

## Minisart RC Syringe Filter Holders

**Ready-to-use syringe disposable filter units** for simple, rapid and reliable ultra-cleaning of small volumes of samples for HPLC, GC or any application where small volume, fine filtering is required. **Minisart-RC4** is recommended for up to approx. **1 ml** sample volumes, **Minisart-RC15** for up to **5ml** and **Minisart-RC25** for up to **100 ml**.

Minisart RC units outperform competitive hydrophilic units in terms of compatibility with aqueous solutions and solvent mixtures.

The **hydrophilic, solvent resistant, RC membrane** is compatible with:

Acetic acid (96%)	Ethyl acetate	Methylene chloride
Acetone	Ethanol	Methyl ethyl ketone
Acetonitrile	Ethylene glycol	Pentane
n-Butanol	Freon TF	Tetrahydrofuran
Cellosolve (ethyl)	Gasoline (Petrol)	Toluene
Chloroform	Hexane	Trichloroacetic acid (25%)
Diethyl acetamide	Isobutanol	Trichloroethane
Dimethyl sulphoxide	Isopropanol	Water
Dioxane	Methanol	Xylene



### Specifications for Minisart RC Units:

<i>Bubble points</i>	Water wetted, approx. 4.0 bar (0.45 µm), 5.4 bar (0.2 µm) 4 mm (RC4), 15 mm (RC15), 25 mm (RC25)
<i>Connectors</i>	Female Luer lock inlet, male Luer slip outlet.
<i>Filter areas</i>	Diameters 0.07 cm <sup>2</sup> (RC4). 1.7 cm <sup>2</sup> (RC15). 4.8 cm <sup>2</sup> (RC25)
<i>Flow rates</i>	Typical values at Δp = 1 bar (100 kPa): for methanol RC4: 3.0 ml/min (0.45 µm), 1.5 ml/min (0.2µm) RC15: 105 ml/min (0.45 µm), 55 ml/min (0.2 µm) RC25: 325 ml/min (0.45 µm), 160 ml/min (0.2 µm)
<i>Limits</i>	Max. operating pressure and min. housing burst pressure, 6.0 bar (600 kPa). Max. temperature 121°C (autoclave)
<i>Materials</i>	Regenerated cellulose membrane, Polypropylene housing
<i>Volumes</i>	Priming/hold-up volumes: 0.17 ml/5 µl, (RC4), 0.2 ml/10 µl (RC15). Approx. 0.95ml/150 µl (RC25)

### Order Numbers for Minisart RC4

<b>F114/RC4</b>	with 0.2 µm membrane (pack of 50)
<b>F115/RC4</b>	with 0.2 µm membrane (pack of 500)
<b>F116/RC4</b>	with 0.45 µm membrane (pack of 50)
<b>F117/RC4</b>	with 0.45 µm membrane (pack of 500)

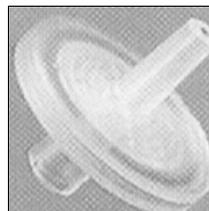
RC4



### Minisart RC15

<b>F114/RC15</b>	with 0.2 µm membrane (pack of 50)
<b>F115/RC15</b>	with 0.2 µm membrane (pack of 500)
<b>F116/RC15</b>	with 0.45 µm membrane (pack of 50)
<b>F117/RC15</b>	with 0.45 µm membrane (pack of 500)

RC15



### Minisart RC25

<b>F114/RC25</b>	with 0.2 µm membrane (pack of 50)
<b>F115/RC25</b>	with 0.2 µm membrane (pack of 500)
<b>F116/RC25</b>	with 0.45 µm membrane (pack of 50)
<b>F117/RC25</b>	with 0.45 µm membrane (pack of 500)

RC25



### Minisart SRP Syringe Filters



Disposable syringe filters with a **clean and chemically inert PTFE Membrane**. Ready-to-use units for simple, rapid and reliable ultracleaning of small volumes of samples for HPLC or GC which require an even more chemical resistant unit than Minisart RC. For solvents such as acetone, dimethylformamide and DMSO, as well as for aggressive aqueous liquids.

