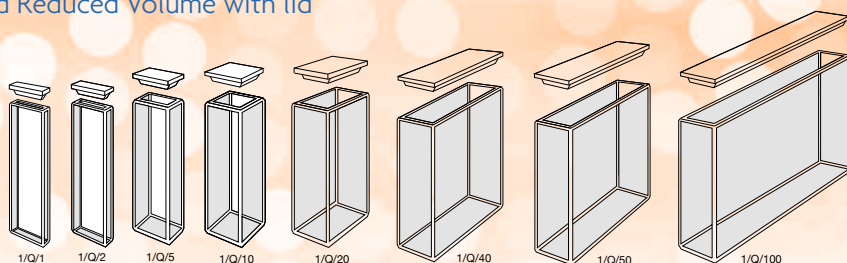
When cells matched for transmission are required, mainly but not exclusively for less consistent materials such as Glass and Special Optical Glass where transmission characteristics from melt to melt differ, each measured cell is given a match code relative to its transmission at a given wavelength as measured on a spectrophotometer. The transmission matching tolerances at measured wavelengths are shown as follows:

| Window Material | Matching Tolerance | Measured at Wavelength |
|-----------------------|--------------------|------------------------|
| Optical Glass | 0.5% | 350nm |
| Special Optical Glass | 1.0% | 320nm |
| Borofloat | 1.0% | 320nm |
| UV Silica | 1.5% | 240nm |
| Spectrosil® Quartz | 1.5% | 200nm |
| Infrasil® Quartz | 1.5% | 240nm |
| Suprasil 300® | 1.5% | 240nm |

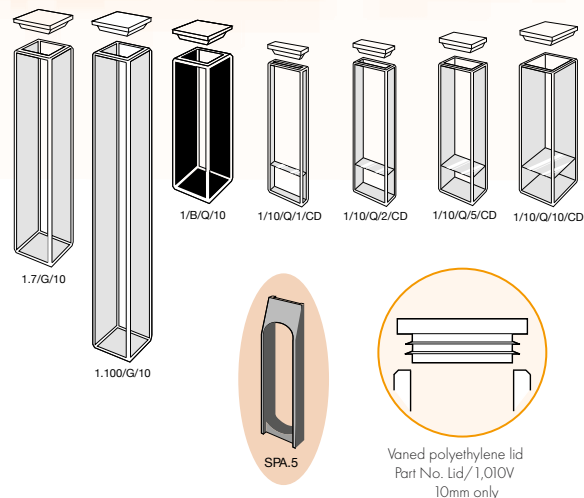
The matching codes are only of real value when comparing new cells as transmission characteristics change during use because of surface contamination or wear due to cleaning processes. Therefore a brand new cell may not identically match an older used cell of the same match code.

Type 1. Macro/Standard Rectangular with lid, and Reduced Volume with lid

- Open top, with non-sealing PTFE cover.
- Polyethylene vanned lid available on request for 10mm cells only, providing a liquid-tight seal. (see page 28)
- Two polished windows.
- Walls polished internally, fine ground externally.
- Suitable for use with all standard cell holders.
- **Type 1/B** has black side walls.
- **Type 1/10/CD** thickbase, reduced sample for CD.
- Cell compartment spacers **SPA** available for 1, 2 & 5mm Path length cells (see page 28).



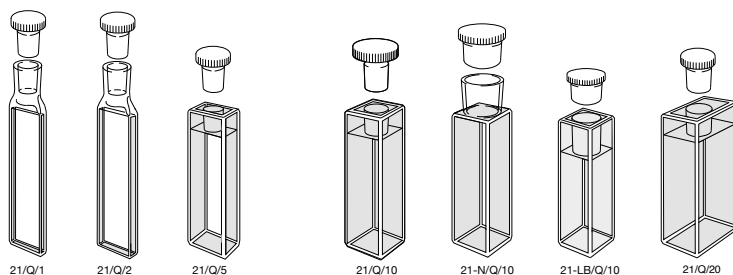
| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|--------------------------|-------------|----------------|----------|------|-----|-----------------|
| | | | | L | W | H | |
| 1 | G, SOG, Q, I, SX | 1 | 10 | 3.5 | 12.5 | 45 | 0.400 |
| 1 | G, SOG, Q, I, SX | 2 | 10 | 4.5 | 12.5 | 45 | 0.700 |
| 1 | G, SOG, Q, I, SX | 5 | 10 | 7.5 | 12.5 | 45 | 1.700 |
| 1 | G, SOG, PX, HH, Q, I, SX | 10 | 10 | 12.5 | 12.5 | 45 | 3.500 |
| 1 | G, SOG, Q, I, SX | 20 | 10 | 22.5 | 12.5 | 45 | 7.000 |
| 1 | G, SOG, Q, I, SX | 30 | 10 | 32.5 | 12.5 | 45 | 10.500 |
| 1 | G, SOG, Q, I, SX | 40 | 10 | 42.5 | 12.5 | 45 | 14.000 |
| 1 | G, SOG, Q, I, SX | 50 | 9.5 | 52.5 | 12.5 | 45 | 17.500 |
| 1 | G, SOG, Q, I, SX | 100 | 9.5 | 102.5 | 12.5 | 45 | 35.000 |
| 1/B | Q | 10 | 10 | 12.5 | 12.5 | 45 | 3.500 |
| 1.7 | G | 10 | 10 | 12.5 | 12.5 | 70 | 6.500 |
| 1.100 | G | 10 | 10 | 12.5 | 12.5 | 100 | 10.000 |
| 1/10/CD | Q, I | 1 | 10 | 3.5 | 12.5 | 45 | 0.275 |
| 1/10/CD | Q, I | 2 | 10 | 4.5 | 12.5 | 45 | 0.450 |
| 1/10/CD | Q, I | 5 | 10 | 7.5 | 12.5 | 45 | 1.200 |
| 1/10/CD | Q, I | 10 | 10 | 12.5 | 12.5 | 45 | 2.500 |



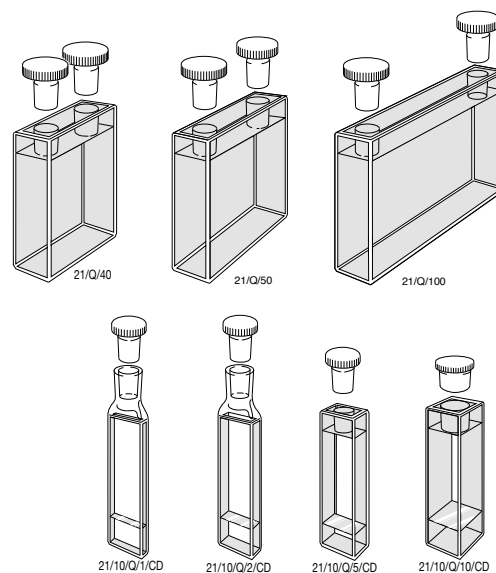
For GL/14 Screw tops, graded seals & straight bore tubes - See pages 11 & 12

Type 21. Macro/Standard Rectangular with stopper(s), and Reduced Volume with stopper(s)

- Closed by PTFE stopper(s), providing a liquid-tight seal.
- Two polished windows.
- Walls polished internally, fine ground externally.
- Suitable for use with all standard cell holders.
- Type 21-N Wide neck.
- Type 21-LB With long stopper block.
- Type 21/10/CD thickbase, reduced sample for CD.
- Cell compartment spacers SPA available for 1, 2 & 5mm Path length cells (see page 28).



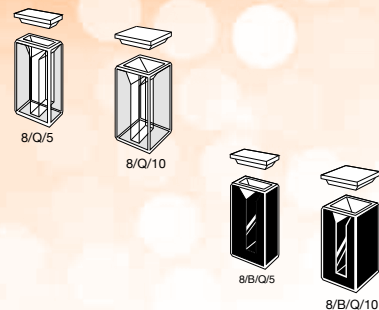
| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|----------|----------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| 21 | G, SOG, Q, I, SX | 1 | 10 | 3.5 | 12.5 | 55 | 0.400 |
| 21 | G, SOG, Q, I, SX | 2 | 10 | 4.5 | 12.5 | 55 | 0.700 |
| 21 | G, SOG, Q, I, SX | 5 | 10 | 7.5 | 12.5 | 48 | 1.700 |
| 21 | G, SOG, HH, Q, I, SX | 10 | 10 | 12.5 | 12.5 | 48 | 3.500 |
| 21 | G, SOG, Q, I, SX | 20 | 10 | 22.5 | 12.5 | 48 | 7.000 |
| 21 | G, SOG, Q, I, SX | 30 | 10 | 32.5 | 12.5 | 48 | 10.500 |
| 21 | G, SOG, Q, I, SX | 40 | 10 | 42.5 | 12.5 | 48 | 14.000 |
| 21 | G, SOG, Q, I, SX | 50 | 9.5 | 52.5 | 12.5 | 48 | 17.500 |
| 21 | G, SOG, Q, I, SX | 100 | 9.5 | 102.5 | 12.5 | 48 | 35.000 |
| 21-N | Q | 10 | 10 | 12.5 | 12.5 | 43 | 3.000 |
| 21-LB | Q | 10 | 10 | 12.5 | 12.5 | 42 | 3.000 |
| 21/10/CD | Q, I | 1 | 10 | 3.5 | 12.5 | 55 | 0.275 |
| 21/10/CD | Q, I | 2 | 10 | 4.5 | 12.5 | 55 | 0.450 |
| 21/10/CD | Q, I | 5 | 10 | 7.5 | 12.5 | 48 | 1.200 |
| 21/10/CD | Q, I | 10 | 10 | 12.5 | 12.5 | 48 | 2.500 |



Type 8. Semi Micro short

- Open top, supplied with non-sealing PTFE cover.
- Two polished windows.
- Walls polished internally, fine ground externally.

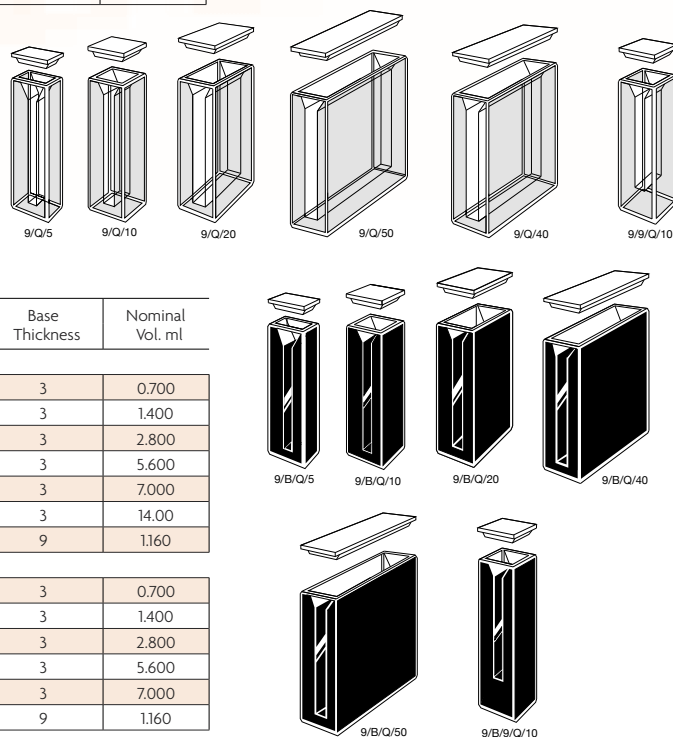
| Type No | Window Materials | Path Length | Internal Width | External | | | Base Thickness | Nominal Vol. ml |
|---------------------------|------------------|-------------|----------------|----------|------|----|----------------|-----------------|
| | | | | L | W | H | | |
| Clear walls | | | | | | | | |
| 8 | SOG, Q | 5 | 4 | 7.5 | 12.5 | 25 | 3 | 0.400 |
| 8 | SOG, Q | 10 | 4 | 12.5 | 12.5 | 25 | 3 | 0.800 |
| Self-masking. Black walls | | | | | | | | |
| 8/B | SOG, Q | 5 | 4 | 7.5 | 12.5 | 25 | 3 | 0.400 |
| 8/B | SOG, Q | 10 | 4 | 12.5 | 12.5 | 25 | 3 | 0.800 |



Type 9 & 9/B. Semi-micro with lid

- Reduced nominal volume to <50% of Standard rectangular. Open top, supplied with non-sealing PTFE cover.
- Two polished windows.
- Walls polished internally, fine ground externally.
- Suitable for use with all standard cell holders.
- **Self-masking solid black walls** enhance sensitivity and improve linearity at higher absorbances.

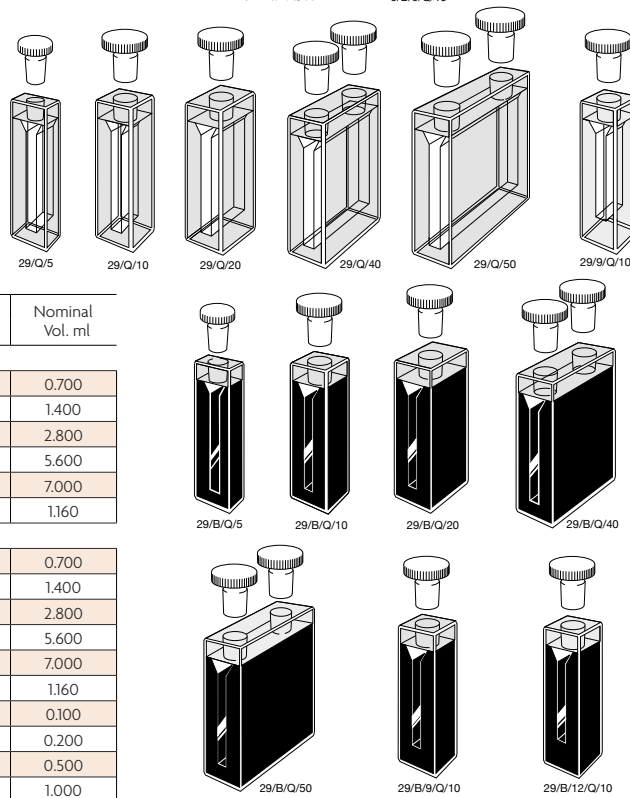
| Type No | Window Materials | Path Length | Internal Width | External | | | Base Thickness | Nominal Vol. ml |
|---------------------------|--------------------------|-------------|----------------|----------|------|----|----------------|-----------------|
| | | | | L | W | H | | |
| Clear walls | | | | | | | | |
| 9 | G, SOG, Q, I, SX | 5 | 4 | 7.5 | 12.5 | 45 | 3 | 0.700 |
| 9 | G, SOG, PX, HH, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 45 | 3 | 1.400 |
| 9 | SOG, Q, I, SX | 20 | 4 | 22.5 | 12.5 | 45 | 3 | 2.800 |
| 9 | SOG, Q, I, SX | 40 | 4 | 42.5 | 12.5 | 45 | 3 | 5.600 |
| 9 | SOG, Q, I, SX | 50 | 4 | 52.5 | 12.5 | 45 | 3 | 7.000 |
| 9 | Q, I, SX | 100 | 4 | 102.5 | 12.5 | 45 | 3 | 14.00 |
| 9/9 | SOG, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 45 | 9 | 1.160 |
| Self-masking. Black walls | | | | | | | | |
| 9/B | SOG, Q, I, SX | 5 | 4 | 7.5 | 12.5 | 45 | 3 | 0.700 |
| 9/B | SOG, HH, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 45 | 3 | 1.400 |
| 9/B | SOG, Q, I, SX | 20 | 4 | 22.5 | 12.5 | 45 | 3 | 2.800 |
| 9/B | SOG, Q, I, SX | 40 | 4 | 42.5 | 12.5 | 45 | 3 | 5.600 |
| 9/B | SOG, Q, I, SX | 50 | 4 | 52.5 | 12.5 | 45 | 3 | 7.000 |
| 9/B/9 | SOG, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 45 | 9 | 1.160 |



Type 29 & 29/B. Semi-micro with stopper(s)

- Reduced nominal volume to <50% of Standard rectangular.
- Closed by PTFE stopper(s), providing a liquid-tight seal.
- Two polished windows.
- Walls polished internally, fine ground externally.
- Suitable for use with all standard cell holders.
- **Self-masking solid black walls** enhance sensitivity and improve linearity at higher absorbances.

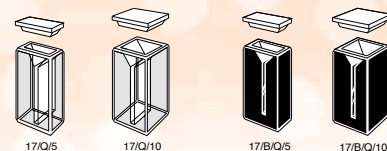
| Type No | Window Materials | Path Length | Internal Width | External | | | Base Thickness | Nominal Vol. ml |
|---------------------------|-----------------------|-------------|----------------|----------|------|----|----------------|-----------------|
| | | | | L | W | H | | |
| Clear walls | | | | | | | | |
| 29 | SOG, Q, I, SX | 5 | 4 | 7.5 | 12.5 | 48 | 3 | 0.700 |
| 29 | SOG, PX, HH, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 48 | 3 | 1.400 |
| 29 | SOG, Q, I, SX | 20 | 4 | 22.5 | 12.5 | 48 | 3 | 2.800 |
| 29 | SOG, Q, I, SX | 40 | 4 | 42.5 | 12.5 | 48 | 3 | 5.600 |
| 29 | SOG, Q, I, SX | 50 | 4 | 52.5 | 12.5 | 48 | 3 | 7.000 |
| 29/9 | SOG, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 48 | 9 | 1.160 |
| Self-masking. Black walls | | | | | | | | |
| 29/B | SOG, Q, I, SX | 5 | 4 | 7.5 | 12.5 | 48 | 3 | 0.700 |
| 29/B | SOG, HH, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 48 | 3 | 1.400 |
| 29/B | SOG, Q, I, SX | 20 | 4 | 22.5 | 12.5 | 48 | 3 | 2.800 |
| 29/B | SOG, Q, I, SX | 40 | 4 | 42.5 | 12.5 | 48 | 3 | 5.600 |
| 29/B | Q, I, SX | 50 | 4 | 52.5 | 12.5 | 48 | 3 | 7.000 |
| 29/B/9 | SOG, Q, I, SX | 10 | 4 | 12.5 | 12.5 | 48 | 9 | 1.160 |
| 29/B/12 | Q | 1 | 4 | 12.5 | 12.5 | 48 | 12 | 0.100 |
| 29/B/12 | Q | 2 | 4 | 12.5 | 12.5 | 48 | 12 | 0.200 |
| 29/B/12 | Q | 5 | 4 | 12.5 | 12.5 | 48 | 12 | 0.500 |
| 29/B/12 | Q | 10 | 4 | 12.5 | 12.5 | 48 | 12 | 1.000 |



Type 17. Micro short

- Two polished windows.
- Open top, supplied with non-sealing PTFE cover.
- Walls polished internally, fine ground externally.
- Base thickness - 3mm.

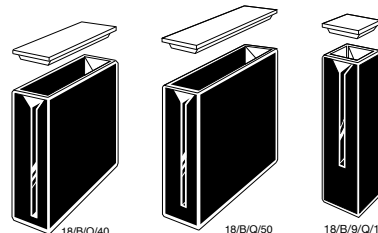
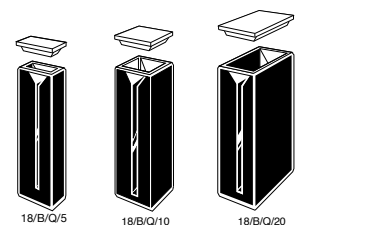
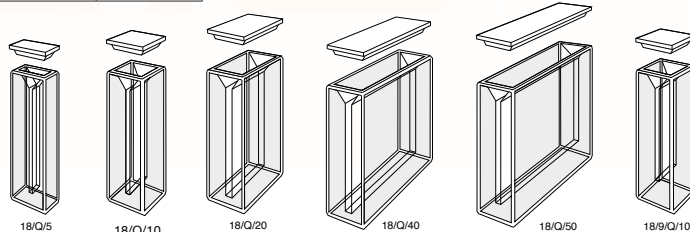
| Type No | Window Materials | Path Length | Internal Width | External | | | Base Thickness | Nominal Vol. ml |
|---------------------------|------------------|-------------|----------------|----------|------|----|----------------|-----------------|
| | | | | L | W | H | | |
| Clear walls | | | | | | | | |
| 17 | SOG, Q | 5 | 2 | 7.5 | 12.5 | 25 | 0.200 | 0.400 |
| 17 | SOG, Q | 10 | 2 | 12.5 | 12.5 | 25 | 0.400 | 0.800 |
| Self-masking. Black walls | | | | | | | | |
| 17/B | SOG, Q | 5 | 2 | 7.5 | 12.5 | 25 | 0.200 | 0.400 |
| 17/B | SOG, Q | 10 | 2 | 12.5 | 12.5 | 25 | 0.400 | 0.800 |



Type 18 & 18/B. Micro with lid

- Reduced nominal volume to <20% of Standard rectangular. Open top, with non-sealing PTFE cover.
- Two polished windows.
- Walls polished internally, fine ground externally.
- Suitable for use with all standard cell holders.
- **Self-masking solid black walls** enhance sensitivity and improve linearity at higher absorbances.

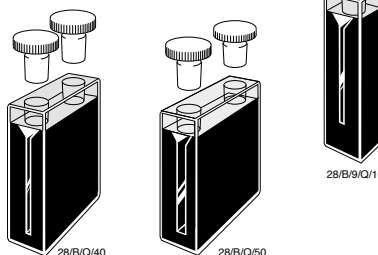
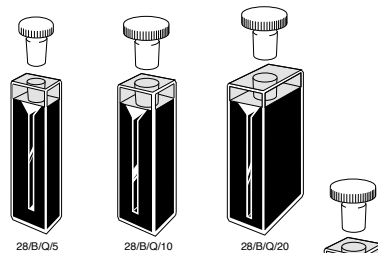
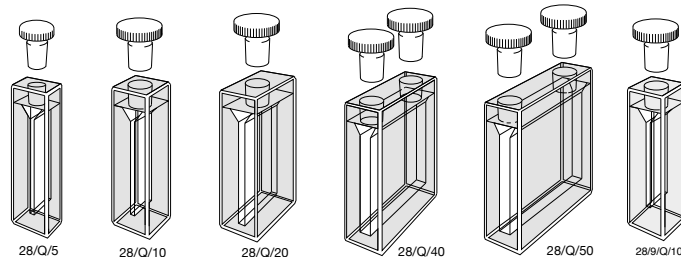
| Type No | Window Materials | Path Length | Internal Width | External | | | Base Thickness | Nominal Vol. ml |
|---------------------------|-----------------------|-------------|----------------|----------|------|----|----------------|-----------------|
| | | | | L | W | H | | |
| Clear walls | | | | | | | | |
| 18 | SOG, Q, I, SX | 5 | 2 | 7.5 | 12.5 | 45 | 3 | 0.350 |
| 18 | SOG, PX, HH, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 45 | 3 | 0.700 |
| 18 | SOG, Q, I, SX | 20 | 2 | 22.5 | 12.5 | 45 | 3 | 1.400 |
| 18 | SOG, Q, I, SX | 40 | 2 | 42.5 | 12.5 | 45 | 3 | 2.800 |
| 18 | SOG, Q, I, SX | 50 | 2 | 52.5 | 12.5 | 45 | 3 | 3.500 |
| 18 | SOG, Q, I, SX | 50 | 2 | 52.5 | 12.5 | 45 | 3 | 3.500 |
| 18 | Q, I, SX | 100 | 2 | 102.5 | 12.5 | 45 | 3 | 7.000 |
| 18/9 | SOG, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 45 | 9 | 0.580 |
| Self-masking. Black walls | | | | | | | | |
| 18/B | SOG, Q, I, SX | 5 | 2 | 7.5 | 12.5 | 45 | 3 | 0.350 |
| 18/B | SOG, HH, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 45 | 3 | 0.700 |
| 18/B | SOG, Q, I, SX | 20 | 2 | 22.5 | 12.5 | 45 | 3 | 1.400 |
| 18/B | SOG, Q, I, SX | 40 | 2 | 42.5 | 12.5 | 45 | 3 | 2.800 |
| 18/B | SOG, Q, I, SX | 50 | 2 | 52.5 | 12.5 | 45 | 3 | 3.500 |
| 18/B/9 | SOG, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 45 | 9 | 0.580 |



Type 28 & 28/B. Micro with stopper(s)

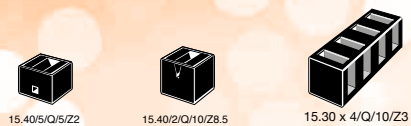
- Reduced nominal volume to <20% of Standard rectangular.
- Closed by PTFE stopper(s), providing a liquid-tight seal.
- Two polished windows.
- Walls polished internally, fine ground externally.
- Suitable for use with all standard cell holders.
- **Self-masking solid black walls** enhance sensitivity and improve linearity at higher absorbances.

| Type No | Window Materials | Path Length | Internal Width | External | | | Base Thickness | Nominal Vol. ml |
|---------------------------|-----------------------|-------------|----------------|----------|------|----|----------------|-----------------|
| | | | | L | W | H | | |
| Clear walls | | | | | | | | |
| 28 | SOG, Q, I, SX | 5 | 2 | 7.5 | 12.5 | 48 | 3 | 0.350 |
| 28 | SOG, PX, HH, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 48 | 3 | 0.700 |
| 28 | SOG, Q, I, SX | 20 | 2 | 22.5 | 12.5 | 48 | 3 | 1.400 |
| 28 | SOG, Q, I, SX | 40 | 2 | 42.5 | 12.5 | 48 | 3 | 2.800 |
| 28 | SOG, Q, I, SX | 50 | 2 | 52.5 | 12.5 | 48 | 3 | 3.500 |
| 28/9 | SOG, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 48 | 9 | 0.580 |
| Self-masking. Black walls | | | | | | | | |
| 28/B | SOG, Q, I, SX | 5 | 2 | 7.5 | 12.5 | 48 | 3 | 0.350 |
| 28/B | SOG, HH, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 48 | 3 | 0.700 |
| 28/B | SOG, Q, I, SX | 20 | 2 | 22.5 | 12.5 | 48 | 3 | 1.400 |
| 28/B | SOG, Q, I, SX | 40 | 2 | 42.5 | 12.5 | 48 | 3 | 2.800 |
| 28/B | Q, I, SX | 50 | 2 | 52.5 | 12.5 | 48 | 3 | 3.500 |
| 28/B/9 | SOG, Q, I, SX | 10 | 2 | 12.5 | 12.5 | 48 | 9 | 0.580 |



Type 15. Sub-micro & Multi-micro, short

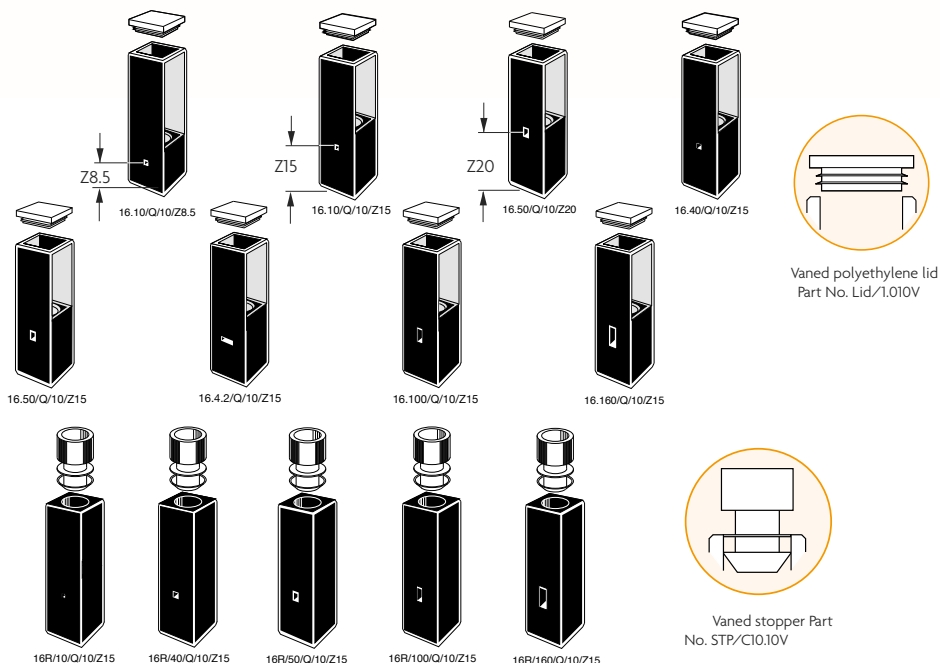
- Two polished windows.
- Open top.
- To be used with holder supplied by instrument manufacturer.



| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml | Remarks |
|-----------|------------------|-------------|----------|----------|-----|----------|------|------|-----------------|-----------------------|
| | | | | W | H | L | W | H | | |
| 15.40/5 | Q | 10 | 2 | 2 | 5 | 12.5 | 12.5 | 8 | 0.100 | Cecil |
| 15.40/4 | Q | 10 | 2 | 2 | 4 | 12.5 | 12.5 | 10 | 0.050 | Biochrom (masked 2x2) |
| 15.40/7.5 | Q | 10 | 2 | 2 | 7.5 | 12.5 | 12.5 | 10 | 0.160 | Shimadzu |
| 15.40/2 | Q | 10 | 8.5 | 2 | 2 | 12.5 | 12.5 | 12 | 0.040 | Beckman |
| 15.30 x 4 | Q | 10 | 3 | 3 | 10 | 36 | 36 | 14.5 | 0.300 | Beckman |

Type 16 & 16R. Sub-micro

- Sub-micro volumes from 10µl to 160µl.
- Type 16 has a top section; comprising two black walls and two translucent side walls
- with a square internal cross-section.
- Open top, supplied with non-sealing PTFE cover as well as a vaned lid to provide a liquid-tight seal.
- To avoid possible meniscus errors; it may be necessary to increase the nominal sample fill volume by at least 20%.
- Z dimension measurement or instrument information is required when ordering. May be used with all standard cell holders. Filling and emptying with a pipette is recommended.
- Type 16R. Similar to Type 16 except that the top section is solid black quartz and round internal cross-section.
- Closed by a vaned polyethylene plug stopper to provide a liquid-tight seal.



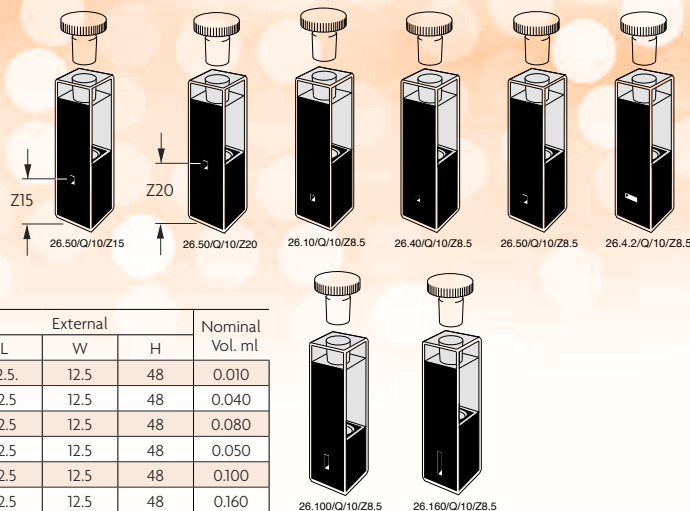
| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---|------------------|-------------|-------------|----------|-----|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| Square top, two translucent walls | | | | | | | | | |
| 16.10 | Q | 10 | 8.5, 15, 20 | 1 | 1 | 12.5 | 12.5 | 45 | 0.010 |
| 16.40 | Q | 10 | 8.5, 15, 20 | 2 | 2 | 12.5 | 12.5 | 45 | 0.040 |
| 16.50 | Q | 10 | 8.5, 15, 20 | 2 | 2.5 | 12.5 | 12.5 | 45 | 0.050 |
| 16.4.2 | Q | 10 | 15 | 4 | 2 | 12.5 | 12.5 | 45 | 0.080 |
| 16.100 | Q | 10 | 8.5, 15, 20 | 2 | 5 | 12.5 | 12.5 | 45 | 0.100 |
| 16.160 | Q | 10 | 8.5, 15, 20 | 2 | 8 | 12.5 | 12.5 | 45 | 0.160 |
| Square top with round hole, solid black | | | | | | | | | |
| 16R/10 | Q | 10 | 8.5, 15, 20 | 1 | 1 | 12.5 | 12.5 | 45 | 0.010 |
| 16R/40 | Q | 10 | 8.5, 15, 20 | 2 | 2 | 12.5 | 12.5 | 45 | 0.040 |
| 16R/50 | Q | 10 | 8.5, 15, 20 | 2 | 2.5 | 12.5 | 12.5 | 45 | 0.050 |
| 16R/100 | Q | 10 | 8.5, 15, 20 | 2 | 5 | 12.5 | 12.5 | 45 | 0.100 |
| 16R/160 | Q | 10 | 8.5, 15, 20 | 2 | 8 | 12.5 | 12.5 | 45 | 0.160 |

Z Dimension per instrument

| Manufacturer | Z Dimension |
|--------------------------|-------------|
| Agilent* | 15mm |
| Beckman* | 8.5mm |
| Bio-Rad* | 8.5mm |
| Eppendorf* | 8.5mm |
| GBC* | 15mm |
| Hewlett-Packard* | 15mm |
| Hitachi* | 8.5mm |
| Jasco* | 12mm |
| Perkin-Elmer* | 15mm |
| Pharmacia* | 15mm |
| Scinco* | 15mm |
| Shimadzu* | 15mm |
| Spectronics* | 8.5mm |
| Turner* | 8.5mm |
| Varian* (Cary®/Agilent®) | 20mm |

Type 26. Sub-micro & Ultra-micro with stopper

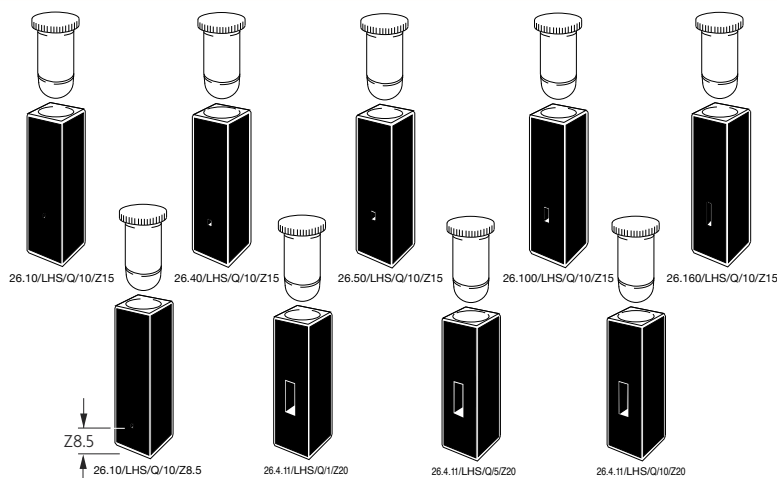
- Reduced nominal volume from 10µl to 160µl.
- Rectangular top section with two black walls and two translucent walls. Closed by PTFE stopper, providing a liquid-tight seal.
- To avoid possible meniscus errors; it may be necessary to increase the nominal sample fill volume by at least 20%.
- May also be used with all standard cell holders.
- Z dimension or instrument information required when ordering.
- Filling and emptying with a pipette is recommended.



| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|------------------|-------------|-------------|----------|-----|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 26.10 | Q | 10 | 8.5, 15, 20 | 1 | 1 | 12.5 | 12.5 | 48 | 0.010 |
| 26.40 | Q | 10 | 8.5, 15, 20 | 2 | 2 | 12.5 | 12.5 | 48 | 0.040 |
| 26.4.2 | Q | 10 | 15, 20 | 4 | 2 | 12.5 | 12.5 | 48 | 0.080 |
| 26.50 | Q | 10 | 8.5, 15, 20 | 2 | 2.5 | 12.5 | 12.5 | 48 | 0.050 |
| 26.100 | Q | 10 | 8.5, 15, 20 | 2 | 5 | 12.5 | 12.5 | 48 | 0.100 |
| 26.160 | Q | 10 | 8.5, 15, 20 | 2 | 8 | 12.5 | 12.5 | 48 | 0.160 |

Type 26/LHS. Sub-micro, low head space

- The cell and liquid-tight stopper are specially designed so the volume of air above the sample is reduced by >95% compared with normal sub-micro cells.
- This reduces evaporation loss of samples such as DNA to a minimum.
- Reduced nominal volume range from 10µl to 440µl.
- Round internal solid black top closed by a specially profiled PTFE stopper. Spare stoppers, see page 28.
- Part No. STP/C10.LHS/Z8.5 or STP/C10.LHS/Z15/20
- Quartz stoppers available to avoid condensation errors at higher temperatures (see page 28)
- To avoid possible meniscus errors; it may be necessary to increase the nominal sample fill volume by at least 20%.
- Sample may be introduced and retrieved by syringe or micro pipette.
- Z dimension or instrument information required when ordering.



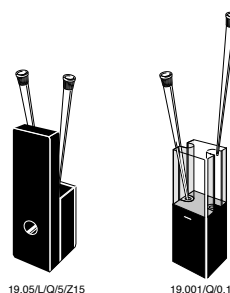
| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|-------------|------------------|-------------|-------------|----------|-----|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 26.10/LHS | Q | 10 | 8.5, 15, 20 | 1 | 1 | 12.5 | 12.5 | 48 | 0.010 |
| 26.40/LHS | Q | 10 | 8.5, 15, 20 | 2 | 2 | 12.5 | 12.5 | 48 | 0.040 |
| 26.50/LHS | Q | 10 | 8.5, 15, 20 | 2 | 2.5 | 12.5 | 12.5 | 48 | 0.050 |
| 26.100/LHS | Q | 10 | 8.5, 15, 20 | 2 | 5 | 12.5 | 12.5 | 48 | 0.100 |
| 26.160/LHS | Q | 10 | 8.5, 15, 20 | 2 | 8 | 12.5 | 12.5 | 48 | 0.160 |
| 26.4.11/LHS | Q | 1 | 20 | 4 | 11 | 12.5 | 12.5 | 48 | 0.044 |
| 26.4.11/LHS | Q | 5 | 20 | 4 | 11 | 12.5 | 12.5 | 48 | 0.220 |
| 26.4.11/LHS | Q | 10 | 20 | 4 | 11 | 12.5 | 12.5 | 48 | 0.440 |

Z Dimension per instrument

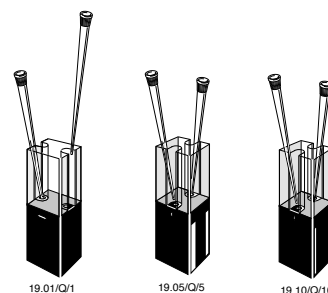
| Manufacturer | Z Dimension |
|-------------------------|-------------|
| Agilent* | 15mm |
| Beckman* | 8.5mm |
| Bio-Rad* | 8.5mm |
| Eppendorf* | 8.5mm |
| GBC* | 15mm |
| Hewlett-Packard* | 15mm |
| Hitachi* | 8.5mm |
| Jasco* | 12mm |
| Perkin-Elmer* | 15mm |
| Pharmacia* | 15mm |
| Scinco* | 15mm |
| Shimadzu* | 15mm |
| Spectronics* | 8.5mm |
| Turner* | 8.5mm |
| Varian®(Cary®/Agilent®) | 20mm |

Type 19 Ultra-micro & 19/L Ultra-micro lens cell

- Ultra-micro volume range from 0.5µl to 10µl.
- Two polished windows.
- Sample inserted and retrieved with micro pipette tip.
- Two micro pipette tips provided with each cell.
- Type 19/L is a patented design with integral focusing lens. Which increases the energy entering the sample.
- Performance is dictated by instrument optical configuration.
- Type 19/L is not suitable for all instruments.
- Type 19/L Z 8.5* has an External height of 38.5mm
- Z dimension or instrument information required when ordering.

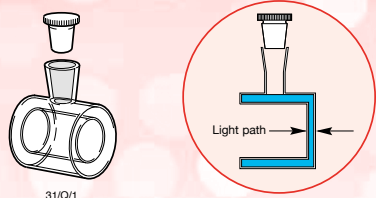


| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|------------------|-------------|--------------|----------|---|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 19.001 | Q | 0.1 | 8.5, 15, 20 | 5 | 1 | 12.5 | 12.5 | 45 | 0.0005 |
| 19.01 | Q | 1 | 8.5, 15, 20 | 5 | 1 | 12.5 | 12.5 | 45 | 0.0050 |
| 19.05 | Q | 5 | 8.5, 15, 20 | 0.8Ø | | 12.5 | 12.5 | 45 | 0.0025 |
| 19.10 | Q | 10 | 8.5, 15, 20 | 0.8Ø | | 12.5 | 12.5 | 45 | 0.0050 |
| 19.05/L | Q | 5 | 8.5*, 15, 20 | 1 | 1 | 12.5 | 12.5 | 45 | 0.0050 |



Type 31. Cylindrical. Short path length

- Two polished windows.
- Closed by PTFE stopper, providing a liquid-tight seal.

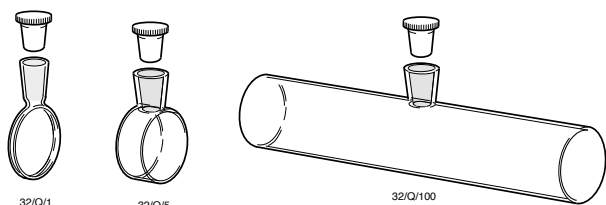


31/Q/1

| Type No | Window Materials | Path Length | Internal Dia. | External | | Nominal Vol. ml |
|---------|------------------|-------------|---------------|----------|------|-----------------|
| | | | | Dia. | L | |
| 31 | Q, I, SX | 0.01 | 15 | 22 | 22.5 | 2.15 |
| 31 | Q, I, SX | 0.05 | 15 | 22 | 22.5 | 2.15 |
| 31 | Q, I, SX | 0.10 | 15 | 22 | 22.5 | 2.15 |
| 31 | Q, I, SX | 0.20 | 15 | 22 | 22.5 | 2.18 |
| 31 | Q, I, SX | 0.50 | 15 | 22 | 22.5 | 2.22 |
| 31 | Q, I, SX | 1 | 15 | 22 | 22.5 | 2.31 |
| 31 | Q, I, SX | 2 | 15 | 22 | 22.5 | 2.49 |
| 31 | Q, I, SX | 5 | 15 | 22 | 22.5 | 3.02 |

Type 32. Cylindrical. Standard

- Two polished windows.
- Closed by a single PTFE stopper, providing a liquid-tight seal.



32/Q/1

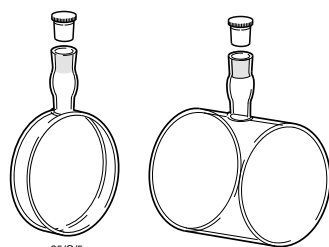
32/Q/5

32/Q/100

| Type No | Window Materials | Path Length | Internal Dia. | External | | Nominal Vol. ml |
|---------|-------------------|-------------|---------------|----------|-------|-----------------|
| | | | | Dia. | L | |
| 32 | SOG, PX, Q, I, SX | 1 | 19 | 22 | 3.5 | 0.28 |
| 32 | SOG, PX, Q, I, SX | 2 | 19 | 22 | 4.5 | 0.56 |
| 32 | SOG, PX, Q, I, SX | 5 | 19 | 22 | 7.5 | 1.40 |
| 32 | SOG, PX, Q, I, SX | 10 | 19 | 22 | 12.5 | 2.80 |
| 32 | SOG, PX, Q, I, SX | 20 | 19 | 22 | 22.5 | 5.60 |
| 32 | SOG, PX, Q, I, SX | 50 | 19 | 22 | 52.5 | 14.10 |
| 32 | SOG, PX, Q, I, SX | 100 | 19 | 22 | 102.5 | 28.20 |

Type 35. Cylindrical. Large diameter

- Two polished windows.
- Closed by PTFE stopper(s), providing a liquid-tight seal.



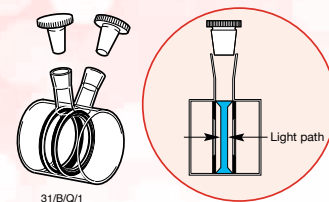
35/Q/5

35/Q/50

| Type No | Window Materials | Path Length | Internal Dia. | External | | Nominal Vol. ml |
|---------|------------------|-------------|---------------|----------|-------|-----------------|
| | | | | Dia. | L | |
| 35 | SOG, PX, Q, I | 2 | 47 | 50 | 4.5 | 3.40 |
| 35 | SOG, PX, Q, I | 5 | 47 | 50 | 7.5 | 8.50 |
| 35 | SOG, PX, Q, I | 10 | 47 | 50 | 12.5 | 17.00 |
| 35 | SOG, PX, Q, I | 20 | 47 | 50 | 22.5 | 35.00 |
| 35 | SOG, PX, Q, I | 50 | 47 | 50 | 52.5 | 86.00 |
| 35 | Q | 100 | 47 | 50 | 102.5 | 172.00 |

Type 31/B. Cylindrical. Short path length, micro.

- Reduced sample volume.
- Two polished windows.
- Two filling ports, closed by two PTFE stoppers, providing a liquid-tight seal.

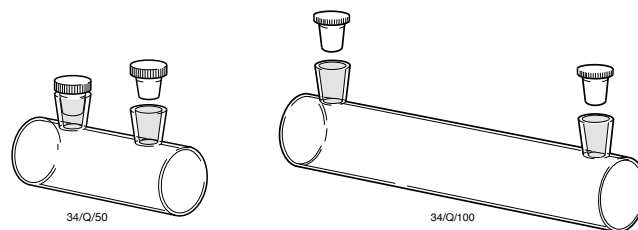


31/B/Q/1

| Type No | Window Materials | Path Length | Internal Dia. | External | | Nominal Vol. ml |
|---------|------------------|-------------|---------------|----------|------|-----------------|
| | | | | Dia. | L | |
| 31/B | Q | 0.01 | 13 | 22 | 22.5 | 0.140 |
| 31/B | Q | 0.05 | 13 | 22 | 22.5 | 0.151 |
| 31/B | Q | 0.10 | 13 | 22 | 22.5 | 0.165 |
| 31/B | Q | 0.20 | 13 | 22 | 22.5 | 0.194 |
| 31/B | Q | 0.50 | 13 | 22 | 22.5 | 0.278 |
| 31/B | Q | 1 | 13 | 22 | 22.5 | 0.420 |
| 31/B | Q | 2 | 13 | 22 | 22.5 | 0.703 |
| 31/B | Q | 5 | 13 | 22 | 22.5 | 1.552 |

Type 34. Cylindrical. Standard

- Two polished windows.
- Closed by two PTFE stoppers, providing a liquid-tight seal.



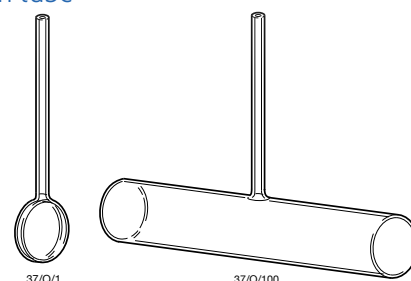
34/Q/50

34/Q/100

| Type No | Window Materials | Path Length | Internal Dia. | External | | Nominal Vol. ml |
|---------|-------------------|-------------|---------------|----------|-------|-----------------|
| | | | | Dia. | L | |
| 34.4 | Q | 100 | 4 | 6 | 102.5 | 1.30 |
| 34.8 | Q | 100 | 8 | 10 | 102.5 | 5.10 |
| 34.10 | Q | 100 | 10 | 12 | 102.5 | 7.86 |
| 34.12 | Q | 100 | 12 | 14 | 102.5 | 11.35 |
| 34 | SOG, PX, Q, I, SX | 50 | 19 | 22 | 52.5 | 14.10 |
| 34 | SOG, PX, Q, I, SX | 100 | 19 | 22 | 102.5 | 28.20 |
| 34 | Q | 200 | 19 | 22 | 202.5 | 56.40 |

Type 37. Cylindrical with tube

- Two polished windows.
- Tube material the same as cell body.
- Available on request with restriction for easy seal.