**Minisart SRP4** is recommended for up to 1 ml, **Minisart SRP 15** for up to 5 ml and **Minisart SRP 25** for up to 100 ml sample volumes.

#### Specifications for Minisart-SRP Units:

<i>Bubble points</i>	Isopropanol wetted, 0.9 bar 0.45µm, 1.4 bar (0.2µm)
<i>Connectors</i>	Female Luer lock inlet, male Luer slip outlet (Minisart- SRP15 is also available with a small spike outlet)
<i>Diameters</i>	4 mm (SRP4), 15mm (SRP15), 25 mm (SRP25)
<i>Filter areas</i>	0.07 cm <sup>2</sup> (SRP4), 1.7 cm <sup>2</sup> (SRP15), 4.8 cm <sup>2</sup> (SRP25)
<i>Flow rates</i>	Typical values at Δp = 1 bar(100 kPa) for methanol: SRP4:4.5 l/min (0.45µm) SRP15: 150ml/min (0.45µm), 55ml/min (0.2µm) SRP25: 260ml/min (0.45µm), 160ml/min (0.2µm)
<i>Hold-up</i>	Hold-up volumes: 1µl (SRP4), 10µl (SRP15), 100µl (SRP25)
<i>Limits</i>	Max. operating pressure and min. housing burst pressure, 6.0 bar (600 kPa). Max. temperature, 127°C (autoclave)
<i>Materials</i>	Polypropylene reinforced PTFE membrane filter, polypropylene housing
<i>Wetting</i>	Water penetration pressure, 3.0 bar (300 kPa) for 0.45µm, 4 bar (400 kPa) for 0.2 µm

#### Order Numbers for Minisart-SRP4

<b>F284/SRP4</b>	with 0.45 µm membrane (pack of 50)
<b>F285/SRP4</b>	with 0.45 µm membrane (pack of 500)

#### Minisart-SRP15 with small spike outlet

<b>F282/S/SRP15</b>	with 0.2 µm membrane (pack of 50)
<b>F283/S/SRP15</b>	with 0.2 µm membrane (pack of 500)
<b>F284/S/SRP15</b>	with 0.45 µm membrane (pack of 50)
<b>F285/S/SRP15</b>	with 0.45 µm membrane (pack of 500)

#### Minisart-SRP15 with luer slip outlet

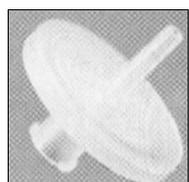
<b>F282/L/SRP15</b>	with 0.2 µm membrane (pack of 50)
<b>F283/L/SRP15</b>	with 0.2 µm membrane (pack of 500)
<b>F284/L/SRP15</b>	with 0.45 µm membrane (pack of 50)
<b>F285/L/SRP15</b>	with 0.45 µm membrane (pack of 500)

#### Minisart-SRP25

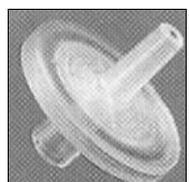
<b>F282/SRP25</b>	with 0.2 µm membrane (pack of 50)
<b>F283/SRP25</b>	with 0.2 µm membrane (pack of 500)
<b>F284/SRP25</b>	with 0.45 µm membrane (pack of 50)
<b>F285/SRP25</b>	with 0.45 µm membrane (pack of 500)



SRP4



SRP15 with small spike outlet



SRP15 with luer slip outlet



SRP25

## Minisart 0.2µm Syringe Filters

Disposable syringe filters for **rapid small volume sterilisation** with maximum user comfort. Ready-to-use units which offer high flow rates at low inlet pressures and correspondingly quicker, less hand-tiring sterilisation of up to 100ml liquid volumes. Fits on a standard syringe. A Minisart fitted on a Dosing Syringe makes very convenient system for simultaneous dosing and sterilisation. The combination of large area and optimised geometry of the filter support which are responsible for the high flow rates, also ensures high total throughputs.



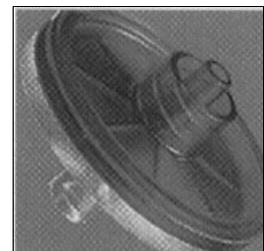
Minisart-plus units are of advantage for the sterilisation of difficult to filter liquids. They include a fine glass fibre prefilter on the membrane filter, a combination which is so effective that throughputs can often be doubled. Minisarts and their packaging are environmentally friendly, free of PVC.