37/Q/1

37/Q/100

| Type No | Window Materials | Path Length | Internal Dia. | External | | Nominal Vol. ml | | | Nominal Vol. ml |
|---------|-------------------|-------------|---------------|----------|-------|-----------------|-----|----|-----------------|
| | | | | Dia. | L | ID. | OD. | L. | |
| 37 | SOG, PX, Q, I, SX | 1 | 19 | 22 | 3.5 | 2 | 4 | 70 | 0.28 |
| 37 | SOG, PX, Q, I, SX | 2 | 19 | 22 | 4.5 | 2 | 4 | 70 | 0.56 |
| 37 | SOG, PX, Q, I, SX | 5 | 19 | 22 | 7.5 | 2 | 4 | 70 | 1.40 |
| 37 | SOG, PX, Q, I, SX | 10 | 19 | 22 | 12.5 | 2 | 4 | 70 | 2.80 |
| 37 | SOG, PX, Q, I, SX | 20 | 19 | 22 | 22.5 | 2 | 4 | 70 | 5.60 |
| 37 | SOG, PX, Q, I, SX | 50 | 19 | 22 | 52.5 | 2 | 4 | 70 | 14.10 |
| 37 | SOG, PX, Q, I, SX | 100 | 19 | 22 | 102.5 | 2 | 4 | 70 | 28.20 |

Rectangular & Cylindrical with Quartz to Borofloat graded seal (GS)

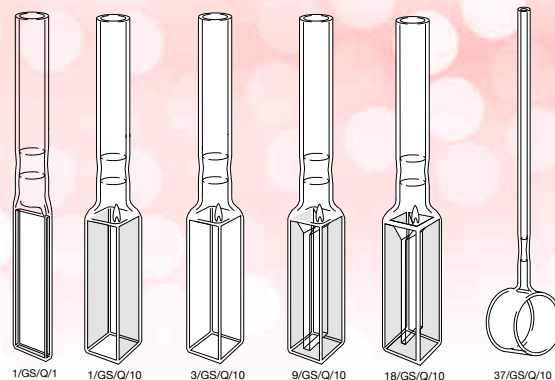
- Quartz to borofloat graded seal fully fused to cell.
- Different diameters and lengths of graded seals can be supplied on request.

Rectangular & Cylindrical with straight tube (SBT)

- Quartz tube fully fused to quartz cell.
- Borofloat tube fully fused to borofloat cell
- Different diameters & lengths of straight bore tube can be supplied on request.

Rectangular for Low Temperature (HLT/GS) with Quartz to Borofloat graded seal

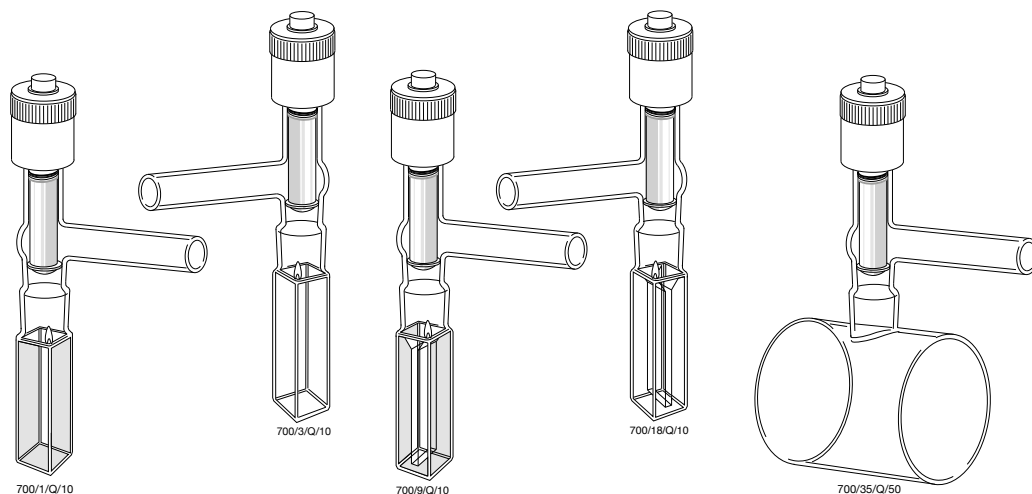
- 2mm thick walls.
- Fully fused 'welded' joints.
- Quartz to borofloat graded seal



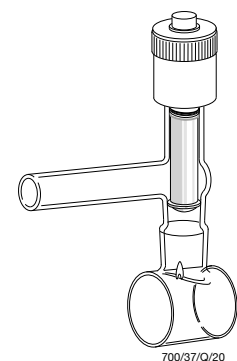
| Type No | Window Materials | Path Length | Internal Width | Internal Dia. | External | | | | Tube | | | Nominal Vol. ml | Remarks |
|--------------|------------------|-------------|----------------|---------------|----------|------|-----|----|------|-----|----|-----------------|----------------------------|
| | | | | | L | W | H | D | ID. | OD. | L. | | |
| 1/GS or SBT | Q, I | 1 | 10 | | 3.5 | 12.5 | 115 | | 8 | 10 | 70 | 0.40 | Macro/Standard rectangular |
| 1/GS or SBT | Q, I | 2 | 10 | | 4.5 | 12.5 | 115 | | 8 | 10 | 70 | 0.70 | Macro/Standard rectangular |
| 1/GS or SBT | Q, I | 5 | 10 | | 7.5 | 12.5 | 115 | | 8 | 10 | 70 | 1.70 | Macro/Standard rectangular |
| 1/GS or SBT | Q, I | 10 | 10 | | 12.5 | 12.5 | 115 | | 8 | 10 | 70 | 3.50 | Macro/Standard rectangular |
| 3/GS or SBT | Q, I | 10 | 10 | | 12.5 | 12.5 | 115 | | 8 | 10 | 70 | 3.50 | Fluorimeter |
| 9/GS or SBT | Q, I | 10 | | | 12.5 | 12.5 | 115 | | 8 | 10 | 70 | 1.40 | Semi-micro |
| 18/GS or SBT | Q, I | 10 | | | 12.5 | 12.5 | 115 | | 8 | 10 | 70 | 0.70 | Micro |
| 37/GS | Q, I | 1 | | 19 | 3.5 | | | 22 | 2 | 4 | 70 | 0.28 | Cylindrical |
| 37/GS | Q, I | 2 | | 19 | 4.5 | | | 22 | 2 | 4 | 70 | 0.56 | Cylindrical |
| 37/GS | Q, I | 5 | | 19 | 7.5 | | | 22 | 2 | 4 | 70 | 1.40 | Cylindrical |
| 37/GS | Q, I | 10 | | 19 | 12.5 | | | 22 | 2 | 4 | 70 | 2.80 | Cylindrical |
| 37/GS | Q, I | 20 | | 19 | 22.5 | | | 22 | 2 | 4 | 70 | 5.60 | Cylindrical |
| 37/GS | Q, I | 50 | | 19 | 52.5 | | | 22 | 2 | 4 | 70 | 14.00 | Cylindrical |
| 37/GS | Q, I | 100 | | 19 | 102.5 | | | 22 | 2 | 4 | 70 | 28.00 | Cylindrical |
| 1/HLT/GS | Q | 10 | 8.5 | 10 | 12.5 | | 115 | | 8 | 10 | 70 | 3.5 | Macro/Standard rectangular |
| 3/HLT/GS | Q | 10 | 8.5 | 10 | 12.5 | | 115 | | 8 | 10 | 70 | 3.5 | Fluorimeter |

Type 700. UHV Stopcock cells

- High vacuum patented stopcock.
- All cells will withstand evacuation <10-11 Tor.
- PTFE threaded.
- Can be fused to most quartz cells. Stopcock itself can withstand pressure up to 5 bar (5x10⁵ Pa).
- For cell pressure guidance;
- please enquire.

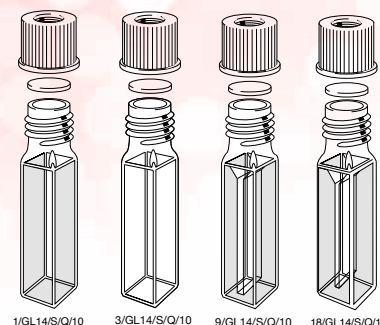
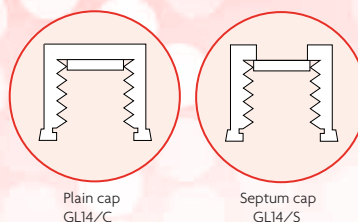


| Type No | Window Materials | Path Length | External | | | Side arm | | | Remarks |
|---------|------------------|-------------|----------|------|----------|----------|-----|---------|---------------------|
| | | | L | L | H | ID. | OD. | Length. | |
| 700/1 | Q | 10 | 12.5 | 12.5 | ≈135/150 | 10 | 13 | 50 | Type 1 Macro |
| 700/3 | Q | 10 | 12.5 | 12.5 | ≈135/150 | 10 | 13 | 50 | Type 3 Fluorimeter |
| 700/9 | Q | 10 | 12.5 | 12.5 | ≈135/150 | 10 | 13 | 50 | Type 9 Semi micro |
| 700/18 | Q | 10 | 12.5 | 12.5 | ≈135/150 | 10 | 13 | 50 | Type 18 Micro |
| 700/32 | Q | 10 | 22.5 | 22Ø | ≈135/150 | 10 | 13 | 50 | Type 32 Cylindrical |
| 700/32 | Q | 20 | 22.5 | 22Ø | ≈135/150 | 10 | 13 | 50 | Type 32 Cylindrical |
| 700/32 | Q | 40 | 42.5 | 22Ø | ≈135/150 | 10 | 13 | 50 | Type 32 Cylindrical |
| 700/32 | Q | 50 | 52.5 | 22Ø | ≈135/150 | 10 | 13 | 50 | Type 32 Cylindrical |
| 700/32 | Q | 100 | 102.5 | 22Ø | ≈135/150 | 10 | 13 | 50 | Type 32 Cylindrical |
| 700/35 | Q | 50 | 52.5 | 50Ø | ≈135/150 | 10 | 13 | 50 | Type 35 Cylindrical |
| 700/35 | Q | 100 | 102.5 | 50Ø | ≈135/150 | 10 | 13 | 50 | Type 35 Cylindrical |

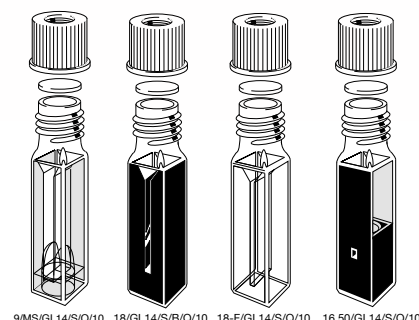


Rectangular Anærobic with screw cap (GL14)

- Closed by screw cap or septum cap.
- GL14/Cclosed cap.
- GL14/Sseptum cap to allow filling, extraction or gas flow with syringe needle(s) through the silicone seal.
- Septum aperture diameter 9mm.
- Cap with stands pressure up to 5x10⁵ Pa (5 bar).
- GL14 can be fused to most rectangular and cylindrical cells with either one or two ports. Particularly suitable for stopping evaporation in cells used for stirring eg. 9/MS/GL14/Q/10.



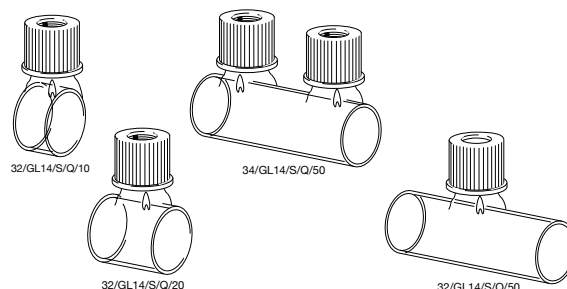
| Type No | Window Materials | Path Length | Internal Width. | External | | | Nominal Vol. ml | Remarks |
|--------------|------------------|-------------|-----------------|----------|------|----|-----------------|--------------------------|
| | | | | L | W | H | | |
| 1/GL14 | SOG, Q, I | 1 | 10 | 3.5 | 12.5 | 66 | 0.400 | Macro/Rectangular |
| 1/GL14 | SOG, Q, I | 2 | 10 | 4.5 | 12.5 | 66 | 0.800 | Macro/Rectangular |
| 1/GL14 | SOG, Q, I | 5 | 10 | 7.5 | 12.5 | 66 | 1.600 | Macro/Rectangular |
| 1/GL14 | SOG, Q, I | 10 | 10 | 12.5 | 12.5 | 66 | 3.500 | Macro/Rectangular |
| 9/GL14 | SOG, Q, I | 10 | 4 | 12.5 | 12.5 | 66 | 1.400 | Semi-micro |
| 9/B/GL14 | Q, I | 10 | 4 | 12.5 | 12.5 | 66 | 1.400 | Semi-micro. Self masking |
| 18/GL14 | SOG, Q, I | 10 | 2 | 12.5 | 12.5 | 66 | 0.700 | Micro |
| 18/B/GL14 | Q, I | 10 | 2 | 12.5 | 12.5 | 66 | 0.700 | Micro. Self masking |
| 3/GL14 | SOG, Q, I | 10 | 10 | 12.5 | 12.5 | 66 | 3.500 | Fluorimeter |
| 9-F/GL14 | Q | 10 | 10 | 12.5 | 12.5 | 66 | 1.400 | Semi-micro. Fluorescent |
| 18-F/GL14 | Q | 10 | 10 | 12.5 | 12.5 | 66 | 0.700 | Micro. Fluorescent |
| 16. **/GL14 | Q | 10 | 10 | 12.5 | 12.5 | 66 | **all volumes | Sub-micro. |
| 16. **-/GL14 | Q | 10 | 10 | 12.5 | 12.5 | 66 | **all volumes | Sub-micro. |



Cylindrical Anærobic with screw cap(s) (GL14)

- GL14can be fused to most cylindrical cells with either one or two ports.

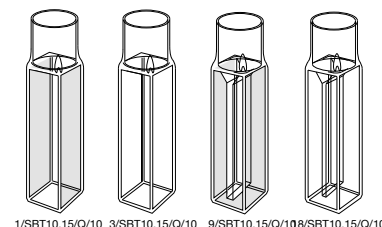
| Type No | Window Materials | Path Length | Internal Width. | Internal Diameter. | Nominal Vol. ml |
|---------|-------------------|-------------|-----------------|--------------------|-----------------|
| 32/GL14 | SOG, PX, Q, I, SX | 10 | 12.5 | 19 | 2.800 |
| 32/GL14 | SOG, PX, Q, I, SX | 20 | 22.5 | 19 | 5.600 |
| 32/GL14 | SOG, PX, Q, I, SX | 50 | 52.5 | 19 | 14.100 |
| 32/GL14 | SOG, PX, Q, I, SX | 100 | 102.5 | 19 | 28.200 |
| 34/GL14 | SOG, PX, Q, I | 50 | 52.5 | 19 | 14.100 |
| 34/GL14 | SOG, PX, Q, I | 100 | 102.5 | 19 | 28.200 |



Rectangular Anærobic for use with rubber septa seal

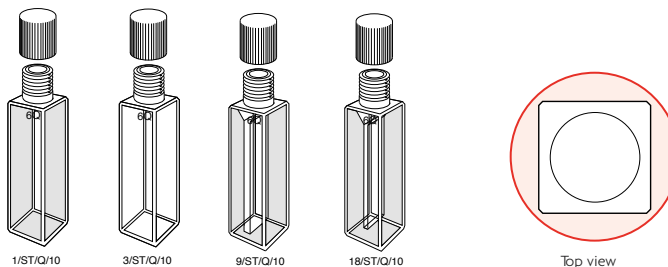
- SBT10.15stops suitable for rubber septa seal for Anærobic environments. Tubing 15mm long, 10mm I.D.

| Type No | Window Materials | Path Length | Internal Width. | External | | | | Tube | | Nominal Vol. ml | Remarks |
|-------------|------------------|-------------|-----------------|----------|------|----|-----|------|----|-----------------|----------------------------|
| | | | | L | W | H. | D.. | L. | L. | | |
| 1/SBT10.15 | Q, I | 10 | 10 | 12.5 | 12.5 | 59 | 10 | 13 | 15 | 3.500 | Macro/Standard rectangular |
| 3/SBT10.15 | Q, I | 10 | 10 | 12.5 | 12.5 | 59 | 10 | 13 | 15 | 3.500 | Fluorimeter |
| 9/SBT10.15 | Q, I | 10 | 4 | 12.5 | 12.5 | 59 | 10 | 13 | 15 | 1.400 | Semi-micro |
| 18/SBT10.15 | Q, I | 10 | 2 | 12.5 | 12.5 | 59 | 10 | 13 | 15 | 0.700 | Micro |



Rectangular with small screw cap (ST)

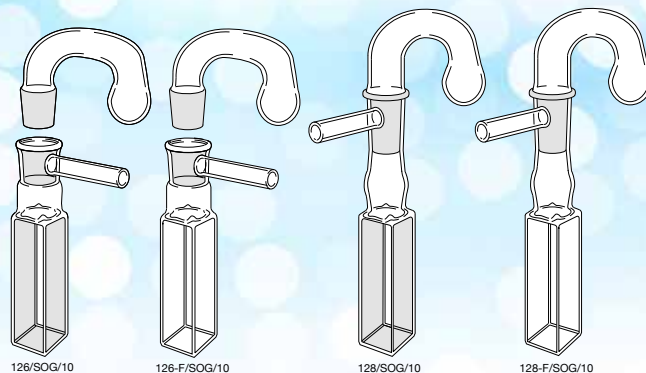
- Closed with screw cap, with or without septum aperture. Outside diameter of cap is less than the cross-section of the cell. Septum aperture diameter - 6mm.
- ST/C closed cap.
- ST/S septum cap to allow filling, extraction or gas flow with syringe needle(s) through silicone seal which has a PTFE face.



| Type No | Window Materials | Path Length | Internal Width. | External | | | Nominal Vol. ml | Remarks |
|---------|------------------|-------------|-----------------|----------|------|----|-----------------|-----------------------------|
| | | | | L | W | H. | | |
| 1/ST | Q, I | 10 | 10 | 12.5 | 12.5 | 58 | 3.500 | Macro/Standard rectangular |
| 130/ST | Q | 10 | 10 | 12.5 | 12.5 | 43 | 2.800 | For Reference Adaptor Plate |
| 3/ST | Q, I | 10 | 10 | 12.5 | 12.5 | 58 | 3.500 | Fluorimeter |
| 9/ST | Q, I | 10 | 4 | 12.5 | 12.5 | 58 | 1.400 | Semi-micro |
| 18/ST | Q, I | 10 | 2 | 12.5 | 12.5 | 58 | 0.700 | Micro |

Type 126 & 128. An aerobic. Standard Rectangular 126-F & 128-F Fluorimeter

- Two polished windows except 126-F and 128-F have four windows and base polished.
- Reservoir has ground cone with evacuation hole to line up with socket outlet tube.
- Reservoir volume 1.5ml.
- Type 126 Evacuation tube is 3mm I.D., 5mm O.D. and 30mm long.
- Type 128 Evacuation tube is 4mm I.D., 6mm O.D. and 30mm long.
- Socket assembly can be fused to other rectangular cells on request.

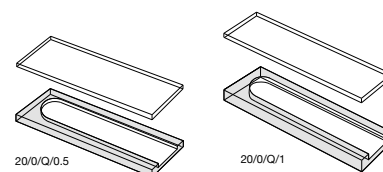


| Type No | Window Materials | Path Length | Internal Width. | External | | | Nominal Vol. ml | Remarks |
|-------------|------------------|-------------|-----------------|----------|------|-----|-----------------|--|
| | | | | L | W | H. | | |
| 126 & 126-F | SOG, Q, I | 2 | 2 | 4.5 | 12.5 | 70 | 0.700 | Macro/Standard Rectangular. Short socket. Fluorimeter |
| 126 & 126-F | SOG, Q, I | 5 | 5 | 7.5 | 12.5 | 70 | 1.750 | Macro/Standard Rectangular. Short socket. Fluorimeter |
| 126 & 126-F | SOG, Q, I | 10 | 10 | 12.5 | 12.5 | 70 | 3.500 | Macro/Standard Rectangular. Short socket. Fluorimeter |
| 128 & 128-F | SOG, Q, I | 2 | 2 | 4.5 | 12.5 | 120 | 0.700 | Macro/Standard Rectangular. Extended socket. Fluorimeter |
| 128 & 128-F | SOG, Q, I | 5 | 5 | 7.5 | 12.5 | 120 | 1.750 | Macro/Standard Rectangular. Extended socket. Fluorimeter |
| 128 & 128-F | SOG, Q, I | 10 | 10 | 12.5 | 12.5 | 120 | 3.500 | Macro/Standard Rectangular. Extended socket. Fluorimeter |

Type 20/O. Short path length. Demountable, open-ended

- One end open when assembled.
- Two polished windows.
- Intended for use with Type CH/2049 cell holder. (see page 28)

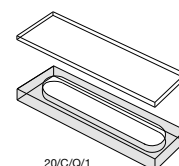
| Type No | Window Materials | Path Length | Internal | | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------|------|----------|------|----|-----------------|
| | | | W | H | L | W | H. | |
| 20/O | Q, I | 0.01 | 10 | 43.5 | 2.5 | 12.5 | 45 | 0.004 |
| 20/O | Q, I | 0.05 | 10 | 43.5 | 2.5 | 12.5 | 45 | 0.020 |
| 20/O | Q, I | 0.1 | 10 | 43.5 | 2.6 | 12.5 | 45 | 0.040 |
| 20/O | Q, I | 0.2 | 10 | 43.5 | 2.7 | 12.5 | 45 | 0.080 |
| 20/O | Q, I | 0.5 | 10 | 43.5 | 3.0 | 12.5 | 45 | 0.190 |
| 20/O | G, SOG, Q, I | 1 | 10 | 43.5 | 3.5 | 12.5 | 45 | 0.390 |



Type 20/C & Type 30. Short path length. Demountable, closed

- Totally enclosed when assembled.
- Two polished windows.
- Type 20/C intended for use with Type CH/2049 cell holder. (see page 28)

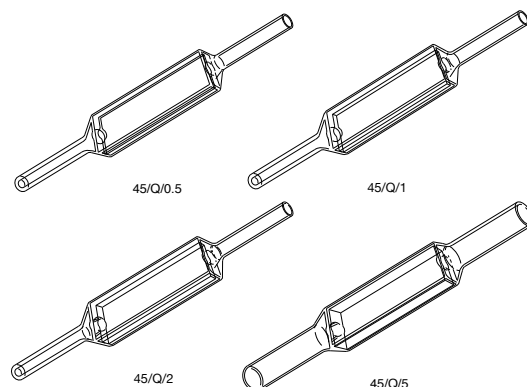
| Type No | Window Materials | Path Length | Internal | | External | | | O.D. | I.D. | Thickness | Nominal Vol. ml |
|---------|------------------|-------------|----------|----|----------|------|----|------|------|-----------|-----------------|
| | | | W | H | L | W. | H | | | | |
| 20/C | Q | 0.008 | 8 | 38 | 2.5 | 12.5 | 45 | | | | 0.002 |
| 20/C | Q, I | 0.01 | 8 | 38 | 2.5 | 12.5 | 45 | | | | 0.003 |
| 20/C | Q, I | 0.05 | 8 | 38 | 2.5 | 12.5 | 45 | | | | 0.015 |
| 20/C | Q, I | 0.1 | 8 | 38 | 2.6 | 12.5 | 45 | | | | 0.030 |
| 20/C | Q, I | 0.2 | 8 | 38 | 2.7 | 12.5 | 45 | | | | 0.060 |
| 20/C | Q, I | 0.5 | 8 | 38 | 3.0 | 12.5 | 45 | | | | 0.150 |
| 20/C | G, SOG, Q, I | 1 | 8 | 38 | 3.5 | 12.5 | 45 | | | | 0.310 |
| 30 | Q | 0.01 | | | | | | 22 | 16 | 2.5 | 0.002 |
| 30 | Q | 0.1 | | | | | | 22 | 16 | 2.6 | 0.020 |
| 30 | Q | 0.2 | | | | | | 22 | 16 | 2.7 | 0.040 |
| 30 | Q | 0.5 | | | | | | 22 | 16 | 3.0 | 0.100 |



Type 45 & 45-F. Flow cells. In-line or microscope analysis

- Type 45 two polished windows. Type 45-F has four polished windows.
- Tubes may be bent at angles to sample compartment if required.
- Up to 2mm Path length. Inlet/Outlet tubes - 2mm I.D., 4mm O.D. x 25mm long.
- Up to 5mm Path length. Inlet/Outlet tubes - 5mm I.D., 7mm O.D. x 25mm long.

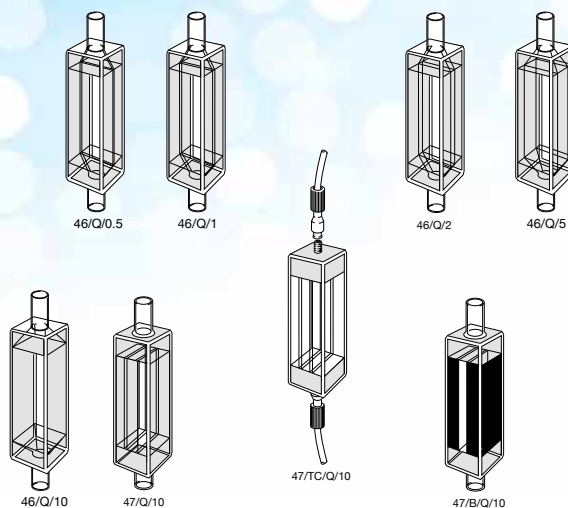
| Type No | Window Materials | Path Length | Internal Width. | External | | | Nominal Vol. ml |
|-----------|------------------|-------------|-----------------|----------|------|------------|-----------------|
| | | | | L | W | H. | |
| 45 & 45-F | Q | 0.1 | 10 | 2.6 | 12.5 | 40 + tubes | 0.040 |
| 45 & 45-F | Q | 0.2 | 10 | 2.7 | 12.5 | 40 + tubes | 0.080 |
| 45 & 45-F | Q | 0.5 | 10 | 3.0 | 12.5 | 40 + tubes | 0.200 |
| 45 & 45-F | Q | 1.0 | 10 | 3.5 | 12.5 | 40 + tubes | 0.400 |
| 45 & 45-F | Q | 2.0 | 10 | 4.5 | 12.5 | 40 + tubes | 0.800 |
| 45 & 45-F | Q | 5.0 | 10 | 7.5 | 12.5 | 40 + tubes | 4.000 |



Type 46, 46-F Fluorimeter & 47 Flow cells. In-line

- Two polished windows. Type 46-F have 4 windows and base polished.
- Tubulations intended for push-on flexible tubing.
- Profiled inlet and outlet
- Inlet/outlet tubes - 2mm I.D., 4mm O.D. and 10mm long.
- TYPE 47/TC Screw-on connections

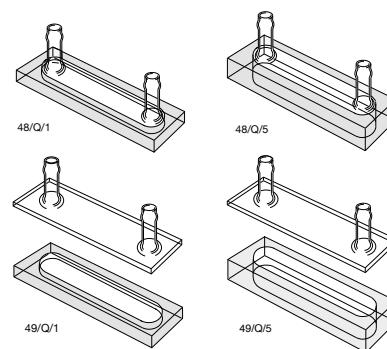
| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------------------------------------|------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| Clear walls | | | | | | | |
| 46 & 46-F | Q | 0.5 | 10 | 12.5 | 12.5 | 65 | 0.185 |
| 46 & 46-F | Q | 1 | 10 | 12.5 | 12.5 | 65 | 0.370 |
| 46 & 46-F | Q | 2 | 10 | 12.5 | 12.5 | 65 | 0.740 |
| 46 & 46-F | Q | 5 | 10 | 12.5 | 12.5 | 65 | 1.850 |
| 46 & 46-F | G, SOG, Q | 10 | 10 | 12.5 | 12.5 | 65 | 3.700 |
| Semi-micro. Clear walls | | | | | | | |
| 47 | G, SOG, Q | 10 | 4 | 12.5 | 12.5 | 65 | 1.480 |
| 47/TC | Q | 10 | 4 | 12.5 | 12.5 | 65 | 1.480 |
| Semi-micro. Self-masking. Black walls | | | | | | | |
| 47/B | Q | 10 | 4 | 12.5 | 12.5 | 65 | 1.480 |



Type 48 Flow cells & Type 49 demountable Flow cells. Short path length

- Two polished windows.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 16mm long intended for push-on flexible tubing.
- Intended for use with Type CH/2049 cell holder. (see page 28)

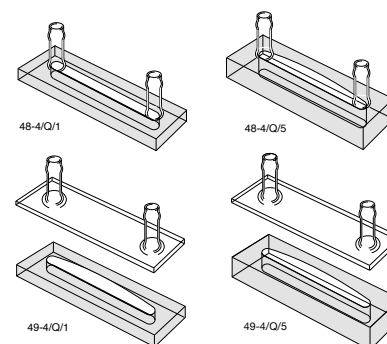
| Type No | Window Materials | Path Length | Internal | | External | | | Nominal Vol. ml |
|----------|------------------|-------------|----------|----|----------|------|----|-----------------|
| | | | W | H | L | W | H | |
| 48 or 49 | Q, I | 0.01 | 8 | 38 | 2.6 | 12.5 | 45 | 0.003 |
| 48 or 49 | Q, I | 0.1 | 8 | 38 | 2.6 | 12.5 | 45 | 0.030 |
| 48 or 49 | Q, I | 0.2 | 8 | 38 | 2.7 | 12.5 | 45 | 0.060 |
| 48 or 49 | Q, I | 0.5 | 8 | 38 | 3.0 | 12.5 | 45 | 0.150 |
| 48 or 49 | G, SOG, Q, I | 1 | 8 | 38 | 3.5 | 12.5 | 45 | 0.300 |
| 48 or 49 | G, SOG, Q, I | 2 | 8 | 38 | 4.5 | 12.5 | 45 | 0.600 |
| 48 or 49 | G, SOG, Q, I | 5 | 8 | 38 | 7.5 | 12.5 | 45 | 1.560 |



Type 48-4 Flow cells & Type 49-4 demountable Flow cells. Short path length

- Two polished windows.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 16mm long intended for push-on flexible tubing.
- Intended for use with Type CH/2049 cell holder. (see page 28)

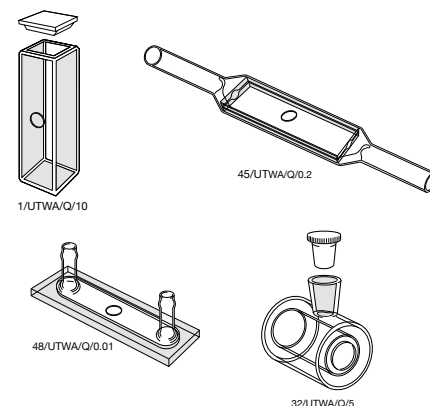
| Type No | Window Materials | Path Length | Internal | | External | | | Nominal Vol. ml |
|--------------|------------------|-------------|----------|----|----------|------|----|-----------------|
| | | | W | H | L | W | H | |
| 48-4 or 49-4 | Q, I | 0.01 | 4 | 38 | 2.6 | 12.5 | 45 | 0.002 |
| 48-4 or 49-4 | Q, I | 0.1 | 4 | 38 | 2.6 | 12.5 | 45 | 0.015 |
| 48-4 or 49-4 | Q, I | 0.2 | 4 | 38 | 2.7 | 12.5 | 45 | 0.030 |
| 48-4 or 49-4 | Q, I | 0.5 | 4 | 38 | 3.0 | 12.5 | 45 | 0.075 |
| 48-4 or 49-4 | G, SOG, Q, I | 1 | 4 | 38 | 3.5 | 12.5 | 45 | 0.150 |
| 48-4 or 49-4 | G, SOG, Q, I | 2 | 4 | 38 | 4.5 | 12.5 | 45 | 0.300 |
| 48-4 or 49-4 | G, SOG, Q, I | 5 | 4 | 38 | 7.5 | 12.5 | 45 | 0.780 |



Types UTWA & UTWA2. Ultra thin wall aperture cells

- Two polished windows.
- Aperture window - 0.2mm (200 microns)
- For use with high magnification systems
- UTWA/2 has two thin window apertures, one in each window.

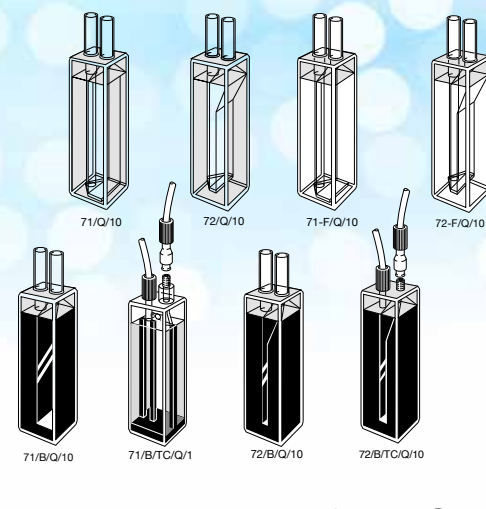
| Type No | Window Material | Path Length | Internal Width | External | | | Internal Dia. | External Dia. |
|----------|-----------------|------------------|----------------|----------|------|----|---------------|---------------|
| | | | | L | W | H | | |
| 1/UTWA | Q | All Path Lengths | 10 | 12.5 | 12.5 | 45 | - | - |
| 1/UTWA2 | Q | | 10 | 12.5 | 12.5 | 45 | - | - |
| 45/UTWA | Q | | 10 | 12.5 | 12.5 | 45 | - | - |
| 45/UTWA2 | Q | | 10 | 12.5 | 12.5 | 45 | - | - |
| 48/UTWA | Q | | 10 | 2.6 | 12.5 | 45 | - | - |
| 48/UTWA2 | Q | | 10 | 2.6 | 12.5 | 45 | - | - |
| 32/UTWA | Q | | - | 22.5 | - | - | 15 | 22 |
| 32/UTWA2 | Q | | - | 22.5 | - | - | 15 | 22 |



Type 71, 71B, 71F, 72, 72B & 72F Flow cells. Standard and semi-micro

- 71, 71B, 72 & 72B have two polished windows.
- Long sample compartment suitable for all Z dimensions.
- Inlet/outlet tubes - 2 I.D., 4 O.D., 16mm long intended for push-on flexible tubing.
- Also available with TC threaded connectors.
- 71-F & 72-F fluorescence cells have three polished windows.

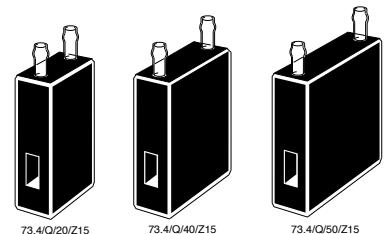
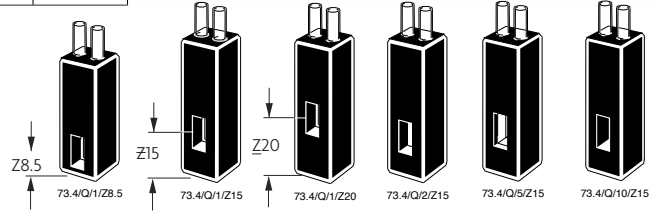
| Type No | Window Material | Path Length | Internal | | External | | | Nominal Vol. ml |
|---------------------------|-----------------|-------------|----------|------|----------|------|----|-----------------|
| | | | W | H | L | W | H | |
| Clear walls | | | | | | | | |
| 71 | Q | 10 | 7 | 37.5 | 12.5 | 12.5 | 48 | 3.000 |
| 71-F | Q | 10 | 7 | 37.5 | 12.5 | 12.5 | 48 | 3.000 |
| 72 | Q | 10 | 4 | 37.5 | 12.5 | 12.5 | 48 | 1.800 |
| 72-F | Q | 10 | 4 | 37.5 | 12.5 | 12.5 | 48 | 1.800 |
| Self masking. Black walls | | | | | | | | |
| 71/B | Q | 1 | 7 | 37.5 | 12.5 | 12.5 | 48 | 0.300 |
| 71/B | Q | 10 | 7 | 37.5 | 12.5 | 12.5 | 48 | 3.000 |
| 72/B | Q | 1 | 4 | 37.5 | 12.5 | 12.5 | 48 | 0.180 |
| 72/B | Q | 10 | 4 | 37.5 | 12.5 | 12.5 | 48 | 1.800 |



Type 73.4. Flow cells. Dissolution, medium aperture

- Two polished windows.
- Inlet/outlet tubes - 2 I.D., 4 O.D., 10mm long intended for push-on flexible tubing.
- Cells with a Z height of 8.5mm have an overall height of 38.5mm.

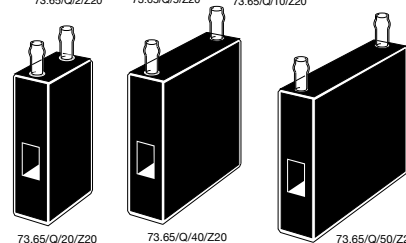
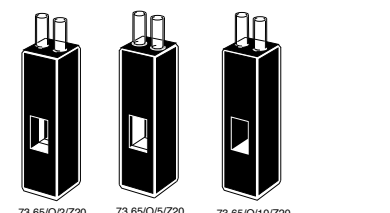
| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|------------------|-------------|-------------|----------|----|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 73.4 | Q | 1 | 8.5, 15, 20 | 4 | 11 | 12.5 | 12.5 | 45 | 0.045 |
| 73.4 | Q | 2 | 8.5, 15, 20 | 4 | 11 | 12.5 | 12.5 | 45 | 0.090 |
| 73.4 | Q | 5 | 8.5, 15, 20 | 4 | 11 | 12.5 | 12.5 | 45 | 0.225 |
| 73.4 | SOG, Q, SX | 10 | 8.5, 15, 20 | 4 | 11 | 12.5 | 12.5 | 45 | 0.450 |
| 73.4 | Q | 20 | 8.5, 15, 20 | 4 | 11 | 22.5 | 12.5 | 45 | 0.900 |
| 73.4 | Q | 40 | 8.5, 15, 20 | 4 | 11 | 42.5 | 12.5 | 45 | 1.800 |
| 73.4 | Q | 50 | 8.5, 15, 20 | 4 | 11 | 52.5 | 12.5 | 45 | 2.250 |



Type 73.65 Flow cells. Dissolution, wide aperture

- Two polished windows.
- Inlet/outlet tubes - 2 I.D., 4 O.D., 10mm long intended for push-on flexible tubing. Cells with a Z height of 8.5mm have an overall height of 38.5mm.

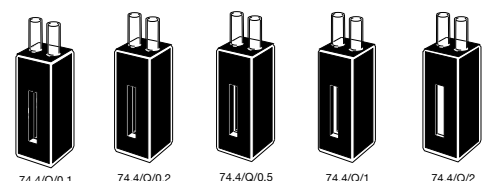
| Type No | Window Material | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|-----------------|-------------|-------------|----------|----|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 73.65 | Q | 1 | 8.5, 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 45 | 0.072 |
| 73.65 | Q | 2 | 8.5, 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 45 | 0.144 |
| 73.65 | Q | 5 | 8.5, 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 45 | 0.360 |
| 73.65 | Q | 10 | 8.5, 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 45 | 0.720 |
| 73.65 | Q | 20 | 8.5, 15, 20 | 6.5 | 11 | 22.5 | 12.5 | 45 | 1.440 |
| 73.65 | Q | 40 | 8.5, 15, 20 | 6.5 | 11 | 42.5 | 12.5 | 45 | 2.880 |
| 73.65 | Q | 50 | 8.5, 15, 20 | 6.5 | 11 | 52.5 | 12.5 | 45 | 3.600 |



Type 74.4 Flow cells. Dissolution. Short path length, long aperture

- Two polished windows.
- Path lengths of 0.5mm or less incorporate by-pass tubes to avoid back pressure and assist laminar flow through the sample compartment. Profiled sample compartment to optimise flow characteristics, reduces carry-over and bubble retention.
- Inlet/outlet tubes - 2 I.D., 4 O.D., 10mm long intended for push-on flexible tubing.

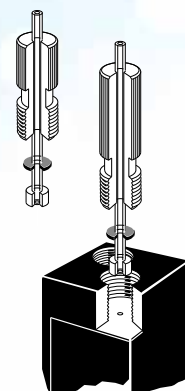
| Type No | Window Material | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|-----------------|-------------|----------|----------|------|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 74.4 | Q | 0.1 | 15 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.042 |
| 74.4 | Q | 0.2 | 15 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.049 |
| 74.4 | Q | 0.5 | 15 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.100 |
| 74.4 | Q | 1 | 15 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.135 |
| 74.4 | Q | 2 | 15 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.200 |



Advantages of Starna® Type 583, 584, 576, 577&5 85 series flow cells

(for 576, 577 & 583 see page 20)

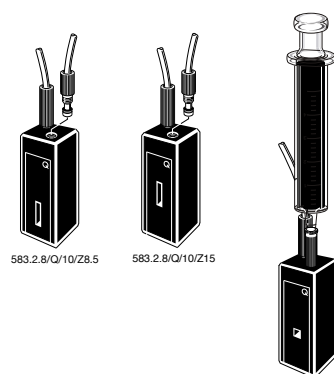
- Fully fused body, accurately located in precisely formed extruded CNC drilled enclosure.
- Superior design, firm and accurate positioning of screw-in M6 gripper fittings with PTFE tubing, without reliance on the shear strength of intermediate bonding material.
- Polished top surface of the cell creates a positive seal with the PTFE face of the M6 gripper fitting, (see illustration), ensures a leak proof seal without dislodging the cell body or damaging the cell surface.
- A gap of 300 microns between the top of the cell body and the enclosure allows confirmation of a positive seal before use. Internally profiled inlet and outlet to each sample chamber optimises flow characteristic and performance, providing a smooth laminar flow wherever possible and reduces bubble retention.
- All cells are pressure tested to more than 5 bar after final assembly.
- Each cell is engraved with the path length and a unique identifying number, for full traceability throughout the manufacturing process.
- Cells with path lengths of less than 0.5mm or less are checked on a reference spectrophotometer before and after final assembly using an interference method. The path length is determined to an uncertainty better than 0.2 microns (0.0002mm).
- Path lengths of 0.5mm or greater are verified by physical measurement during the production processes.
- Flanged fittings, FEP tubing, and special adaptors Type TJ/G/038 for use with normal silicone tubing are available, see page 29.
- Short path length flow cells may be used as static short path length using a syringe and luer lock adaptor (see illustration).



Type 583.2.8 Flow cells. Dissolution. Micro aperture

- Two polished windows.
- M6 Screw-in connections.
- Profiled sample compartment to optimise flow characteristics, reduces carry-over and bubble retention.

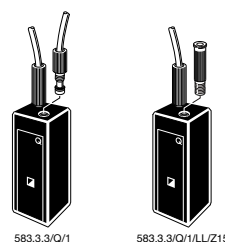
| Type No | Window Material | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|-----------------|-------------|----------|----------|---|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 583.2.8 | Q | 10 | 8.5, 15 | 2 | 8 | 12.5 | 12.5 | 35 | 0.160 |



Type 583.3.3. Flow cells. Sub-micro. Small aperture

- Two polished windows.
- Overflow tube attached to outlet side of cell.
- M6 fittings as described, included with cell.
- Also designed for use with luer lock fitting and syringe for introduction and extraction of sample.

| Type No | Window Material | Path Length | Z Height | Internal | | External | | Nominal Vol. ml |
|---------|-----------------|-------------|----------|----------|---|----------|----|-----------------|
| | | | | W | H | W | H | |
| 583.3.3 | Q | 1 | 15 | 3 | 3 | 12.5 | 35 | 0.009 |
| 583.3.3 | Q | 2 | 15 | 3 | 3 | 12.5 | 35 | 0.018 |
| 583.3.3 | Q | 5 | 15 | 3 | 3 | 12.5 | 35 | 0.045 |

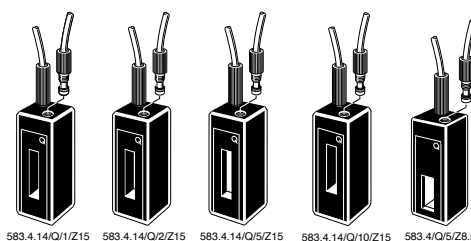


Z Dimension per instrument

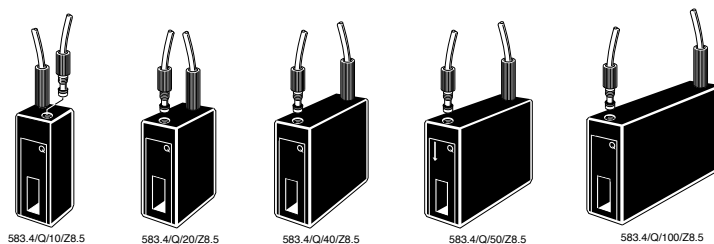
| Manufacturer | Z Dimension |
|--------------------------|-------------|
| Agilent* | 15mm |
| Beckman* | 8.5mm |
| Bio-Rad* | 8.5mm |
| Eppendorf* | 8.5mm |
| GBC* | 15mm |
| Hewlett-Packard* | 15mm |
| Hitachi* | 8.5mm |
| Jasco* | 12mm |
| Perkin-Elmer* | 15mm |
| Pharmacia* | 15mm |
| Scinco* | 15mm |
| Shimadzu* | 15mm |
| Spectronics* | 8.5mm |
| Turner* | 8.5mm |
| Varian* (Cary®/Agilent®) | 20mm |

Type 583.4 & 583.4.14 Flow cells. Dissolution. Medium Aperture

- Two polished windows.
- M6 Screw-in connections.
- Profiled sample compartment to optimise flow characteristics, reduces carry-over and bubble retention.

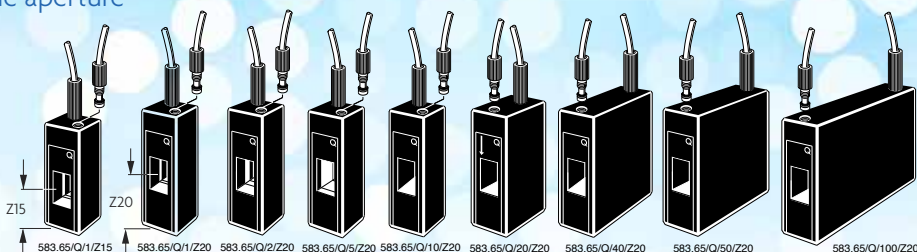


| Type No | Window Materials | Path Length | Z Height | Internal | | External | | Nominal Vol. ml |
|----------|------------------|-------------|-------------|----------|----|----------|----|-----------------|
| | | | | W | H | W | H | |
| 583.4.14 | Q | 1 | 15, 20 | 4 | 14 | 12.5 | 35 | 0.056 |
| 583.4.14 | Q | 2 | 15, 20 | 4 | 14 | 12.5 | 35 | 0.112 |
| 583.4.14 | Q | 5 | 15, 20 | 4 | 14 | 12.5 | 35 | 0.280 |
| 583.4.14 | Q | 10 | 15, 20 | 4 | 14 | 12.5 | 35 | 0.560 |
| 583.4 | Q | 5 | 8.5, 15, 20 | 4 | 11 | 12.5 | 35 | 0.225 |
| 583.4 | Q | 10 | 8.5, 15, 20 | 4 | 11 | 12.5 | 35 | 0.450 |
| 583.4 | Q | 20 | 8.5, 15, 20 | 4 | 11 | 12.5 | 35 | 0.900 |
| 583.4 | Q | 40 | 8.5, 15, 20 | 4 | 11 | 12.5 | 35 | 1.800 |
| 583.4 | Q | 50 | 8.5, 15, 20 | 4 | 11 | 12.5 | 35 | 2.250 |
| 583.4 | Q | 100 | 8.5, 15, 20 | 4 | 11 | 12.5 | 35 | 4.500 |



Type 583.65 Flow cells. Dissolution. Wide aperture

- Two polished windows.
- Cells with a Z height of 20mm have overall an height of 40mm.
- Path lengths of 0.5mm or less incorporate by-pass tubes to avoid back pressure and assist laminar flow through the sample compartment.
- M6 Screw-in connections.
- Profiled sample compartment to optimise flow characteristics, reduce carry-over and bubble retention.