### Specifications for 0.2 µm Minisarts and Minisart-plus

<i>Adsorption</i>	Values determined for the cellulose acetate membrane, 0.8-3 µg per cm <sup>2</sup> with BSA, 8-12 µg per cm <sup>2</sup> with g-globulin. Adsorption of Minisart-plus units varies due to prefilter
<i>Bubble point</i>	Minimum value, water wetted, 3.2 bar (320 kPa)
<i>Colour coding</i>	Blue
<i>Connectors</i>	Female Luer Lock inlet and male Luer Lock outlet. Alternatively, for standard Minisarts only, male Luer outlet
<i>Cytotoxicity</i>	No inhibition with MRC-5 or L-929 cells
<i>Endotoxins</i>	Endotoxin release is below 0.06 EU/ml (detection limit of test)
<i>Filter diameter</i>	26 mm
<i>Filtration area</i>	5.3 cm <sup>2</sup>
<i>Flow rates</i>	Typical value for water at Δp = 1 bar (100 kPa), 60ml/ min Hold-up volume 0.1 ml for standard Minisarts, 23ml for Minisart-plus
<i>Limits for use</i>	Max. recommended operating pressure, 4.5 bar (450 kPa). Housing resists bursting up to at least 6 bar (600 kPa). Max. temperature, 50°C
<i>Materials</i>	Cellulose acetate membrane filter. Glass fibre prefilter (Minisart-plus only). Cyrolite (CY/RO Industries trade marked MBS-copolymer) housing

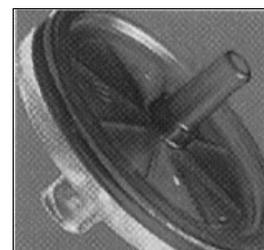
### 0.2 µm Minisarts Order Numbers

- a) **Sterile**, individually packed:  
**F286/L** with Luer lock outlet (pack of 50)  
**F286/ML** with male Luer outlet (pack of 50)
- b) **non sterile**, bulk packed  
**F287/L** with Luer lock outlet (pack of 500)  
**F287/ML** with male Luer outlet (pack of 500)

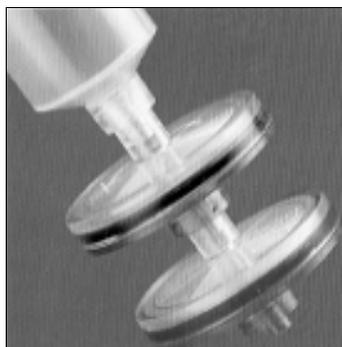


### 0.2 µm Minisart-Plus

- a) **Sterile**, individually packed  
**F286/L/PLUS** with Luer lock outlet (pack of 50)
- b) **non sterile**, bulk packed  
**F287/L/PLUS** with Luer lock outlet (pack of 500)



### Minisart High Flow Rate Filters



Disposable **Minisart** Syringe Filters for particle removal, ultracleaning and prefiltration. Ready-to-use units with 0.45  $\mu\text{m}$ , 0.8  $\mu\text{m}$ , 1.2  $\mu\text{m}$  or 5  $\mu\text{m}$  pore size membrane filters. They allow rapid clarification or ultracleaning of up to 100 ml liquid volumes or can be mounted directly in front of an 0.2  $\mu\text{m}$  Minisart to act as prefilter and increase the total filterable volume. The high flow rates of these units result from the large filter area and the very low flow resistance of the filter support, which is demonstrated by the relative constant increase in the flow rate with increasing pore size. These flow rates contribute to user comfort by lowering the pressure required for filtration. **Minisart-GF** contains a glass fibre filter with a retention efficiency of 98% for 0.7 $\mu\text{m}$  spherical particles. It is very useful when relatively dirty solutions are to be clarified, or as a prefilter on an 0.2  $\mu\text{m}$  or 0.45  $\mu\text{m}$  Minisart. **Minisart-plus** units also contain this glass fibre filter, but as prefilter on an 0.45  $\mu\text{m}$  or 1.2  $\mu\text{m}$  membrane, for higher total throughputs.