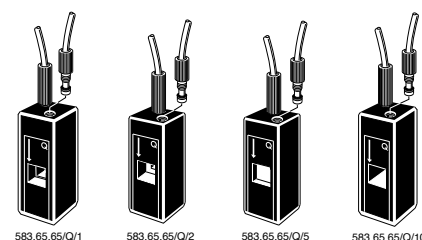
| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------|----------|----|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 583.65 | Q | 0.1 | 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 35 | 0.029 |
| 583.65 | Q | 0.2 | 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 35 | 0.036 |
| 583.65 | Q | 0.5 | 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 35 | 0.072 |
| 583.65 | Q | 1 | 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 35 | 0.072 |
| 583.65 | Q | 2 | 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 35 | 0.290 |
| 583.65 | Q | 5 | 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 35 | 0.360 |
| 583.65 | Q | 10 | 15, 20 | 6.5 | 11 | 12.5 | 12.5 | 35 | 0.720 |
| 583.65 | Q | 20 | 15, 20 | 6.5 | 11 | 22.5 | 12.5 | 35 | 1.400 |
| 583.65 | Q | 40 | 15, 20 | 6.5 | 11 | 42.5 | 12.5 | 35 | 2.900 |
| 583.65 | Q | 50 | 15, 20 | 6.5 | 11 | 52.5 | 12.5 | 35 | 3.600 |
| 583.65 | Q | 100 | 15, 20 | 6.5 | 11 | 102.5 | 12.5 | 35 | 7.200 |



Type 583.65.65 Flow cells. Dissolution. Wide square aperture

- Two polished windows.
- Cells with a Z height of 20mm have overall an height of 40mm.
- M6 Screw-in connections.
- Profiled sample compartment to optimise flow characteristics, reduces carry over and bubble retention. Aperture with reduced height and volume for specific instruments such as Agilent 8453 and Varian Cary 50.

| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|-----------|------------------|-------------|----------|----------|-----|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 583.65.65 | Q | 1 | 15, 20 | 6.5 | 6.5 | 12.5 | 12.5 | 35 | 0.076 |
| 583.65.65 | Q | 2 | 15, 20 | 6.5 | 6.5 | 12.5 | 12.5 | 35 | 0.160 |
| 583.65.65 | Q | 5 | 15, 20 | 6.5 | 6.5 | 12.5 | 12.5 | 35 | 0.210 |
| 583.65.65 | Q | 10 | 15, 20 | 6.5 | 6.5 | 12.5 | 12.5 | 35 | 0.420 |

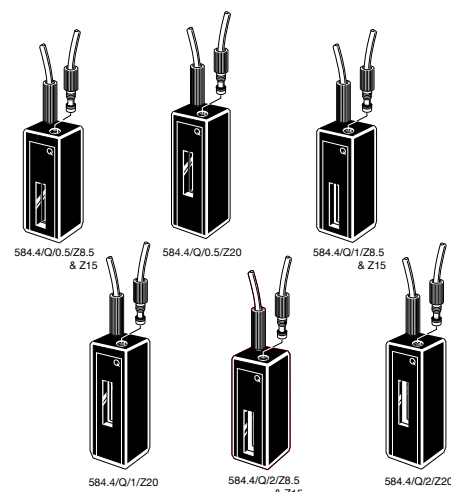


* When Z height is 20mm, external height is 40mm

Type 584.4 Flow cells. Dissolution. Short path length, long aperture

- Two polished windows.
- Long aperture.
- Path lengths of 0.5mm or less incorporate by-pass tubes to avoid back pressure and assist laminar flow through the sample compartment.
- M6 Screw-in connections.
- Profiled sample compartment to optimise flow characteristics, reduces carry over and bubble retention.

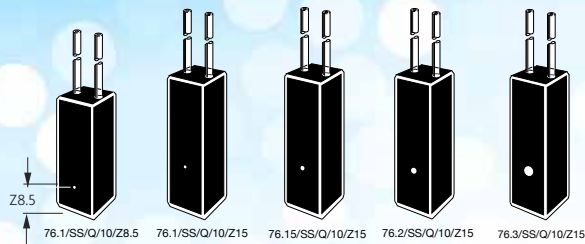
| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|------------------|-------------|-----------|----------|------|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 584.4 | Q | 0.01 | 8.5,15,20 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.036 |
| 584.4 | Q | 0.05 | 8.5,15,20 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.039 |
| 584.4 | Q | 0.1 | 8.5,15,20 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.041 |
| 584.4 | Q | 0.2 | 8.5,15,20 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.047 |
| 584.4 | Q | 0.5 | 8.5,15,20 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.095 |
| 584.4 | Q | 1 | 8.5,15,20 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.120 |
| 584.4 | Q | 2 | 8.5,15,20 | 4 | 17.5 | 12.5 | 12.5 | 35 | 0.240 |



* When Z height is 20mm, external height is 40mm

Type 76. Flow cells HPLC, round aperture with stainless steel tubes

- Two polished windows.
- Stainless steel inlet/outlet tubes.
- Cells with a Z height of 8.5mm have an overall height of 38.5mm.



| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml | Stainless steel tubes | | | | |
|---------|------------------|-------------|----------|---------------|----------|------|----|-----------------|-----------------------|------|-------------|------|--------|
| | | | | | L | W | H | | Inlet I.D. | O.D. | Outlet I.D. | O.D. | Length |
| 76.1 | Q | 10 | 8.5, 15 | 1 | 12.5 | 12.5 | 45 | 0.008 | 0.25 | 1.6 | 0.5 | 1.6 | 100 |
| 76.15 | SOG, Q | 10 | 8.5, 15 | 1.5 | 12.5 | 12.5 | 45 | 0.018 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |
| 76.2 | SOG, Q | 10 | 8.5, 15 | 2 | 12.5 | 12.5 | 45 | 0.040 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |
| 76.3 | SOG, Q | 10 | 8.5, 15 | 3 | 12.5 | 12.5 | 45 | 0.080 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |

Type 15. Micro aspiration

- Two polished windows.
- Open top.
- Filling and emptying with a pipette is recommended.

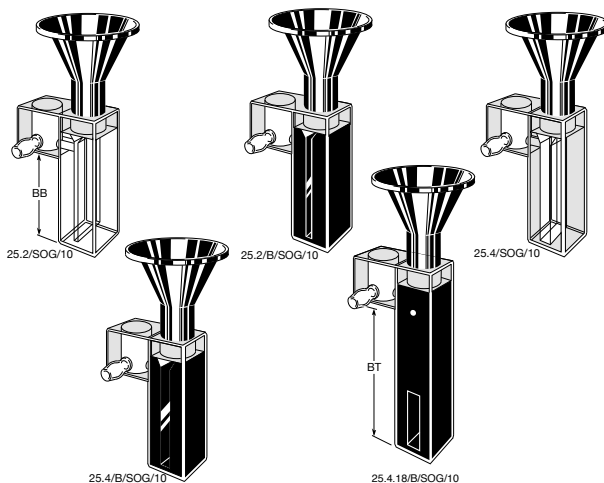


| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------|----------|------|----------|------|----|-----------------|
| | | | | W | H | L | W | H | |
| 15.50A | Q | 10 | 8.5 | - | 13.5 | 12.5 | 12.5 | 15 | 0.050 |

Type 25. Micro & semi-micro. Vacuum suction/aspiration

- Two polished windows.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 10mm long intended for push-on flexible tubing. Funnel supplied with cell.

| Type No | Window Materials | Path Length | Internal W. | External | | | Base to Block (BB) | Nominal Vol. ml |
|---------------------------------------|------------------|-------------|-------------|----------|------|----|--------------------|-----------------|
| | | | | L | W | H | | |
| Micro. Clear walls | | | | | | | | |
| 25.2 | SOG, Q | 10 | 2 | 12.5 | 12.5 | 45 | 26 | 0.500 |
| Micro. Black walls. Self-masking | | | | | | | | |
| 25.2/B | SOG, Q | 10 | 2 | 12.5 | 12.5 | 45 | 26 | 0.500 |
| Semi-micro. Clear walls | | | | | | | | |
| 25.4 | SOG, Q | 10 | 4 | 12.5 | 12.5 | 45 | 26 | 1.000 |
| Semi-micro. Black walls. Self-masking | | | | | | | | |
| 25.4/B | SOG, Q | 10 | 4 | 12.5 | 12.5 | 45 | 26 | 1.000 |
| 25.4.18/B | SOG, Q | 10 | 4 | 12.5 | 12.5 | 64 | 44 | 0.750 |

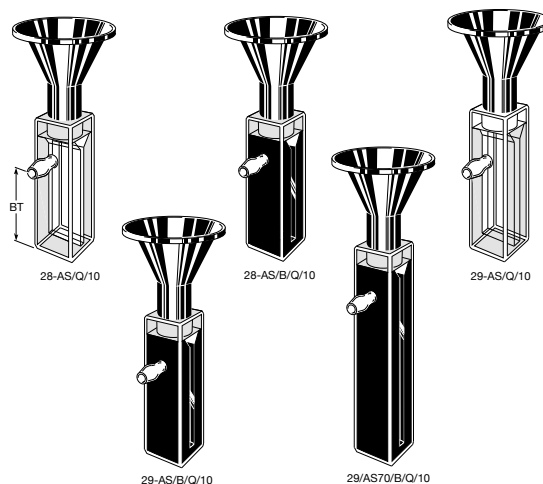


Type 28-AS. Micro, suction outlet

Type 29-AS. Semi-micro, suction outlet

- Two polished windows.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 10mm long intended for push-on flexible tubing. Funnel supplied with cell.

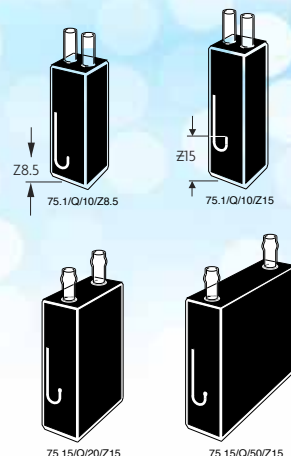
| Type No | Window Materials | Path Length | Internal W. | External | | | Base to Block (BB) | Nominal Vol. ml |
|---------------------------------------|------------------|-------------|-------------|----------|------|----|--------------------|-----------------|
| | | | | L | W | H | | |
| Micro. Clear walls | | | | | | | | |
| 28-AS | SOG, Q | 10 | 2 | 12.5 | 12.5 | 48 | 31 | 0.500 |
| Micro. Black walls. Self-masking | | | | | | | | |
| 28-AS/B | SOG, Q | 10 | 2 | 12.5 | 12.5 | 48 | 31 | 0.500 |
| Semi-micro. Clear walls | | | | | | | | |
| 29-AS | SOG, Q | 10 | 4 | 12.5 | 12.5 | 48 | 31 | 1.000 |
| Semi-micro. Black walls. Self-masking | | | | | | | | |
| 29-AS/B | SOG, Q | 10 | 4 | 12.5 | 12.5 | 48 | 31 | 1.000 |
| 29/AS60/B | Q | 10 | 4 | 12.5 | 12.5 | 60 | 46.5 | 1.200 |
| 29/AS70/B | SOG, Q | 10 | 4 | 12.5 | 12.5 | 70 | 55 | 1.800 |



Type 75.1, 75.15 Flow cells. Ultra-micro, round aperture

- Two polished windows.
- Cells with a Z height of 8.5mm have an overall height of 38.5mm.
- Bore specially treated to reduce bubble formation and/or retention.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 10mm long intended for push-on flexible tubing.

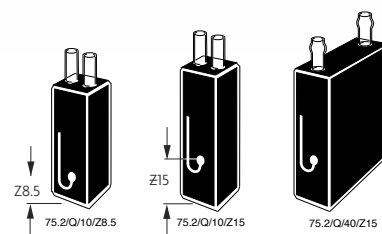
| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------|---------------|----------|------|----|-----------------|
| | | | | | L | W | H | |
| 75.1 | Q, S | 5 | 8.5,15 | 1 | 12.5 | 12.5 | 35 | 0.036 |
| 75.1 | SOG, Q, SX | 10 | 8.5,15 | 1 | 12.5 | 12.5 | 35 | 0.039 |
| 75.15 | Q, SX | 1 | 8.5,15 | 1.5 | 12.5 | 12.5 | 35 | 0.041 |
| 75.15 | Q, SX | 2 | 8.5,15 | 1.5 | 12.5 | 12.5 | 35 | 0.047 |
| 75.15 | Q, SX | 5 | 8.5,15 | 1.5 | 12.5 | 12.5 | 35 | 0.095 |
| 75.15 | SOG, Q, SX | 10 | 8.5,15 | 1.5 | 12.5 | 12.5 | 35 | 0.120 |
| 75.15 | Q, SX | 20 | 8.5,15 | 1.5 | 22.5 | 12.5 | 35 | 0.240 |
| 75.15 | Q, SX | 50 | 8.5,15 | 1.5 | 52.5 | 12.5 | 35 | 0.600 |



Type 75.2 Flow cells. Sub-micro, round aperture

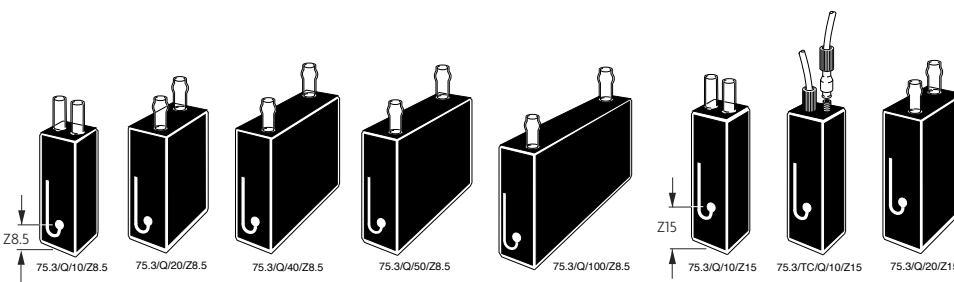
- Two polished windows.
- Cells with a Z height of 8.5mm have an overall height of 38.5mm.
- Bore specially treated to reduce bubble formation and/or retention.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 10mm long intended for push-on flexible tubing.

| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------|---------------|----------|------|----|-----------------|
| | | | | | L | W | H | |
| 75.2 | SOG, Q, SX | 2 | 8.5,15 | 2 | 12.5 | 12.5 | 45 | 0.007 |
| 75.2 | SOG, Q, SX | 5 | 8.5,15 | 2 | 12.5 | 12.5 | 45 | 0.016 |
| 75.2 | SOG, Q, SX | 10 | 8.5,15 | 2 | 12.5 | 12.5 | 45 | 0.032 |
| 75.2 | SOG, Q, SX | 40 | 8.5,15 | 2 | 42.5 | 12.5 | 45 | 0.128 |



Type 75.3 Flow cells. Round aperture

- Two polished windows.
- Cells with a Z height of 8.5mm have an overall height of 38.5mm.
- Bore specially treated to reduce bubble formation and/or retention.
- Inlet/outlet tubes - 2 I.D, 4 O.D,
- 10mm long intended for push-on flexible tubing.

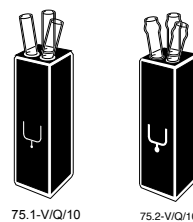


| Type No | Window Materials | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml | Remarks |
|---------|------------------|-------------|----------|----------|-----|----------|------|----|-----------------|----------------------|
| | | | | W | H | L | W | H | | |
| 75.3 | SOG, Q | 1 | 8.5,15 | 3 | 1 | 12.5 | 12.5 | 45 | 0.007 | |
| 75.3 | SOG, Q | 2 | 8.5,15 | 3 | 2 | 12.5 | 12.5 | 45 | 0.014 | |
| 75.3 | SOG, Q | 5 | 8.5,15 | 3 | 5 | 12.5 | 12.5 | 45 | 0.035 | |
| 75.3 | SOG, Q, SX | 10 | 8.5,15 | 3 | 10 | 12.5 | 12.5 | 45 | 0.070 | |
| 75.3/TC | Q | 10 | 15, 20 | 3 | 10 | 12.5 | 12.5 | 45 | 0.070 | Screw-on connections |
| 75.3 | SOG, Q | 20 | 8.5,15 | 3 | 20 | 22.5 | 12.5 | 45 | 0.140 | |
| 75.3 | SOG, Q | 40 | 8.5,15 | 3 | 40 | 42.5 | 12.5 | 45 | 0.280 | |
| 75.3 | SOG, Q | 50 | 8.5,15 | 3 | 50 | 52.5 | 12.5 | 45 | 0.350 | |
| 75.3 | SOG, Q | 100 | 8.5,15 | 3 | 100 | 102.5 | 12.5 | 45 | 0.700 | |

Type 75.1-V Flow cells. Ultra-micro, sub-micro, round aperture vacuum/debubbler

- Two polished windows.
- Cells with a Z height of 8.5mm have an overall height of 38.5mm.
- Bore specially treated to reduce bubble formation and/or retention.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 10mm long intended for push-on flexible tubing.
- Third outlet debubbler tube - 2 I.D, 4 O.D, 10mm long.

| Type No | Window Material | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml |
|---------|-----------------|-------------|----------|---------------|----------|------|----|-----------------|
| | | | | | L | W | H | |
| 75.1-V | Q | 10 | 8.5, | 1 | 12.5 | 12.5 | 45 | 0.008 |
| 75.2-V | Q | 10 | 8.5,15 | 2 | 12.5 | 12.5 | 45 | 0.040 |



Type 576 Ultra micro, round aperture with stainless steel tubes

- Two polished windows.
- Bore specially treated to reduce bubble formation and/or retention.
- Stainless steel inlet/outlet tubes. Nominal length 100mm.

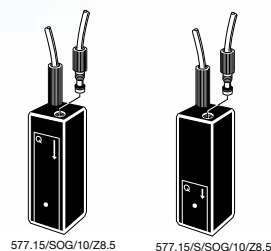
| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml | Stainless steel tubes | | | | |
|---------|------------------|-------------|----------|---------------|----------|------|----|-----------------|-----------------------|------|-------------|------|--------|
| | | | | | L | W | H | | Inlet I.D. | O.D. | Outlet I.D. | O.D. | Length |
| 576.15 | SOG, Q | 10 | 8.5 | 1.5 | 12.5 | 12.5 | 35 | 0.018 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |
| 576.20 | SOG, Q | 10 | 8.5 | 2.0 | 12.5 | 12.5 | 35 | 0.032 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |



Type 577 Ultra micro round aperture

- Two polished windows.
- Bore specially treated to reduce bubble formation and/or retention. M6 screw-in connections.
- Long body or short body 576.15/S.

| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml |
|----------|------------------|-------------|----------|---------------|----------|------|----|-----------------|
| | | | | | L | W | H | |
| 577.15 | SOG | 10 | 8.5 | 1.5 | 12.5 | 12.5 | 35 | 0.018 |
| 577.15/S | SOG | 10 | 8.5 | 1.5 | 12.5 | 12.5 | 35 | 0.018 |

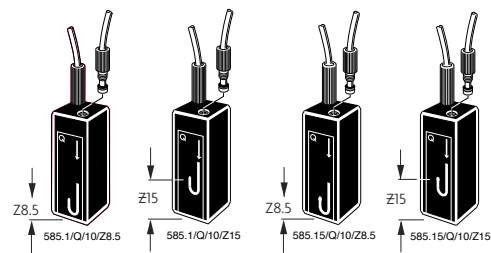


Type 585.1, 585.15 Flow cells. Ultra-micro, round aperture

- Two polished windows.
- Bore specially treated to reduce bubble formation and/or retention.
- M6 screw-in connections.

| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml |
|---------|------------------|-------------|--------------|---------------|----------|------|----|-----------------|
| | | | | | L | W | H | |
| 585.1 | SOG, Q | 10 | 8.5, 15, 20* | 1 | 12.5 | 12.5 | 35 | 0.008 |
| 585.15 | SOG, Q | 10 | 8.5, 15, 20* | 1.5 | 12.5 | 12.5 | 35 | 0.018 |

* When Z height is 20mm, external height is 40mm

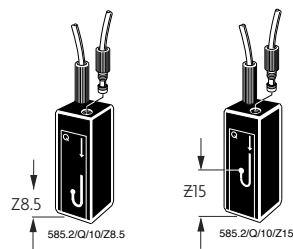


Type 585.2 Flow cells. Sub-micro, round aperture

- Two polished windows.
- Bore specially treated to reduce bubble formation and/or retention.
- M6 screw-in connections.

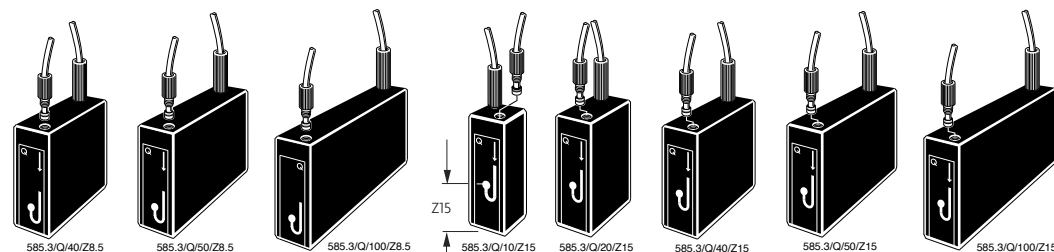
| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml |
|---------|------------------|-------------|--------------|---------------|----------|------|----|-----------------|
| | | | | | L | W | H | |
| 585.2 | SOG, Q, SX | 10 | 8.5, 15, 20* | 2 | 12.5 | 12.5 | 35 | 0.032 |

* When Z height is 20mm, external height is 40mm



Type 585.3 Flow cells, round aperture

- Two polished windows.
- Bore specially treated to reduce bubble formation and/or retention. M6 screw-in connections.



| Type No | Window Materials | Path Length | Z Height | Internal Dia. | External | | | Nominal Vol. ml |
|---------|------------------|-------------|--------------|---------------|----------|------|----|-----------------|
| | | | | | L | W | H | |
| 585.3 | SOG, Q | 10 | 8.5, 15, 20* | 3 | 12.5 | 12.5 | 35 | 0.070 |
| 585.3 | SOG, Q | 20 | 8.5, 15, 20* | 3 | 22.5 | 12.5 | 35 | 0.140 |
| 585.3 | SOG, Q | 40 | 8.5, 15, 20* | 3 | 42.5 | 12.5 | 35 | 0.280 |
| 585.3 | SOG, Q | 50 | 8.5, 15, 20* | 3 | 52.5 | 12.5 | 35 | 0.350 |
| 585.3 | SOG, Q | 100 | 8.5, 15, 20* | 3 | 102.5 | 12.5 | 35 | 0.700 |

* When Z height is 20mm, external height is 40mm

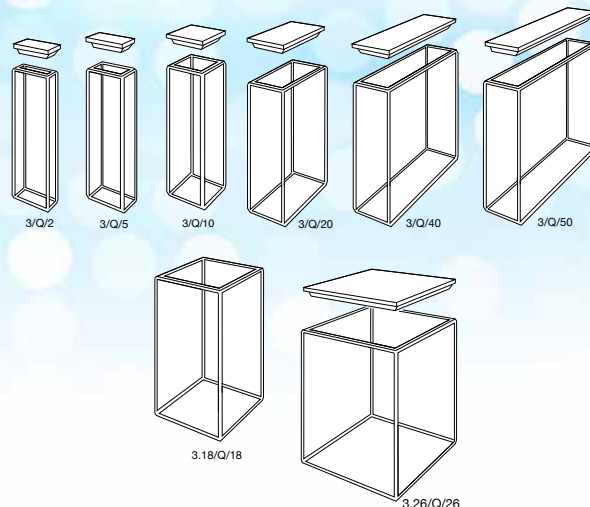
Z Dimension per instrument

| Manufacturer | Z Dimension |
|-------------------------|-------------|
| Agilent* | 15mm |
| Beckman* | 8.5mm |
| Bio-Rad* | 8.5mm |
| Eppendorf* | 8.5mm |
| GBC* | 15mm |
| Hewlett-Packard* | 15mm |
| Hitachi* | 8.5mm |
| Jasco* | 12mm |
| Perkin-Elmer* | 15mm |
| Pharmacia* | 15mm |
| Scinco* | 15mm |
| Shimadzu* | 15mm |
| Spectronics* | 8.5mm |
| Turner* | 8.5mm |
| Varian®(Cary®/Agilent®) | 20mm |

Type 3. Fluorimeter. Macro/Standard Rectangular

- Open top, with non-sealing PTFE cover.
- Polyethylene vaned lid available on request for
- 10mm cells only, providing a liquid-tight seal.
- Four windows and base polished.