#### Specifications for Minisarts, Minisart-plus and Minisart-GF

<i>Bubble points</i>	Min. values, water wetted, 1.6 bar (0.45 $\mu\text{m}$ ), 0.8 bar (0.8 $\mu\text{m}$ ), 0.7 bar (1.2 $\mu\text{m}$ ), 0.4 bar (5 $\mu\text{m}$ ), 0.5 bar (Minisart-GF)
<i>Colour coding</i>	Yellow (0.45 $\mu\text{m}$ ), green (0.8 $\mu\text{m}$ ), red (1.2 $\mu\text{m}$ ), brown (5 $\mu\text{m}$ ), opaque (Minisart-GF)
<i>Connectors</i>	Female Luer lock inlet, male Luer lock outlet (the 0.45 $\mu\text{m}$ unit is also available with a male Luer outlet)
<i>Cytotoxicity</i>	No inhibition with MRC-5 human lung cells
<i>Filter diameter</i>	26 mm
<i>Filtration area</i>	5.3 cm <sup>2</sup>
<i>Flow rate</i>	Typical values for water at $\Delta p = 1$ bar (100 kPa), 180 ml/min (0.45 $\mu\text{m}$ ), 350 ml/min (0.8 $\mu\text{m}$ ), 400 ml/min (1.2 $\mu\text{m}$ ), 500 ml/min (5 $\mu\text{m}$ ), 600 ml/min (Minisart-GF)
<i>Hold-up volume</i>	0.1 ml
<i>Limits for use</i>	Max. recommended operating pressure, 4.5 bar (450 kPa). Housing resists bursting up to at least 6 bar (600 kPa). Max. temperature 50°C
<i>Materials</i>	Cellulose acetate membrane (except Minisart-GF).
<i>Glass fibre</i>	filter (Minisart-GF and Minisart-plus). Cyrolite (CY/RO Industries trademarked MBS-copolymer) housing

#### Order Numbers for Standard 0.45 $\mu\text{m}$ to 5 $\mu\text{m}$ Minisarts

a) <b>Sterile</b> , individually packed (packs of 50):	
<b>F103/ML</b>	0.45 $\mu\text{m}$ , with male Luer outlet
<b>F103/L</b>	0.45 $\mu\text{m}$ , with Luer lock outlet
<b>F105</b>	0.8 $\mu\text{m}$ , with Luer lock outlet
<b>F109</b>	1.2 $\mu\text{m}$ , with Luer lock outlet
<b>F111</b>	5 $\mu\text{m}$ , with Luer lock outlet
b) <b>Non sterile</b> , bulk packed, (packs of 500)	
<b>F104/ML</b>	0.45 $\mu\text{m}$ , with male Luer outlet
<b>F104/L</b>	0.45 $\mu\text{m}$ , with Luer lock outlet
<b>F106</b>	0.8 $\mu\text{m}$ , with Luer lock outlet
<b>F110</b>	1.2 $\mu\text{m}$ , with Luer lock outlet
<b>F112</b>	5 $\mu\text{m}$ , with Luer lock outlet

#### Minisart-plus units

a) <b>Sterile</b> , individually packed (packs of 50)	
<b>F103/L/PLUS</b>	0.45 $\mu\text{m}$ , with Luer lock outlet
b) <b>Non sterile</b> , bulk packed, (packs of 500)	
<b>F104/L/PLUS</b>	0.45 $\mu\text{m}$ , with Luer lock outlet
<b>F110/PLUS</b>	1.2 $\mu\text{m}$ , with Luer lock outlet

#### Minisart-GF units

a) <b>Non sterile</b> , bulk packed	
<b>F288</b>	Luer lock outlet (pack of 50)
<b>F289</b>	Luer lock outlet (pack of 500)

## Re-usable 13 mm Syringe Filter Holder

PTFE Holder for solvents and aggressive liquids for particle removal from small (ml) volumes of samples and solvents. Made completely of PTFE, this holder is unaffected by chemicals and contains no trace elements which could be released into the liquid being filtered. It is therefore extremely well suited for particle removal from samples for instrumental analysis, especially for samples which are sensitive to hydrolysis or oxidation. Used with a PTFE membrane filter, it filters particles out of deuterised solvents for NMR spectroscopy simply and with minimal sample loss because of the very small dead volume. Subsequently it can be rinsed with solvent and dried in an oven at 180°C to remove all traces of water after mounting a new PTFE filter, .

### Specifications:

<i>Compatibility</i>	Chemical resistance as for PTFE	
<i>Connectors</i>	Luer lock inlet and Luer slip outlet	
<i>Dead volume</i>	Less than 0.03 ml after overcoming the bubble point of the filter used	
<i>Filter</i>	Requires 13 mm diameter membrane filter	Filtration area 0.5 cm <sup>2</sup>
<i>Flow rates</i>	Typical values for water at 1 bar (100 kPa), 10 ml/min with 0.2 µm, 1 8ml/min with 0.45µm pore size filters	
<i>Materials</i>	PTFE top and bottom part	
<i>Pressure limit</i>	Max. operating pressure, 5 bar (500 kPa)	
<i>Sterilisation</i>	By autoclaving (121°C or 134°C) or dry heat (180°C)	
<i>Weight</i>	13g	
<b>F121</b>	13 mm PTFE syringe filter holder	



## Inexpensive Polycarbonate Holder

This inexpensive, re-usable holder is made of clear, autoclavable poly-carbonate and contains a silicone gasket for leakproof sealing. It can be used at pressures of up to 7 bar. It is designed for use with aqueous solutions. Filter supports in the top and bottom parts allow filtration in either direction. The milled edges make hand tightening easy.

### Specifications for the 13 mm Polycarbonate syringe filter holder

<i>Compatibility</i>	Chemical resistance as for polycarbonate and silicone	
<i>Connectors</i>	Luer lock inlet and Luer slip outlet	
<i>Dead volume</i>	Less than 0.2 ml after bubble point	
<i>Filter</i>	Requires 13 mm diameter membrane filter	
<i>Filtration area</i>	0.5 cm <sup>2</sup>	
<i>Flow rates</i>	Typical values for water at 1 bar (100 kPa), 18 ml/min with 0.2µm, 35 ml/min with 0.45 µm pore size filters	
<i>Materials</i>	Polycarbonate top and bottom part. Silicone gasket (10x14.9 mm, replacement part no. 6980569 for a pack of 10)	
<i>Pressure limit</i>	Max. operating pressure, 7 bar (700 kPa)	
<i>Sterilisation</i>	By autoclaving (121°C)	
<i>Weight</i>	13g	
<b>F119</b>	13 mm Polycarbonate syringe filter holder (pack of 12)	



### S/Steel 25mm Syringe Filter Holder



A re-usable **Stainless Steel Holder** for particle removal and sterilisation of up to 100ml volumes of solvents and aggressive liquids. Filter supports in the top and bottom parts allow filtration in either direction. No sealing ring or gasket is required, as a PTFE coated surface on the top part ensures leakproof sealing using the tightening tool in which the holder is supplied. The holder can be sterilised by auto-claving or in an oven at 180°C.

#### Specifications for the 25 mm Stainless Steel holder

<i>Compatibility</i>	Chemical resistance as for stainless steel and PTFE
<i>Connectors</i>	Luer lock inlet and Luer slip outlet
<i>Dead volume</i>	Less than 0.1ml after overcoming the bubble point of the filter used
<i>Filter</i>	Requires 25mm diameter membrane filter
<i>Filtration area</i>	3 cm <sup>2</sup>
<i>Flow rates</i>	Typical values for water at 1 bar (100 kPa), 45 ml/min with 0.2 µm, 80 ml/min with 0.45 µm pore size filters
<i>Materials</i>	Stainless steel top and bottom part. PTFE coating in top part. Luran368R tightening tool
<i>Pressure limit</i>	Max. operating pressure, 7 bar (700 kPa)
<i>Sterilisation</i>	By autoclaving (121°C or 134°C) or dry heat (180°C)

**F126** 25 mm Stainless Steel holder

### Polycarbonate 25mm Syringe Filter Holder



This inexpensive, re-usable holder is made of clear, autoclavable poly-carbonate and contains a silicone gasket for leakproof sealing. It can be used at pressures of up to 7 bar. Filter supports in the top and bottom parts allow filtration in either direction. The milled edges make hand tightening easy.