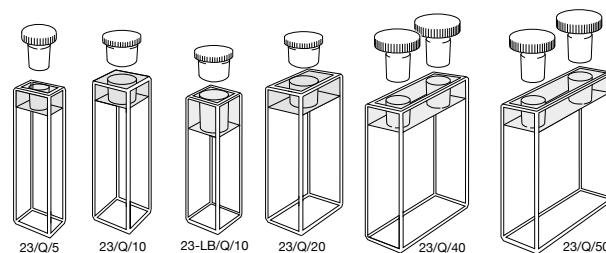
| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| 3 | Q | 2 | 10 | 4.5 | 12.5 | 45 | 0.800 |
| 3 | G,SOG, Q,I,SX | 5 | 10 | 7.5 | 12.5 | 45 | 1.70 |
| 3 | G,SOG,PX,Q,I,SX | 10 | 10 | 12.5 | 12.5 | 45 | 3.500 |
| 3 | G,SOG, Q,I | 20 | 10 | 22.5 | 12.5 | 45 | 7.000 |
| 3 | G,SOG, Q,I | 40 | 10 | 42.5 | 12.5 | 45 | 14.000 |
| 3 | G,SOG, Q,I | 50 | 10 | 52.5 | 12.5 | 45 | 17.500 |
| 3 | G,SOG, Q,I,SX | 100 | 9.5 | 102.5 | 12.5 | 45 | 35.000 |
| 3.18 | Q | 18 | 18 | 22 | 22 | 50 | 14.600 |
| 3.26 | Q | 26 | 26 | 30 | 30 | 50 | 30.500 |



Type 23. Fluorimeter with stopper(s). Macro/Standard Rectangular

- Closed by PTFE stopper(s), providing a liquid-tight seal.
- Four windows and base polished.

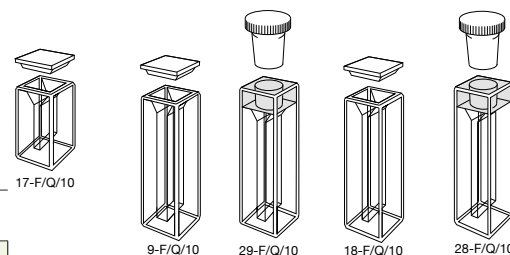
| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| 23 | G, SOG, Q, I, SX | 5 | 10 | 7.5 | 12.5 | 48 | 1.700 |
| 23 | G, SOG, Q, I, SX | 10 | 10 | 12.5 | 12.5 | 48 | 3.500 |
| 23 | G, SOG, Q, I | 20 | 10 | 22.5 | 12.5 | 48 | 7.000 |
| 23 | G, SOG, Q, I | 40 | 10 | 42.5 | 12.5 | 48 | 7.00 |
| 23 | G, SOG, Q, I | 50 | 10 | 52.5 | 12.5 | 48 | 17.500 |
| 23 | Q | 100 | 10 | 102.5 | 12.5 | 48 | 35,000 |
| 23-LB | Q | 10 | 10 | 12.5 | 12.5 | 42 | 3.000 |



Type 9-F & 29-F Fluorimeter. Semi-micro. Type 17-F, 18-F & 28-F Fluorimeter. Micro

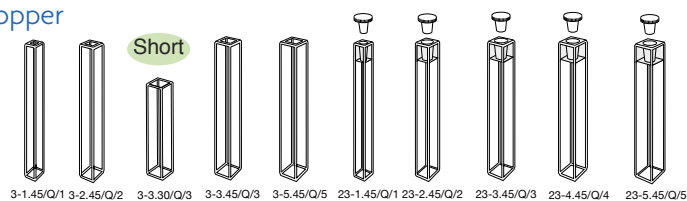
- Fits 12.5mm square cell holder.
- Four windows and base polished.
- Type 9-F, 17-F & 18-F have open top with non-sealing PTFE cover.
- Type 28-F & 29-F are closed by PTFE stopper, providing a liquid-tight seal.
- Base thickness - 3mm
- Suitable for use with all standard cell holders.

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml | Remarks |
|---------|------------------|-------------|----------------|----------|------|----|-----------------|-------------------------|
| | | | | L | W | H | | |
| 9-F | SOG, Q | 10 | 4 | 12.5 | 12.5 | 45 | 1.400 | Semi-micro with lid |
| 29-F | SOG, Q | 10 | 4 | 12.5 | 12.5 | 48 | 1.400 | Semi-micro with stopper |
| 17-F | G, Q | 10 | 2 | 12.5 | 12.5 | 25 | 0.400 | Micro with lid |
| 18-F | SOG, Q | 10 | 2 | 12.5 | 12.5 | 45 | 0.700 | Micro with lid |
| 28-F | SOG, Q | 10 | 2 | 12.5 | 12.5 | 48 | 0.700 | Micro with stopper |

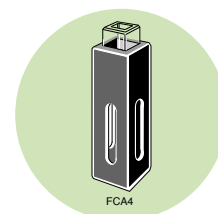


Type 3-. Fluorimeter. Micro. Type 23-. Fluorimeter. Micro, with stopper

- Four polished windows.
- This range of micro fluorimeter cells is specially designed to be used with the FCA adaptors. The appropriate adaptor for the path length correctly aligns the cell in a standard 12.5mm square cell holder to maximise excitation and emission energy utilisation.



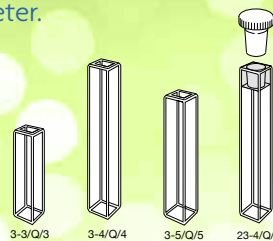
| Type No | Window Materials | Path Length | Internal Width | External | | | Adaptor | Nominal Vol. ml |
|-----------------|------------------|-------------|----------------|----------|-----|----|---------|-----------------|
| | | | | L | W | H | | |
| Square open top | | | | | | | | |
| 3-1.45 | Q | 1 | 1 | 3.5 | 3.5 | 45 | FCA1 | 0.035 |
| 3-2.45 | SOG, Q | 2 | 2 | 4.5 | 4.5 | 45 | FCA2 | 0.140 |
| 3-3.30 | SOG, Q | 3 | 3 | 5.5 | 5.5 | 30 | FCA3.30 | 0.225 |
| 3-3.45 | SOG, Q | 3 | 3 | 5.5 | 5.5 | 45 | FCA3 | 0.315 |
| 3-4.45 | SOG, Q | 4 | 4 | 6.5 | 6.5 | 45 | FCA4 | 0.560 |
| 3-5.45 | SOG, Q | 5 | 5 | 7.5 | 7.5 | 45 | FCA5 | 0.875 |
| With stopper | | | | | | | | |
| 23-1.45 | Q | 1 | 1 | 3.5 | 3.5 | 48 | FCA1 | 0.031 |
| 23-2.45 | SOG, Q | 2 | 2 | 4.5 | 4.5 | 48 | FCA2 | 0.125 |
| 23-3.45 | SOG, Q | 3 | 3 | 5.5 | 5.5 | 48 | FCA3 | 0.280 |
| 23-4.45 | SOG, Q | 4 | 4 | 6.5 | 6.5 | 48 | FCA4 | 0.500 |
| 23-5.45 | SOG, Q | 5 | 5 | 7.5 | 7.5 | 48 | FCA5 | 0.780 |



Type 3-. Fluorimeter. Micro, supplied without lid Type 23-4. Fluorimeter. Micro with stopper

- Open top cell.
- Type 23-4 is closed by PTFE stopper, providing a liquid-tight seal.
- Four windows and base polished.

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|-----|----|-----------------|
| | | | | L | W | H | |
| 3-3 | SOG, Q | 3 | 3 | 5.5 | 5.5 | 30 | 0.270 |
| 3-4 | SOG, Q | 4 | 4 | 6 | 6 | 50 | 0.720 |
| 3-5 | SOG, Q | 5 | 5 | 6.8 | 6.8 | 40 | 0.875 |
| 23-4 | SOG, Q | 4 | 4 | 6 | 6 | 50 | 0.720 |

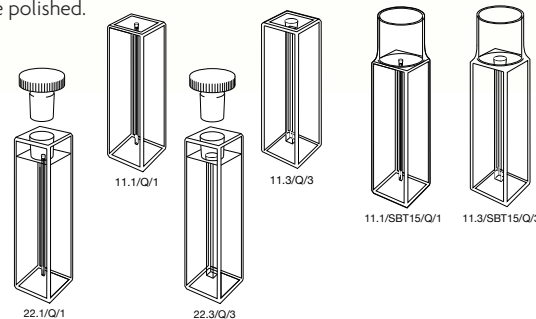


| Z Dimension for some fluorimeters | |
|-----------------------------------|-------------|
| Manufacturer | Z Dimension |
| Jasco® | 18mm |
| Molecular Devices® | 15mm |
| Perkin-Elmer® | 15mm |
| Pharmacia® | 15mm |
| PTI (Photo Technology)® | 15mm |
| Shimadzu® | 15mm |
| SLM/Spectronics® | 15mm |
| Hewlett-Packard® | 15mm |
| Spectra Max® | 15mm |
| Spex® | 15mm |
| TSS® | 15mm |
| Varian® (Cary®/Agilent®) | 20mm |

Type 11. Opentop. Type 22 with stopper. Fluorimeter. Micro.

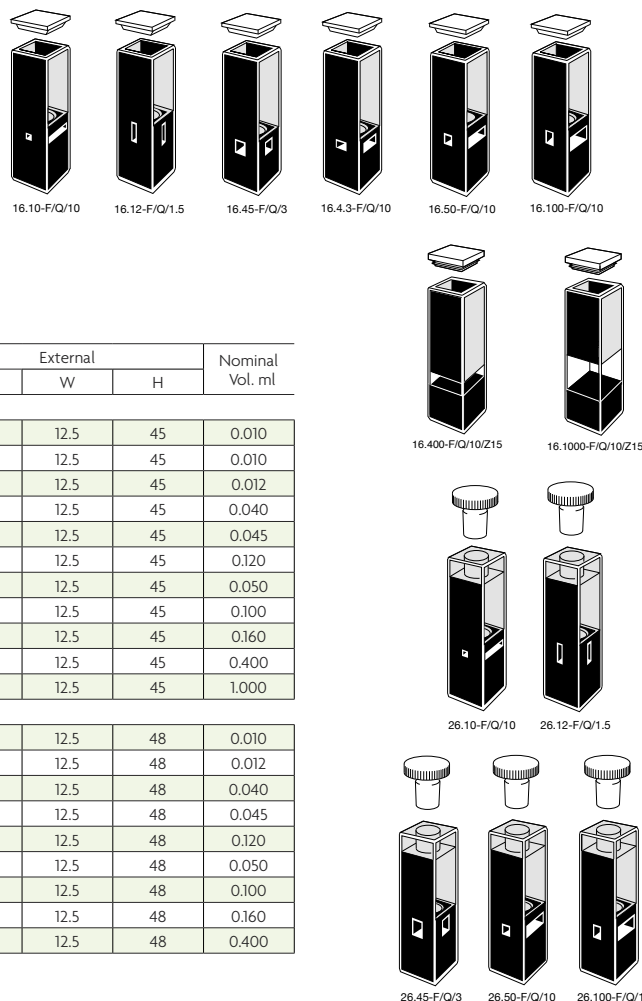
- Open top cell.
- Type SBT15 with 10mm I.D. tube for rubber septa seal for Anærobic environments. All sides and base polished.

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|------------|------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| 11.1 | Q | 1 | 1 | 12.5 | 12.5 | 45 | 0.040 |
| 11.2 | Q | 2 | 2 | 12.5 | 12.5 | 45 | 0.160 |
| 11.3 | Q | 3 | 3 | 12.5 | 12.5 | 45 | 0.360 |
| 22.1 | Q | 1 | 1 | 12.5 | 12.5 | 48 | 0.040 |
| 22.2 | Q | 2 | 2 | 12.5 | 12.5 | 48 | 0.160 |
| 22.3 | Q | 3 | 3 | 12.5 | 12.5 | 48 | 0.360 |
| 11.1/SBT15 | Q | 1 | 1 | 12.5 | 12.5 | 59 | 0.040 |
| 11.2/SBT15 | Q | 2 | 2 | 12.5 | 12.5 | 59 | 0.160 |
| 11.3/SBT15 | Q | 3 | 3 | 12.5 | 12.5 | 59 | 0.360 |



Type 16-F & 26-F. Fluorimeter. Sub-micro

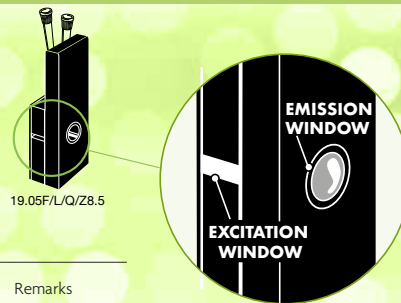
- Three polished windows.
- Sub-micro volumes from 10µl to 160µl.
- Type 16 has a top; comprising two black walls, two translucent side walls and a square internal cross section.
- Open top, supplied with non-sealing PTFE cover as well as a vaned lid to provide a liquid-tight seal.
- To avoid possible meniscus errors; it may be necessary to increase the nominal sample fill volume by at least 20%.
- May be used with all standard cell holders.
- Filling and emptying with a pipette is recommended.
- Type 16.10-F4 has four polished windows.



| Type No | Window Material | Path Length | Z Height | internal | | Emission window | | External | | | Nominal Vol. ml |
|-----------------|-----------------|-------------|------------|----------|-----|-----------------|-----|----------|------|----|-----------------|
| | | | | W | H | W | H | L | W | H | |
| Square open top | | | | | | | | | | | |
| 16.10-F | Q | 10 | 8.5,15, 20 | 1 | 1 | 10 | 1 | 12.5 | 12.5 | 45 | 0.010 |
| 16.10-F4 | Q | 10 | 8.5,15, 20 | 1 | 1 | 10 | 1 | 12.5 | 12.5 | 45 | 0.010 |
| 16.12-F | Q | 1.5 | 8.5,15, 20 | 1.5 | 5 | 1.5 | 5 | 12.5 | 12.5 | 45 | 0.012 |
| 16.40-F | Q | 10 | 8.5,15, 20 | 2 | 2 | 10 | 2 | 12.5 | 12.5 | 45 | 0.040 |
| 16.45-F | Q | 3 | 8.5,15, 20 | 3 | 5 | 3 | 5 | 12.5 | 12.5 | 45 | 0.045 |
| 16.4.3-F | Q | 10 | 8.5,15, 20 | 4 | 3 | 10 | 3 | 12.5 | 12.5 | 45 | 0.120 |
| 16.50-F | Q | 10 | 8.5,15, 20 | 2 | 2.5 | 10 | 2.5 | 12.5 | 12.5 | 45 | 0.050 |
| 16.100-F | Q | 10 | 8.5,15, 20 | 2 | 5 | 10 | 5 | 12.5 | 12.5 | 45 | 0.100 |
| 16.160-F | Q | 10 | 8.5,15, 20 | 2 | 8 | 10 | 8 | 12.5 | 12.5 | 45 | 0.160 |
| 16.400-F | Q | 10 | 8.5,15, 20 | 10 | 4 | 10 | 4 | 12.5 | 12.5 | 45 | 0.400 |
| 16.1000-F | Q | 10 | 8.5,15, 20 | 10 | 10 | 10 | 10 | 12.5 | 12.5 | 45 | 1.000 |
| With stopper | | | | | | | | | | | |
| 26.10-F | Q | 10 | 8.5,15, 20 | 1 | 1 | 10 | 1 | 12.5 | 12.5 | 48 | 0.010 |
| 26.12-F | Q | 1.5 | 8.5,15, 20 | 1.5 | 5 | 1.5 | 5 | 12.5 | 12.5 | 48 | 0.012 |
| 26.40-F | Q | 10 | 8.5,15, 20 | 2 | 2 | 10 | 2 | 12.5 | 12.5 | 48 | 0.040 |
| 26.45-F | Q | 3 | 8.5,15, 20 | 3 | 5 | 3 | 5 | 12.5 | 12.5 | 48 | 0.045 |
| 26.4.3-F | Q | 10 | 8.5,15, 20 | 4 | 3 | 10 | 3 | 12.5 | 12.5 | 48 | 0.120 |
| 26.50-F | Q | 10 | 8.5,15, 20 | 2 | 2.5 | 10 | 2.5 | 12.5 | 12.5 | 48 | 0.050 |
| 26.100-F | Q | 10 | 8.5,15, 20 | 2 | 5 | 10 | 5 | 12.5 | 12.5 | 48 | 0.100 |
| 26.160-F | Q | 10 | 8.5,15, 20 | 2 | 8 | 10 | 8 | 12.5 | 12.5 | 48 | 0.160 |
| 26.400-F | Q | 10 | 8.5,15, 20 | 10 | 4 | 10 | 4 | 12.5 | 12.5 | 48 | 0.400 |

Type 19.05F/L/Q/5/Z../MC Ultra-micro lens cell

- Four polished windows, with windows opposite the emission and excitation windows mirror coated to increase performance.
- Type 19.05F/L is a patented design with integral lens primarily designed for use with small cross section focussed beam instruments.
- The lens colimates the emission energy leaving the sample chamber onto the detector. Sample inserted and retrieved with micro pipette tip.

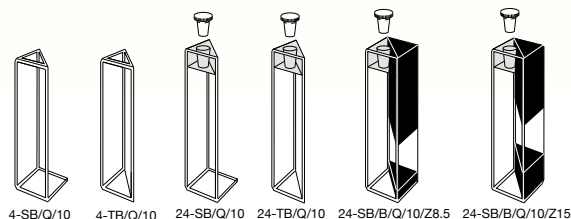


| Type No | Window Material | Path Length | Z Height | Internal | | External | | | Nominal Vol. ml | Remarks |
|----------|-----------------|-------------|-------------|----------|---|----------|------|----|-----------------|---------------------|
| | | | | L | W | L | W | H | | |
| 19.05F/L | Q | 5 | 8.5*,15, 20 | 1 | 1 | 12.5 | 12.5 | 45 | 0.0050 | *Cell height-38.5mm |

Type 4. Fluorimeter. Open top, Type 24 with stopper. Fluorimeter. Triangular

- Fits 12.5mm square cell holder.
- Three windows and base polished.
- Type 24/SB/B, self-masking.

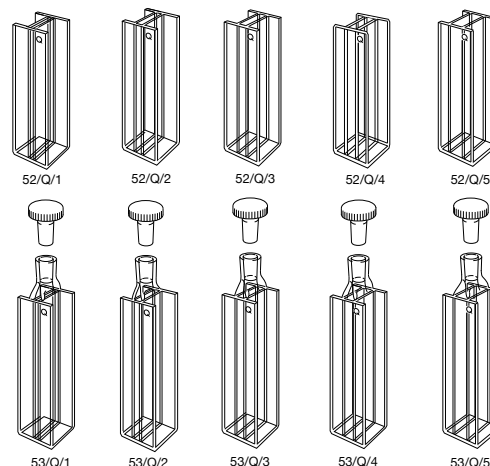
| Type No | Window Material | Internal | | External | | | Nominal Vol. ml | Remarks |
|--------------|-----------------|----------|----|----------|------|----|-----------------|-----------------|
| | | L | W | L | W | H | | |
| Open top | | | | | | | | |
| 4-SB | Q | 10 | 10 | 12.5 | 12.5 | 45 | 1.700 | Square base |
| 4-TB | Q | 10 | 10 | 12.5 | 12.5 | 45 | 1.700 | Triangular base |
| With stopper | | | | | | | | |
| 24-SB | Q | 10 | 10 | 12.5 | 12.5 | 48 | 1.700 | Square base |
| 24-TB | Q | 10 | 10 | 12.5 | 12.5 | 48 | 1.700 | Triangular base |
| 24-SB/B | Q | 10 | 10 | 12.5 | 12.5 | 48 | 1.700 | Z8.5, Z15, Z20 |



Type 52. with lid. Type 53 with stopper. Dual Path Length or Fluorimeter

- All windows and base polished.
- May be used as dual path length absorption cells or fluorimeter cells.
- Volumes equivalent to micro and semi-micro cells depending on internal width.

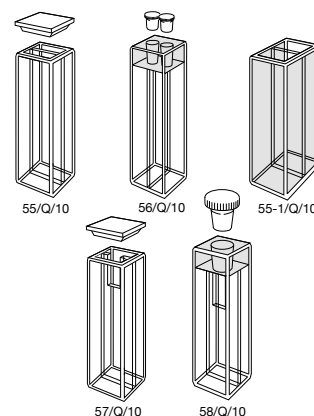
| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|--------------|------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| Open top | | | | | | | |
| 52 | SOG,Q | 1 or 10 | 1 x 10 | 12.5 | 12.5 | 45 | 0.400 |
| 52 | SOG,Q | 2 or 10 | 2 x 10 | 12.5 | 12.5 | 45 | 0.800 |
| 52 | SOG,Q | 3 or 10 | 3 x 10 | 12.5 | 12.5 | 45 | 1.200 |
| 52 | SOG,Q | 4 or 10 | 4 x 10 | 12.5 | 12.5 | 45 | 1.600 |
| 52 | SOG,Q | 5 or 10 | 5 x 10 | 12.5 | 12.5 | 45 | 2.000 |
| With stopper | | | | | | | |
| 53 | SOG,Q | 1 or 10 | 1 x 10 | 12.5 | 12.5 | 48 | 0.400 |
| 53 | SOG,Q | 2 or 10 | 2 x 10 | 12.5 | 12.5 | 48 | 0.800 |
| 53 | SOG,Q | 3 or 10 | 3 x 10 | 12.5 | 12.5 | 48 | 1.200 |
| 53 | SOG,Q | 4 or 10 | 4 x 10 | 12.5 | 12.5 | 48 | 1.600 |
| 53 | SOG,Q | 5 or 10 | 5 x 10 | 12.5 | 12.5 | 48 | 2.000 |



Type 55, 57 with lid & 56, 58 with stopper(s). Tandem, Divided, Mixing or Fluorimeter

- All windows polished except Type 55-1/Q/10.
- Types 55 and 56 are for measuring two samples in series in separate compartments.
- Types 57 and 58 are designed for mixing two samples after measuring in series.

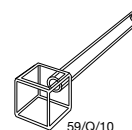
| Type No | Window Material | Path Length | Internal Length | External | | | Nominal Vol. ml | Remarks |
|---------|-----------------|-------------|-----------------|----------|------|----|-----------------|--|
| | | | | L | W | H | | |
| 55 | Q | 2 x 10 | 2 x 4.375 | 12.5 | 12.5 | 45 | 2 x 1.500 | Tandem or divided with lid |
| 55-1 | Q | 2 x 10 | 2 x 10 | 23.75 | 12.5 | 45 | 2 x 3.500 | Tandem or divided. Frosted sides. Open top |
| 56 | Q | 2 x 10 | 2 x 4.375 | 12.5 | 12.5 | 48 | 2 x 1.500 | Tandem or divided with stoppers |
| 57 | Q | 2 x 10 | 2 x 4.375 | 12.5 | 12.5 | 45 | 2 x 1.000 | Tandem mixing with lid |
| 58 | Q | 2 x 10 | 2 x 4.375 | 12.5 | 12.5 | 48 | 2 x 1.000 | Tandem mixing with stoppers |



Type 59. Cube, Fluorimeter with tube

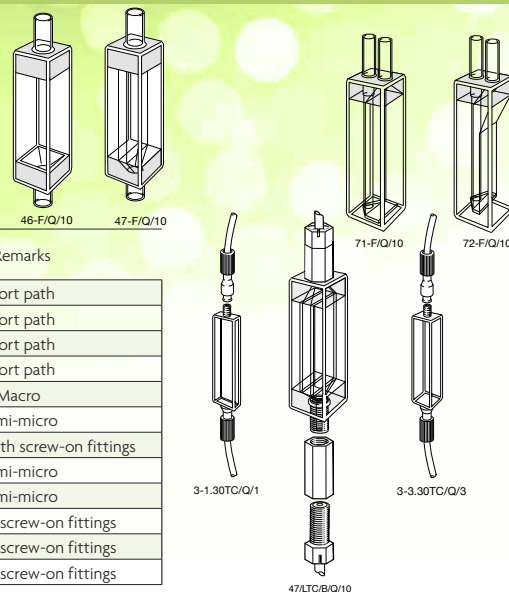
- Five windows polished

| Type No | Window Materials | Path Length | Internal Width | External | | | Tube | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|------|----|------|-----|--------|-----------------|
| | | | | L | W | H | ID. | OD. | Length | |
| 59 | SOG, Q, I | 10 | 10 | 12.5 | 12.5 | 48 | 2 | 4 | 70 | 1.00 |



Type 46-F, 47-F, 71-F&72-F. Fluorimeter flow cells

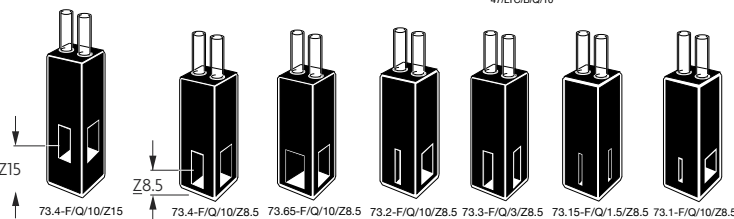
- Four polished windows.
- Profiled inlet/outlet blocks.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 16mm long intended for push-on flexible tubing. TC Screw fittings see Type No. MCTC/1.0, page 29.
- For LTC Screw fittings see Type No. LTC/G/0.5, page 29.



| Type No | Window Materials | Path Length | Internal | | External Height | Nominal Vol. ml | Polished Windows | Remarks |
|-----------|------------------|-------------|----------|------|-----------------|-----------------|------------------|-----------------------------------|
| | | | W | H | | | | |
| 46-F | Q | 0.5 | 10 | 35 | 65 | 0.185 | 4 | Short path |
| 46-F | Q | 1 | 10 | 35 | 65 | 0.350 | 4 | Short path |
| 46-F | Q | 2 | 10 | 35 | 65 | 0.700 | 4 | Short path |
| 46-F | Q | 5 | 10 | 35 | 65 | 1.750 | 4 | Short path |
| 46-F | Q | 10 | 10 | 35 | 65 | 0.350 | 4 | Macro |
| 47-F | Q | 10 | 4 | 35 | 65 | 1.600 | 4 | Semi-micro |
| 47-F/LTC | Q | 10 | 4 | 35 | 65 | 1.600 | 4 | Semi-micro with screw-on fittings |
| 71-F | Q | 10 | 7 | 37.5 | 48 | 3.000 | 3 | Semi-micro |
| 72-F | Q | 10 | 4 | 37.5 | 48 | 1.800 | 3 | Semi-micro |
| 3-1.30/TC | Q | 1 | 1 | 30 | 40 | 0.030 | 4 | Micro with screw-on fittings |
| 3-2.30/TC | Q | 2 | 2 | 30 | 40 | 0.120 | 4 | Micro with screw-on fittings |
| 3-3.30/TC | Q | 3 | 3 | 30 | 40 | 0.270 | 4 | Micro with screw-on fittings |

Type 73-F. Fluorimeter flow cells

- Three polished windows.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 16mm long intended for push-on flexible tubing.
- Cells with a Z height of 8.5mm have an overall height of 40mm.

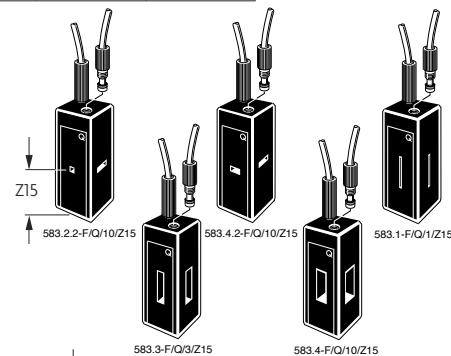


| Type No | Window Materials | Path Length | Z Height | Internal | | Emission window | | External Height | Nominal Vol. ml | Remarks |
|----------|------------------|-------------|----------|----------|----|-----------------|----|-----------------|-----------------|-------------|
| | | | | W | H | W | H | | | |
| 73.1-F | Q | 10 | 8.5,15 | 1 | 11 | 10 | 11 | 45 | 0.010 | Micro |
| 73.2-F | Q | 10 | 8.5,15 | 2 | 11 | 10 | 11 | 45 | 0.012 | Micro |
| 73.4-F | Q | 10 | 8.5,15 | 4 | 11 | 10 | 11 | 45 | 0.040 | Semi-micro |
| 73.65-F | Q | 10 | 8.5,15 | 6.5 | 11 | 10 | 11 | 45 | 0.045 | Semi-micro |
| 73.1.8-F | Q | 1 | 8.5,15 | 1 | 8 | 11 | 8 | 45 | 0.080 | Ultra-micro |
| 73.15-F | Q | 1.5 | 8.5,15 | 1.5 | 11 | 1.5 | 11 | 45 | 0.050 | Micro |
| 73.3-F | Q | 3 | 8.5,15 | 3 | 11 | 3 | 11 | 45 | 0.100 | semi-micro |

Type 583-F. Fluorimeter flow cells

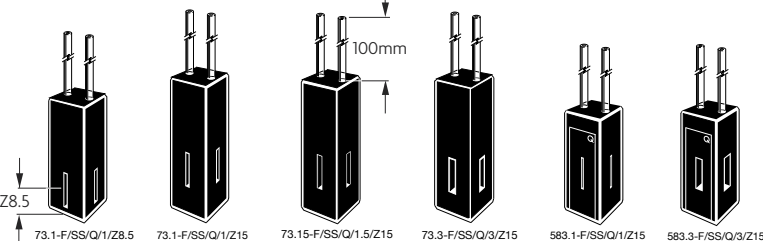
- Three polished windows.
- M6 screw-in connections.
- Cells with a Z height of 20mm have an overall height of 40mm.

| Type No | Window Materials | Path Length | Z Height | Internal | | Emission window | | External | | | Nominal Vol. ml |
|-----------|------------------|-------------|----------|----------|----|-----------------|----|----------|------|----|-----------------|
| | | | | W | H | W | H | L | W | H | |
| 583.2.2-F | Q | 10 | 15, 20 | 2 | 2 | 7 | 2 | 12.5 | 12.5 | 35 | 0.040 |
| 583.4.2-F | Q | 10 | 15, 20 | 4 | 2 | 7 | 2 | 12.5 | 12.5 | 35 | 0.080 |
| 583.1-F | Q | 1 | 15 | 1 | 11 | 1 | 11 | 12.5 | 12.5 | 35 | 0.011 |
| 583.3-F | Q | 3 | 15 | 3 | 11 | 3 | 11 | 12.5 | 12.5 | 35 | 0.100 |
| 583.4-F | Q | 10 | 15 | 4 | 11 | 7 | 11 | 12.5 | 12.5 | 35 | 0.440 |



Type 73-F/SS & 583-F Fluorimeter flow cells, HPLC

- Three polished windows.
- Stainless steel inlet/outlet tubes.
- Type 73 cells with a Z height of 8.5mm have an overall height of 38.5mm.
- Type 583 cells with a Z height of 20mm have an overall height of 40mm.

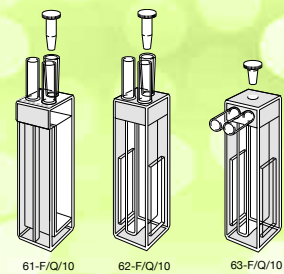


| Type No | Window Material | Path Length | Z Height | Internal | | External | | | Emission window | | Nominal Vol. ml | Stainless steel tubes | | | | |
|------------|-----------------|-------------|----------|----------|----|----------|------|----|-----------------|----|-----------------|-----------------------|------|-------------|------|--------|
| | | | | W | H | L | W | H | W | H | | Inlet I.D. | O.D. | Outlet I.D. | O.D. | Length |
| 73.1-F/SS | Q | 1 | 8.5, 15 | 1 | 11 | 12.5 | 12.5 | 45 | 1 | 11 | 0.011 | 0.25 | 1.6 | 0.50 | 1.6 | 100 |
| 73.15-F/SS | Q | 1.5 | 8.5, 15 | 1.5 | 11 | 12.5 | 12.5 | 45 | 1.5 | 11 | 0.025 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |
| 73.3-F/SS | Q | 3 | 8.5, 15 | 3 | 11 | 12.5 | 12.5 | 45 | 3 | 11 | 0.100 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |
| 583.1-F/SS | Q | 1 | 15, 20 | 1 | 11 | 12.5 | 12.5 | 35 | 1 | 11 | 0.011 | 0.25 | 1.6 | 0.50 | 1.6 | 100 |
| 583.3-F/SS | Q | 3 | 15, 20 | 3 | 11 | 12.5 | 12.5 | 35 | 3 | 11 | 0.100 | 1.0 | 1.6 | 1.0 | 1.6 | 100 |

Type 61-F, 62-F, 63-F. Water-jacketed Fluorimeter cells

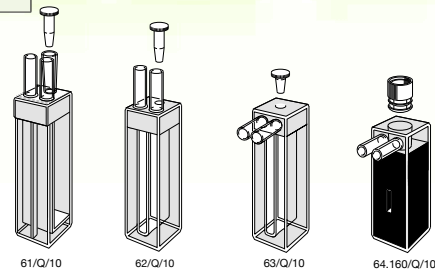
- Inlet/outlet tubes - 2 I.D, 4 O.D, 10mm long intended for push-on flexible tubing.
- Stopper length on 61-F and 62-F, 20mm.
- Types 62-F and 63-F have emission windows 4.5mm x 22mm long.
- Base window 4.5mm x 4.5mm.

| Type No | Window Materials | Path Length | Internal | | External Height | Nominal Vol. ml | Polished Windows |
|---------|------------------|-------------|----------|----|-----------------|-----------------|------------------|
| | | | W | H | | | |
| 61-F | Q | 10 | 7.0 | 37 | 48 | 2.59 | 3 |
| 62-F | Q | 10 | 4.5 | 37 | 48 | 1.66 | 5 |
| 63-F | Q | 10 | 4.5 | 37 | 48 | 1.66 | 5 |



Type 61. Constant temperature with stopper Type 62 & 63. Constant temperature. Semi-micro Type 64. Constant temperature. Sub-micro

- Two polished windows.
- Type 64 sub-micro for heating small samples typically DNA.
- Type 64 with Z15 overall height 45mm.
- Inlet/outlet tubes - 2 I.D, 4 O.D, 10mm long intended for push-on flexible tubing.

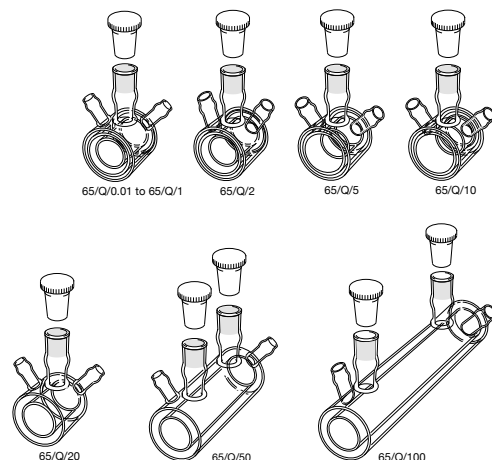


| Type No | Window Materials | Path Length | Internal | | External | | Overall Height | Nominal Vol. ml | Remarks |
|---------|------------------|-------------|----------|------|----------|------|----------------|-----------------|------------------------|
| | | | W | H | L | H | | | |
| 61 | Q | 10 | 7 | 37.5 | 12.5 | 48 | 60 | 2.100 | Vertical flow tubes |
| 62 | Q | 10 | 4.5 | 40 | 12.5 | 48 | 60 | 1.520 | Vertical flow tubes |
| 63 | Q | 10 | 4.5 | 40 | 12.5 | 48 | 60 | 1.520 | Horizontal flow tubes |
| 64.160 | Q | 10 | 2 | 8 | 12.5 | 38.5 | 40 | 0.160 | Z Height - 8.5 or 15mm |

Type 65. Cylindrical constant temperature, standard and short path length

- Two polished windows.
- Maximised surface area contact for temperature controlling medium throughout the range.
- Tubulations intended for push-on flexible tubing.
- Closed by PTFE stopper, providing a liquid-tight seal. (65 & 100mm cells have two stoppers).

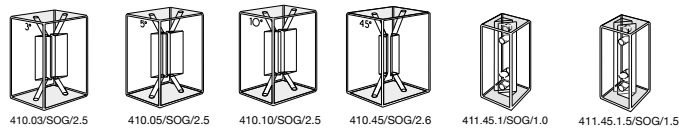
| Type No | Window Materials | Path Length | Internal Dia. | External | | Overall Height | Nominal Vol. ml |
|---------|------------------|-------------|---------------|----------|-------|----------------|-----------------|
| | | | | Dia. | L | | |
| 65 | Q | 0.01 | 32 | 22 | 20 | 32 | 0.737 |
| 65 | Q | 0.1 | 10 | 22 | 20 | 32 | 0.747 |
| 65 | Q | 0.5 | 10 | 22 | 20 | 32 | 0.792 |
| 65 | Q | 1 | 10 | 22 | 20 | 32 | 0.849 |
| 65 | Q | 2 | 10 | 22 | 20 | 32 | 0.962 |
| 65 | Q | 5 | 10 | 22 | 20 | 32 | 1.300 |
| 65 | Q | 10 | 10 | 22 | 12.5 | 32 | 0.825 |
| 65 | Q | 20 | 10 | 22 | 22.5 | 32 | 1.650 |
| 65 | Q | 50 | 10 | 22 | 52.5 | 32 | 4.125 |
| 65 | Q | 100 | 10 | 22 | 102.5 | 32 | 8.250 |



Type 410&411. Flow through. Refractometer

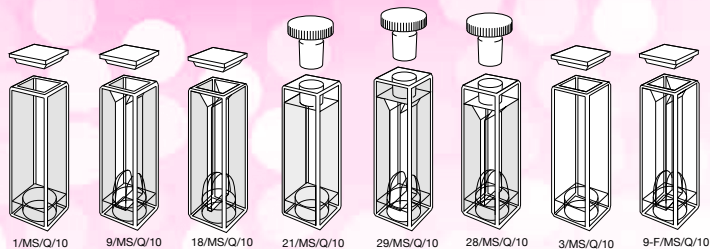
- Three polished windows.
- Inlet/outlet bores for each chamber via special holders supplied by instrument manufacturers together with connectors and tubing.

| Type No | Window Materials | Path Length | Internal | | External | | | Nominal Vol. ml |
|-----------|------------------|-------------|----------|---|----------|----|----|-----------------|
| | | | W | H | L | W | H | |
| 410.03 | SOG, Q | 2.5 | 2.5 | 7 | 8 | 10 | 15 | 2 x 0.01 |
| 410.05 | SOG, Q | 2.5 | 2.5 | 7 | 8 | 10 | 15 | 2 x 0.01 |
| 410.10 | SOG, Q | 2.5 | 2.5 | 7 | 8 | 10 | 15 | 2 x 0.01 |
| 410.45 | SOG, Q | 2.6 | 2.6 | 7 | 8 | 10 | 15 | 2 x 0.01 |
| 411.45.1 | SOG, Q | 1 | 1 | 8 | 5.5 | 5 | 11 | 2 x 0.04 |
| 411.45.15 | SOG, Q | 1.5 | 1.5 | 8 | 5.5 | 5 | 11 | 2 x 0.09 |

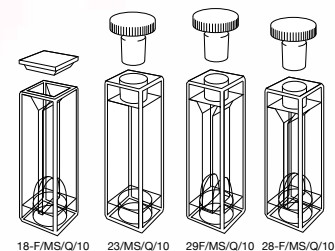


Magnetic stirring

- Rectangular cells have a well for magnet location. Micro and semi-micro cells have a conical profile in walls for better mixing.
- One stir bar is supplied with each cell.
- For spare stirring bars (see page 28).



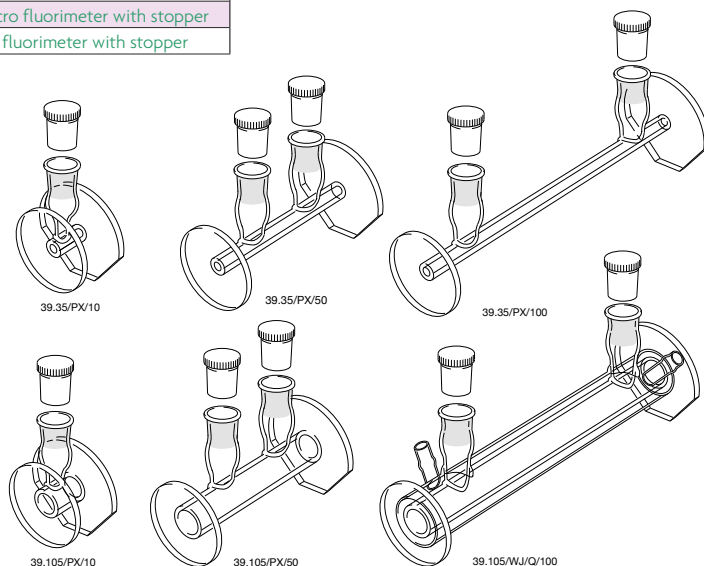
| Type No | Window Materials | Path Length | External | | | Nominal Vol. ml | Remarks |
|---------|------------------|-------------|----------|------|----|-----------------|-------------------------------------|
| | | | L | W | H | | |
| 1/MS | SOG,Q | 10 | 12.5 | 12.5 | 45 | 3.5 | Macro |
| 9/MS | SOG,Q | 10 | 12.5 | 12.5 | 45 | 1.8 | Semi-micro |
| 18/MS | SOG,Q | 10 | 12.5 | 12.5 | 45 | 0.9 | Micro |
| 21/MS | SOG,Q | 10 | 12.5 | 12.5 | 48 | 3.5 | Macro with stopper |
| 29/MS | SOG,Q | 10 | 12.5 | 12.5 | 48 | 1.8 | Semi-micro with stopper |
| 28/MS | SOG,Q | 10 | 12.5 | 12.5 | 48 | 0.9 | Micro with stopper |
| 3/MS | SOG,Q | 10 | 12.5 | 12.5 | 45 | 3.5 | Macro fluorimeter |
| 9-F/MS | Q | 10 | 12.5 | 12.5 | 45 | 1.8 | Semi-micro fluorimeter |
| 18-F/MS | Q | 10 | 12.5 | 12.5 | 45 | 0.9 | Micro fluorimeter |
| 23/MS | Q | 10 | 12.5 | 12.5 | 48 | 3.5 | Macro fluorimeter with stopper |
| 29-F/MS | Q | 10 | 12.5 | 12.5 | 48 | 1.8 | Semi-micro fluorimeter with stopper |
| 28-F/MS | Q | 10 | 12.5 | 12.5 | 48 | 0.9 | Micro fluorimeter with stopper |



Type 39 Polarimeter. Standard and semi-micro, constant temperature

- Easy filling and emptying.
- Extended manufacturing process to ensure that they are free from birefringence effects which could affect the accuracy of measurements.
- Also available with two round windows, 39.35/2R and 39.105/2R.
- Water jacketed 'WJ' available Q only, 100 & 200mm Path length.

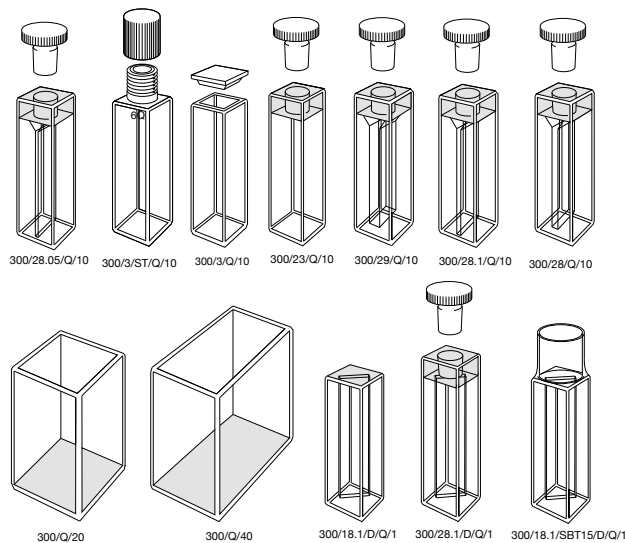
| Type No | Window Materials | Path Length | Internal Dia. | External | | Nominal Vol. ml |
|-----------|------------------|-------------|---------------|----------|-----|-----------------|
| | | | | Dia. | L | |
| 39.35 | PX | 10 | 4 | 6 | 14 | 0.098 |
| 39.35 | PX | 50 | 4 | 6 | 54 | 0.490 |
| 39.35 | PX | 100 | 4 | 6 | 104 | 0.980 |
| 39.105 | PX | 10 | 10 | 12 | 14 | 0.890 |
| 39.105 | PX | 50 | 10 | 12 | 54 | 4.350 |
| 39.105 | PX | 100 | 10 | 12 | 104 | 8.700 |
| 39.105/WJ | Q | 100 | 10 | 12 | 104 | 8.700 |
| 39.105/WJ | Q | 200 | 10 | 12 | 204 | 18.000 |



Type 300. Dye laser

- Dye laser cells are made with extreme accuracy having a surface flatness which extends all the way to the edge of the cell.
- Many of the fluorescent type of cells illustrated in this catalogue may be used for laser applications, however, to ensure their optical flatness, they are polished to more exacting tolerances.
- All Type 300 cells have four polished walls and base except 300/Q/20 and 300/Q/40 which have a grey base.
- Types 300/18.1/D, 300/28.1/D & 300/18.1/SBT15/D have a diagonal sample compartment for front surface fluorescence.

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|------------------|------------------|-------------|----------------|----------|------|----|-----------------|
| | | | | L | W | H | |
| 300/3/ST | Q | 10 | 10 | 12.5 | 12.5 | 45 | 3.500 |
| 300/3 | Q | 10 | 10 | 12.5 | 12.5 | 45 | 3.500 |
| 300/23 | Q | 10 | 10 | 12.5 | 12.5 | 48 | 3.500 |
| 300/29 | Q | 10 | 4 | 12.5 | 12.5 | 48 | 1.400 |
| 300/28.05 | Q | 10 | 0.5 | 12.5 | 12.5 | 48 | 0.175 |
| 300/28.1 | Q | 10 | 1 | 12.5 | 12.5 | 48 | 0.350 |
| 300/28 | Q | 10 | 2 | 12.5 | 12.5 | 48 | 0.700 |
| 300 | Q | 20 | 20 | 26 | 26 | 40 | 12.000 |
| 300 | Q | 40 | 20 | 46 | 26 | 40 | 24.000 |
| 300/18.1/D | Q | 1 | | 12.5 | 12.5 | 45 | 0.350 |
| 300/28.1/D | Q | 1 | | 12.5 | 12.5 | 48 | 0.350 |
| 300/18.1/SBT15/D | Q | 1 | | 12.5 | 12.5 | 59 | 0.350 |

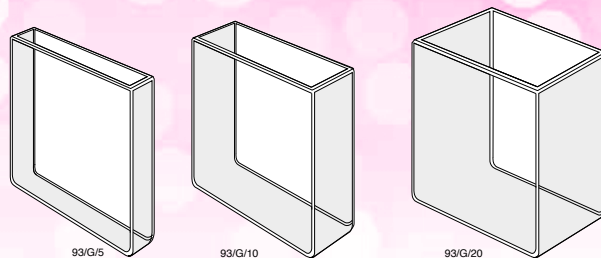


Type 93, 96, 97 & 98 Colorimeter/Absorption cells

- Two polished windows.
- U-shaped wall construction.
- Fully fused.