#### Specifications for the 25 mm Polycarbonate syringe filter holder

<i>Compatibility</i>	Chemical resistance as for polycarbonate and silicone
<i>Connectors</i>	Luer lock inlet and Luer slip outlet
<i>Dead volume</i>	Less than 0.3 ml after bubble point
<i>Filter</i>	Requires 25 mm diameter membrane filter
<i>Filtration area</i>	3 cm <sup>2</sup>
<i>Flow rates</i>	Typical values for water at 1 bar (100 kPa), 70 ml/min with 0.2 µm, 110 ml/min with 0.45 µm pore size filters
<i>Materials</i>	Polycarbonate top and bottom part. Silicone gasket (20.5 x 26.5 mm, replacement part no. 6980570 for a pack of 10)
<i>Pressure limit</i>	Max. operating pressure, 7 bar (700 kPa)
<i>Sterilisation</i>	By autoclaving (121°C)

**F120** 25 mm Polycarbonate syringe filter holder (pack of 12)

## Advice and Accessories for Minisarts

**Small volume** filtration can be simply accomplished by drawing the liquid to be filtered into a syringe, fitting a Minisart filtration unit or a re-usable syringe filter holder with appropriate filter onto the filled syringe and filtering the liquid by depressing the plunger. 3-Ring syringes allow a good grip and are re-usable. Disposable syringes avoid the necessity of cleaning. Both are supplied with needles which can be fitted onto the filter holder outlet, to allow silicone caps or rubber bungs to be pierced. Forceps should be used to handle membrane filters when positioning them in re-usable filter holders.



**Larger volumes** of relatively easily filterable liquids can also be filtered through syringe filtration units, but require refilling of the syringe. The need for repeated removal and replacement of the filtration unit can be avoided by inserting a 3-way valve between the filtration unit and the syringe. The sinker on the end of the suction tubing is dropped into the liquid to be filtered. The syringe plunger is drawn back to suck liquid into the syringe and depressed to push the liquid through the filter. This process is repeated until all of the liquid has been filtered.

**The filtration of larger volumes with simultaneous dosing** can be optimally achieved using a Dosing Syringe. The volume required is set by turning the base of the grip and is clearly visible in a window on the grip. The sinker at the end of the suction tubing is dropped into the liquid to be filtered and the syringe filled by operating the trigger a few times. A Minisart filtration unit or a re-usable syringe filter holder with appropriate filter is fitted onto the syringe. Only normal hand pressure is required, due to the convenient pistol-grip and the effective long-lever action of the trigger.



## Dosing Syringe

This is supplied with connectors for plastic and stainless steel syringe filter units. It allows simultaneous filtration and dosing. The smallest dose volume is 0.5ml, the largest 5.0ml. Volumes between these limits can be chosen in 0.5 ml steps. The plastic parts are made of Ryton polyphenyl sulphide, which has good thermal stability and chemical compatibility. The syringe can be autoclaved at 121°C, but the dosing accuracy may deteriorate when repeatedly autoclaved.

**S140** Dosing syringe 0.5 - 5ml  
Replacement parts available - please ask



## 3-Way Valve

Allows continuous filtration to be carried out when the female Luer lock inlet is connected to a syringe and a syringe filter unit fitted onto the Luer outlet. Autoclavable at 121°C.