Type 93. Colorimeter

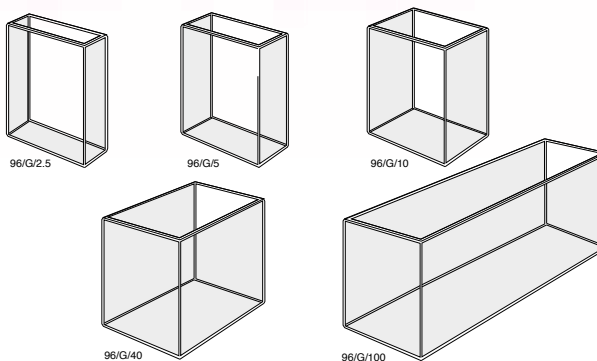
| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|----|----|-----------------|
| | | | | L | W | H | |
| 93 | G | 2 | 50 | 6 | 55 | 56 | 5 |
| 93 | G | 5 | 50 | 9 | 55 | 56 | 12.5 |
| 93 | G | 10 | 50 | 14 | 55 | 56 | 25 |
| 93 | G | 20 | 50 | 24 | 55 | 56 | 50 |
| 93 | G | 30 | 50 | 34 | 55 | 56 | 75 |
| 93 | G | 40 | 50 | 44 | 55 | 56 | 100 |
| 93 | G | 50 | 50 | 54 | 55 | 56 | 125 |



Type 96. Absorption or Colorimeter

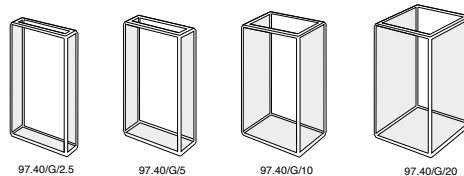
- 96/MCB for Macbeth colorimeter.

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|----|----|-----------------|
| | | | | L | W | H | |
| 96 | G | 2.5 | 24 | 8.5 | 28 | 40 | 1.80 |
| 96 | G | 5 | 24 | 11 | 28 | 40 | 3.60 |
| 96 | G | 10 | 24 | 16 | 28 | 40 | 7.20 |
| 96 | G | 20 | 24 | 26 | 28 | 40 | 14.00 |
| 96 | G | 40 | 24 | 46 | 28 | 40 | 28.00 |
| 96 | G | 100 | 24 | 106 | 28 | 40 | 70.00 |
| 96/MCB | G | 10 | 24 | 14 | 28 | 40 | 7.20 |



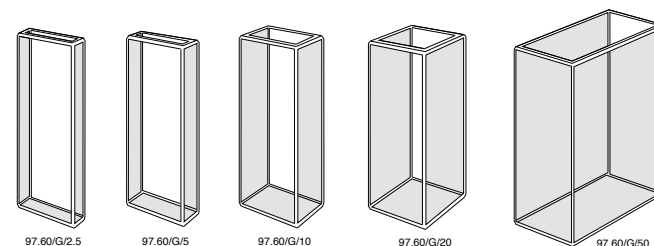
Type 97. 40. Absorption or Colorimeter

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|----|----|-----------------|
| | | | | L | W | H | |
| 97.40 | G | 2.5 | 16 | 6.5 | 20 | 40 | 1.4 |
| 97.40 | G | 5 | 16 | 9 | 20 | 40 | 2.8 |
| 97.40 | G | 10 | 16 | 14 | 20 | 40 | 5.6 |
| 97.40 | G | 20 | 16 | 24 | 20 | 40 | 11.20 |
| 97.40 | G | 40 | 16 | 44 | 20 | 40 | 22.40 |
| 97.45 | G | 40 | 16 | 44 | 20 | 45 | 25.60 |
| 97.40 | G | 50 | 16 | 54 | 20 | 40 | 28.00 |
| 97.40 | G | 100 | 16 | 104 | 20 | 40 | 56.00 |



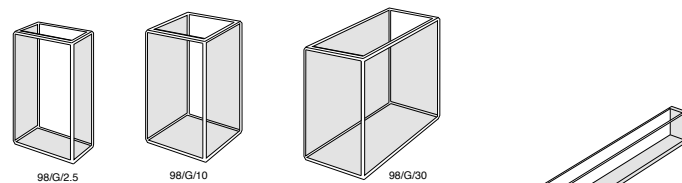
Type 97. 60 Absorption or Colorimeter

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|----|----|-----------------|
| | | | | L | W | H | |
| 97.60 | G | 2.5 | 16 | 6.5 | 20 | 60 | 1.60 |
| 97.60 | G | 5 | 16 | 9 | 20 | 60 | 3.20 |
| 97.60 | G | 10 | 16 | 14 | 20 | 60 | 6.40 |
| 97.60 | G | 20 | 16 | 24 | 20 | 60 | 12.80 |
| 97.60 | G | 40 | 16 | 44 | 20 | 60 | 25.16 |
| 97.60 | G | 50 | 16 | 54 | 20 | 60 | 32.00 |
| 97.60 | G | 100 | 16 | 104 | 20 | 60 | 64.00 |



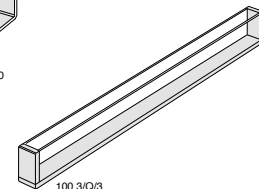
Type 98. Absorption or Colorimeter

| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|----|----|-----------------|
| | | | | L | W | H | |
| 98 | G | 2.5 | 12 | 8.5 | 18 | 40 | 1.20 |
| 98 | G | 5 | 12 | 11 | 18 | 40 | 2.40 |
| 98 | G | 10 | 12 | 16 | 18 | 40 | 4.80 |
| 98 | G | 13 | 12 | 19 | 18 | 40 | 6.24 |
| 98 | G | 15 | 12 | 21 | 18 | 40 | 7.20 |
| 98 | G | 20 | 12 | 28 | 18 | 40 | 9.60 |
| 98 | G | 25 | 12 | 31 | 18 | 40 | 12.00 |
| 98 | G | 30 | 12 | 36 | 18 | 40 | 14.40 |
| 98 | G | 33 | 12 | 39 | 18 | 40 | 15.85 |
| 98 | G | 40 | 12 | 46 | 18 | 40 | 19.20 |



Type 100. Gel boat cells

- Two polished windows.
- Open top, no lid.



| Type No | Window Materials | Path Length | Internal Width | External | | | Nominal Vol. ml |
|---------|------------------|-------------|----------------|----------|-----|-----|-----------------|
| | | | | L | W | H | |
| 100.3 | Q | 3 | 3 | 10 | 104 | 6 | 12 |
| 100.5 | Q | 5 | 5 | 10 | 100 | 7.5 | 10.5 |
| 100.6 | Q | 6 | 6 | 10 | 104 | 10 | 12 |
| 100.7 | Q | 7 | 7 | 10 | 104 | 11 | 12 |
| 100.8 | Q | 8 | 8 | 10 | 104 | 12 | 12 |

Cell holder, short path length

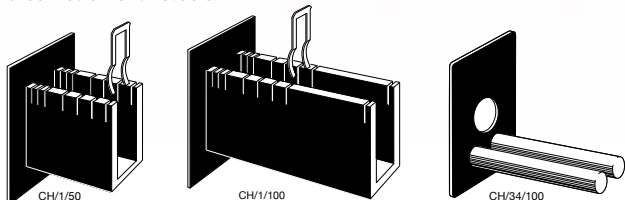
The cell holder Type CH/2049 is designed for use with Types 20 & 49 with path lengths of 3mm or less. Exterior dimensions are 12.5 x 12.5 x 52mm.



| Type No | Description |
|---------|--------------------------------|
| CH/2049 | Cell holder, short path length |

Cell holder, long path length

Cell holders Type CH/50 and CH/100 are for rectangular cells up to 50mm and 100mm path lengths respectively. The CH/34/100 fits 50mm or 100mm Type 34. All are complete with a 75mm x 50mm back plate to fit standard infrared instrument holders.

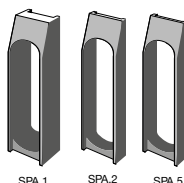


| Type No. | Description |
|-----------|-------------------------|
| CH/1/50 | Up to 50mm cell holder |
| CH/1/100 | Up to 100mm cell holder |
| CH/34/100 | 50/100mm T34 holder |

Cell compartment spacers

Aluminium spacers, black anodised, available in three sizes for use with 1, 2, and 5mm path length cells, supporting them in a 12.5 x 12.5mm holder where there is no cell holder path length adjustment facility.

| Type No. | Description |
|----------|---------------------------|
| SPA/1 | for 1mm path length cells |
| SPA/2 | for 2mm path length cells |
| SPA/5 | for 5mm path length cells |



Magnetic stir bars

PTFE coated magnetic stir bars, available in packs of ten to fit the MS range of cells illustrated on page 26 of this catalogue. Types 18/MS and 28/MS need the MSB/6x1.5 to allow the stirring bar to enter the narrow sample compartment.

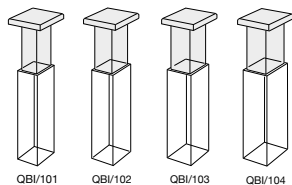
| Type No. | Description |
|--------------|---------------------------|
| MSB/5x2/10 | 5mm long x 2mm diameter |
| MSB/6x1.5/10 | 6mm long x 1.5mm diameter |
| MSB/6x3/10 | 6mm long x 3mm diameter |



Quartz block inserts

Precision polished Far UV quartz inserts are intended for use with Standard Rectangular 10mm path length cells (see page 5), when a reduced path length is required without using a different cell.

Four size combinations, each provide two different path lengths as indicated, by rotating the insert through ninety degrees.

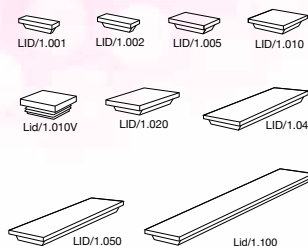


| Type No | Path Length | External | | |
|---------|-------------|----------|------|----|
| | | L | W | H |
| QBI/101 | 1 or 5 | 9 | 5 | 48 |
| QBI/102 | 1 or 2 | 9 | 8 | 48 |
| QBI/103 | 1 or 0.5 | 9 | 9.5 | 48 |
| QBI/104 | 1 or 0.05 | 9 | 9.95 | 48 |

Cell lids

Cell lids are available in PTFE up to 100mm long. Vaned polyethylene lids for 10mm rectangular cells only. Lids for large rectangular cells manufactured to special order.

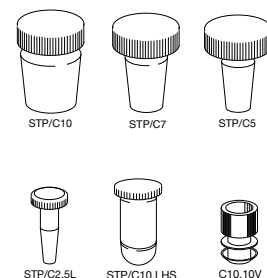
| Types 1 & 3 | 9 | 18 |
|-------------|-----------|------------|
| LID/1.001 | LID/9.001 | LID/18.001 |
| LID/1.002 | 9.002 | 18.002 |
| LID/1.005 | 9.005 | 18.005 |
| LID/1.010 | 9.010 | 18.010 |
| LID/1.010V | | |
| LID/1.020 | 9.020 | 18.020 |
| LID/1.040 | 9.040 | 18.040 |
| LID/1.050 | 9.050 | 18.050 |
| LID/1.100 | 9.100 | 18.100 |



Stoppers

Spare stoppers for all cells require cell type identification. The most common types are shown in the table below

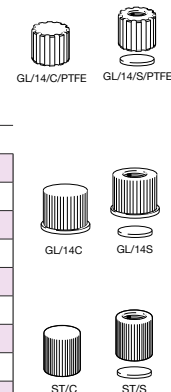
| Type No. | To fit |
|------------------|--|
| STP/C2.5 | 23-1.45, 2.45, 3.45 |
| STP/C5 | 23-4.45, 31B, 21,23 (5mm or less), 23-5.45 |
| STP/C5L | 62, 63 |
| STP/C7 | 28, 29, 32 (up to 10mm) |
| STP/C10 | 21, 21N, 23 |
| STP/C10L | 34, 32 (over 10mm) |
| STP/C10.LHS/Z8.5 | 26/LHS/Z8.5 |
| STP/C10.LHS/Z15 | 26/LHS/Z15 or Z20 |
| STP/C10.10V | 16R |



Caps, closed & septum

Screw caps to fit GL14 or ST threaded tops available as either fully closed cap or septum seal cap.

| Type No. | Description | Dia. | Height | Remarks |
|------------------|---------------------------------------|------|--------|------------|
| GL/14C/PTFE | Closed cap | 20mm | 17mm | PTFE/WHITE |
| GL/14C/PBT | Closed cap | 20mm | 17mm | PBT/RED |
| GL/14S/PTFE | Septum cap | 20mm | 17mm | PTFE/WHITE |
| GL/14S/PBT | Septum cap | 20mm | 17mm | PBT/RED |
| GL/14/C/PTFE/SPF | Closed cap, PTFE Faced Silicone Seal | | | |
| ST/C | Closed cap | 12mm | 12mm | |
| ST/S | Septum cap | 12mm | 12mm | |
| GL/14/SEAL/S | Cap or Septum seal Silicone | | | Pack of 10 |
| GL/14/SEAL/SPF | Cap or Septum seal Silicone/PTFE Face | | | Pack of 10 |
| ST/SEAL/S | Cap or Septum seal Silicone | | | Pack of 10 |
| ST/SEAL/PT | Cap or Septum seal Nitrile/PTFE Face | | | Pack of 10 |

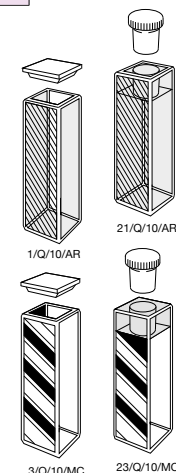


Anti-reflection & mirror coatings

Some fluorescent applications require either or both the excitation and emission energy to be enhanced by applying a metallic mirror coating to the out side of adjacent windows opposite to the source and the detector windows. Similarly, anti-reflection coatings on the other windows reduce reflection losses.

Each suffix indicates coating for two adjacent walls per cell and is priced accordingly in the price list.

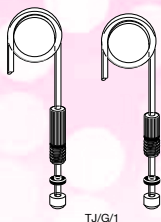
| Type No. | Description |
|----------|----------------------------------|
| /AR | Anti-reflection coating |
| /MC | Mirror coating |
| /AR/MC | Anti-reflection & mirror coating |



Fittings for 583, 584 & 585 Series cells

Universal single-ended connectors

- One pair of gripper fittings, M6 thread, consisting of
- one long and one short connector, single-ended. Each fitting comes with 1,5 metre of tubing as standard, other lengths available on request.
- PTFE tube is standard, 1,6mm O.D,
- 1mm I.D. FEP available on request.

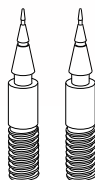


TJ/G/1

| Type No | Description |
|---------------|-------------------------------|
| TJ/G/1.5/PTFE | Pair of connectors, PTFE tube |
| TJ/G/1.0/FEP | Pair of connectors, FEP tube |

Universal adaptors, screw fitting to flexible tubing

- Supplied in pairs, to convert M6 and 1/4 screw thread 28TPI.
- Suitable for using push-on flexible silicone tubing or similar with a range of internal diameters from 1mm to 3.5mm.

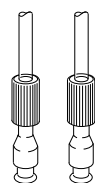


Adaptors

| Type No | Description |
|-----------|---------------------------------------|
| TJ/G/038 | Pair of barbed adaptors for M6 thread |
| LTC/G/0.5 | Pair of barbed adaptors for 1/4 x 28 |

Fittings for TC external Quartz threads

- To fit male threaded quartz tubes fully fused to the cell.
- PTFE flange, ferrule and cap to screw onto the male thread, single ended.
- Each tube one metre length standard, 1,6mm O.D, 1mm I.D. Other lengths available on request.

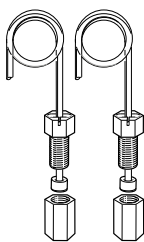


MCTC 1.0

| Type No | Description |
|----------|--|
| MCTC/1.0 | Pair of connectors, PTFE tube, Cap & ferrule |

Fittings for LCTC external Quartz threads

- For use with 1/4 28TPI male thread fully fused to the cell.
- PTFE collar, gripper fitting.
- Each tube 0.5 metre length, 1/8 " O.D, x 1/6 " I.D. Other lengths available on request.

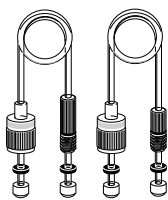


LTC/0.5

| Type No | Description |
|---------|--|
| LTC/0.5 | Pair of connectors, PTFE tube, Bolt and Collar |

Varian C50 Dissolution connector spares kit

- One pair of gripper fittings, one long double-ended with M6 thread, to 1/4 28TPI female and one short double-ended with M6 thread, to 1/4 28TPI female.
- Each tube 30cm long between connectors.
- Clear PTFE tube standard coloured PTFE tubing available in following colours: Blue, Brown, Green, Natural, Purple, Red, White, Yellow.

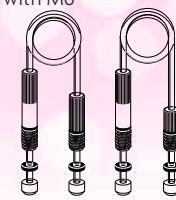


TJ/G/C50

| Type No | Description |
|------------|--|
| TJ/G/C50 | Pair of connectors, PTFE tube |
| TJ/G/C50x4 | Four pairs of above, colours to be specified |
| TJ/G/C50x8 | Eight pairs of above, one pair of each colour |
| TJ/G/C50x9 | Set of 9 single dual path length inter-connecting tubing kit |

Varian C100 Dissolution connector spareskit

- One pair of gripper fittings, one long double-ended with M6 thread, to 1/4 28TPI male and one short double-ended with M6 thread, to 1/4 28TPI male.
- Each tube 21cm long between connectors.

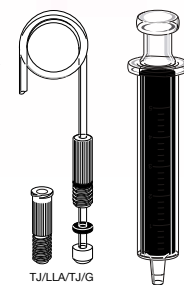


TJ/G/C100

| Type No | Description |
|-------------|--|
| TJ/G/C100 | Pair of connectors, PTFE tube |
| TJ/G/C100x9 | Set of 9 single dual path length inter-connecting tubing kit |

Luerlock Adaptor spareskit

- One Luerlock adaptor for use with syringe. One screw fitting for overflow or to waste.
- Note: Syringe not included.



TJ/LLA/TJ/G

| Type No | Description |
|-------------|---|
| TJ/LLA/TJ/G | One Luerlock adaptor One screw fitting with tube |

Starna Optical Polishing Cloth

The Starna lint-free Optical Polishing Cloth is specifically for use with Starna Liquid Reference Materials sealed into quartz cells where the optical windows need to be kept scrupulously clean for all valuation procedures. It may also be used for cleaning most types of normal glass and quartz cell windows but is not intended for use with any type of glass or metal on quartz filter.



| Type No | Description |
|---------------|---|
| CellClean/OPC | Lint-free Optical Polishing Cloth 25cm sq |

Starna® CellClean

Scrupulously clean glass or quartz cells are essential for consistent analytical results in all photometric disciplines. Starna® CellClean is an aqueous based cleaner with a unique combination of ingredients and provides cleaning actions that are able to lift, disperse, emulsify, sequester, dissolve, suspend or decompose. It may be used to remove oil, grease, resin, tar, wax, biological materials, insoluble oxides, fine particles and many other contaminants.



| Type No | Description |
|------------------|---------------------|
| CellClean/150ml | Cell cleaner 150ml |
| CellClean/1000ml | Cell cleaner 1000ml |

Funnels

Plastic or glass funnel suitable for use with aspiration cells Types 25, 28-AS and 29-AS. Funnel has approximate diameter of 30mm.

| Type No | Description |
|----------|----------------------|
| FUN/P/30 | Plastic funnel 30mmø |
| FUN/G/30 | Glass funnel 30mmø |



FUN/P/30

'Spinette' cell stirrer

'Spinette' cell stirrers offer the ability to simultaneously measure and stir the contents of specially designed cells (MS), see page 26. Mixing of solutions is with a tiny magnetic stir bar placed into a purpose made well at the bottom of the cell. A small electronic coil rotation assembly is placed under the cell in the sample compartment. This raises the cell by 5mm which, without affecting instrument operation may also reduce the required sample volume. The 'Spinette' will fit all standard spectrophotometers cell holders.

The speed of rotation can be adjusted with the controller which is connected to the electronic magnet by thin ribbon wire one metre in length. This will not interfere with insertion or removal of cells from the sample compartment and will also allow instrument covers to close normally.

Magnetic stir bars are available to fit the specially designed MS range of cells with 'stirring wells' depicted on page 26.

When purchasing stir bars separately for use with micro cells, the correct size must

be selected. One stir bar is included with each MS cell. Typically, a cell filled with aqueous solution up to 30mm from the base, may be fully mixed within five seconds. The Spinette cell stirrer is supplied complete with speed controller, electronic rotation platform, ribbon wire and one stir bar. There are two models available, one with input voltage of 110 VAC and the other 220/240 VAC, see below.



| Type No | Description |
|---------|-------------------------------|
| SCSI.22 | Spinette cell stirrer 240 VAC |
| SCSI.11 | Spinette cell stirrer 110 VAC |

Ultra High Vacuum (UHV) cells

- Designed for use in vacuums 10^{-9} Torr
- Fully heat fused
- Windows polished to $\lambda/10$ per cm^2
- 20/10 scratch & dig.
- Far UV synthetic quartz or borosilicate.



A wide variety of UHV cells are produced. Used for quantum mechanics experimentation including Bose Einstein condensate experiments. Multilayer 'V', 'W' or broadband coatings available for specific wavelengths.

| Type No. | Window Materials | Typical dimensions | |
|----------|------------------|--------------------|---------------|
| | | Internal | External |
| UHV | Q | 20 x 20 x 97 | 26 x 26 x 100 |
| UHV | Q | 24 x 24 x 97 | 30 x 30 x 100 |
| UHV | Q | 30 x 30 x 96 | 38 x 38 x 100 |

Custom sizes can be manufactured to special order. Dimensions should be specified when ordering, internal or external. Borosilicate materials may be used for UHV cells when dimensions allow.

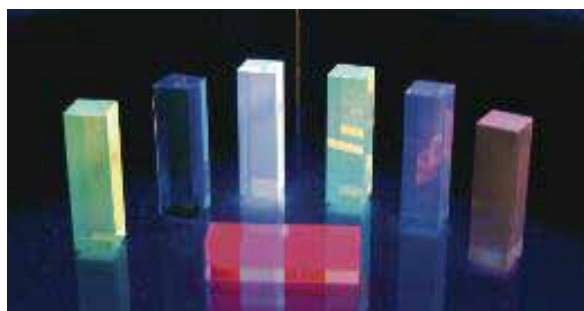
Fluorescent reference materials

Molecular fluorescence spectroscopy is a sensitive and often selective technique. Unlike absorption spectrophotometry it is not an absolute technique: instruments therefore require calibration before every series of measurements. This may be achieved using a stable reference material, which should absorb and emit at similar wavelengths to the samples of interest. Use of the general purpose fluorescent reference material set type 6BF enables the day to day stability of instruments to be measured.

The 6BF reference materials are not standards with absolute values, but a set of six relatively stable fluorescent materials in a polymethylmethacrylate matrix with which the stability and precision of the instrument can be monitored. Four blocks exhibit broad band spectra which cover the normally used UV and visible region of the spectrum, with considerable overlap. Two blocks contain materials suitable for illustrating the selectivity of the technique as well as checking instrument resolution and wavelength calibration. The materials have the following advantages:

- Stability: no degradation, no evaporation.
- Safety: no chemicals to mix.
- Robust: unbreakable, easy to store and use.

Further information can be found in the [Starna](#) booklet entitled: "Reference Materials for Molecular Fluorescence Spectrophotometry"



Also available in permanently flame-sealed cells are the following references for fluorimeter applications.

Quinine Sulphate [RM-QS]

solution in sealed cells for fluorescent instrument qualifications.

Rhodamine [4-TB/Rhodamine/101]

flame-sealed into triangular cells for quantum yield and spectral correction.

Water cell [3/Q/10/Water]

suitable for Raman Band signal to noise determination.