**S153** 3-Way valve

### Replacement parts:

**S153/1** Sealing ring (4x)  
**S153/2** Pressure spring (2x)  
**S153/4** Perbunan valve



### 50 - 500ml Volume Filtering Units



Ready-to-use, presterilised units which only require connection to a vacuum source to quickly and conveniently filter volumes up to the capacities of their filtrate flasks (115ml for Sartolab V115, 150ml for Sartolab-V150 and 500ml for Sartolab-V500). The plug-on hose nipple is stepped for ease of connection of tubing and to accept tubing of various diameters. Protective cotton wool in the spout/hose nipple avoids re-contamination of the sterile filtrate on breaking vacuum. The two larger units have removable flasks which can be closed for storage with the sterile caps supplied with these units. The cellulose acetate membranes are the filters of choice for tissue culture solutions. They combine high flow rates with proven low protein adsorption and are free of cytotoxic effects.

#### Specifications for Sartolab V115, V150 and V500 units

<i>Capacity</i>	Funnel and flask, 115 ml, 150 ml or 500 ml
<i>Extractables</i>	All materials pass USP Plastics Test
<i>Filter</i>	50 mm diameter, 0.2 $\mu\text{m}$ or 0.45 $\mu\text{m}$ pore size membrane which shows no inhibition with MRC-5 or L-929 cells
<i>Flow rates</i>	Typical values for water at 90% vacuum, 200 ml/min for 0.2 $\mu\text{m}$ units, 600 ml/min for 0.45 $\mu\text{m}$ units
<i>Materials</i>	Polystyrene except for cellulose acetate membrane filter, polyethylene hose nipple and cotton wool air filter. A glass fibre prefilter is additionally supplied with Sartolab-V500 Pressure limit Vacuum only Sterilisation Supplied presterilised by gamma-radiation
<i>Pressure limit</i>	Vacuum only
<i>Sterilisation</i>	Supplied presterilised by gamma-radiation



V150



V500

**Order Numbers for Sartolab-V-115 units** (115ml capacity. Flask not removable, has a tube in the vacuum connector for easy clean pour-out of filtrate)

<b>F290/V115</b>	with 0.2 $\mu\text{m}$ filter (pack of 10)
<b>F291/V115</b>	with 0.45 $\mu\text{m}$ filter (pack of 10)

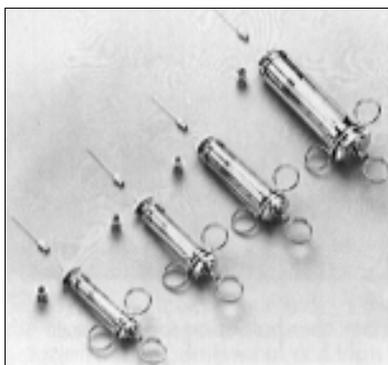
**Sartolab-V-150 units** (150ml capacity. The removable flask can be closed with the cap supplied, for storage of the filtrate)

<b>F290/V150</b>	with 0.2 $\mu\text{m}$ filter (pack of 12)
<b>F291/V150</b>	with 0.45 $\mu\text{m}$ filter (pack of 12)

**Sartolab V-500 units** (500ml capacity. The removable flask can be closed with the cap supplied, for storage of the filtrate. Glass fibre prefilters are also supplied, to be placed on the membrane for higher throughputs of "dirty" solutions).

<b>F290/V500</b>	with 0.2 $\mu\text{m}$ filter (pack of 12)
<b>F291/V500</b>	with 0.45 $\mu\text{m}$ filter (pack of 12)

### Glass Syringe with Needle



3 ring syringes, glass/metal with needle. The three rings allow a good grip so the hand pressure is easier and less tiring. A viton O-ring ensures a leak-proof seal between glass and cylinder and chromium plated base. The plunger is made from type 1.4401 stainless steel. The syringes are supplied with two connectors, a male Luer lock for plastic syringe filter holders and a male Luer Linden connector for stainless steel filter holders. These syringes can be autoclaved at at 121°C for 30 minutes with the plunger removed.

<b>S149</b>	5ml glass syringe, 3 ring with needle	each
<b>S150</b>	10ml glass syringe, 3 ring with needle	each
<b>S151</b>	20ml glass syringe, 3 ring with needle	each
<b>S152</b>	50ml glass syringe, 3 ring with needle	each

## All Glass Syringe

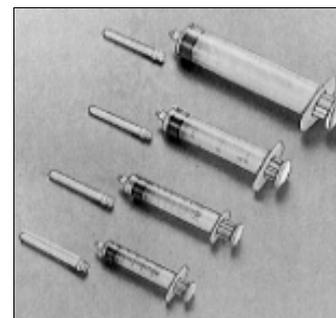
All glass syringe with **metal Luer fitting**, fully interchangeable, centre nozzle. This economical all glass syringe will handle the more aggressive solutions which tend to attack the piston seal of plastic syringes.

<b>S206</b>	2ml all glass syringe	pack of 10
<b>S207</b>	5ml all glass syringe	pack of 10
<b>S208</b>	10ml all glass syringe	pack of 10
<b>S209</b>	20ml all glass syringe	pack of 10

## Plastic Syringe with Needle

Disposable syringe with male Luer lock connector. Can be used in combination with all syringe filter holders.

<b>S143</b>	1ml plastic syringe with needle	pack of 10
<b>S144</b>	2ml plastic syringe with needle	pack of 10
<b>S145</b>	5ml plastic syringe with needle	pack of 10
<b>S146</b>	10ml plastic syringe with needle	pack of 10
<b>S147</b>	20ml plastic syringe with needle	pack of 10
<b>S148</b>	50ml plastic syringe with needle	pack of 10



## Plastic Syringe

Plastic syringes made from polypropylene making them resistant to almost all solutions or mixtures used in electron microscopy.

<b>S142</b>	50ml plastic syringe	pack of 10
<b>S060</b>	20ml plastic syringe	pack of 25
<b>S061</b>	10ml plastic syringe	pack of 25
<b>S062</b>	5ml plastic syringe	pack of 25
<b>S063</b>	2ml plastic syringe	pack of 25
<b>S141</b>	1ml plastic syringe	pack of 25

## Disposable Syringe Needle

Fits all syringe filter holders where male Luer slip is required. **Sterile**, ready for immediate use and therefore especially suitable for use with disposable syringes or syringe filter holders to pierce rubber membranes etc. or to guide the filtrate into a container. Supplied in packs of 10

<b>S064</b>	<i>Coarse</i> ; 19G x 1" (2.54cm) 1.1mm nominal diameter x 40mm long
<b>S065</b>	<i>Fine</i> ; 23G x 1" (2.54cm) 0.6mm nominal diameter x 25mm long

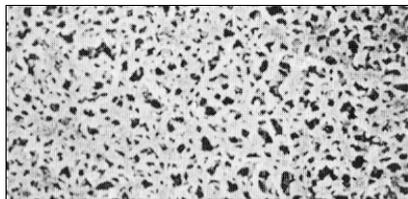
## Stainless Steel Needle

Fits all filter holders and is autoclavable. To pierce rubber membranes or silicone caps or to guide the filtrate into a receiver e.g. a Petri dish

<b>S257</b>	Stainless steel needle for Luer slip
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## Membrane Filter Discs

### Low Adsorption Cellulose Acetate



Membranes with high flow rates, very low adsorption characteristics coupled with thermal stability. This makes the 0.2µm pore size excellently suited for use in disc filter holders to sterilise aqueous solutions, buffers, sera and media.

#### Specifications:

<i>Bubble points</i>	Max. values wetted with water, 3.5 bar (350 kPa) for 0.2µm, 2.0 bar (200kPa) for 0.45µm, 1.3 bar (130 kPa) for 0.65µm and 0.8 bar (80 kPa) for 0.8µm
<i>Compatibility</i>	Stable within the pH range 4-8 and resistant against most alcohols, hydrocarbons and oils
<i>Extractables</i>	With water less than 1%
<i>Flow rates</i>	Average values for water per cm <sup>2</sup> at 1 bar differential pressure, 22ml/min for 0.2µm, 69ml/min for 0.45µm, 130ml/min for 0.65µm and 200ml/min for 0.8µm
<i>Limits</i>	Max temp 180°C
<i>Material</i>	Cellulose acetate
<i>Sterilisation</i>	By autoclaving at 121°C or 134°C, with γ-radiation or ethylene oxide
<i>Thickness</i>	Average value 135µm

#### Order numbers for 13mm cellulose acetate filter discs type 111

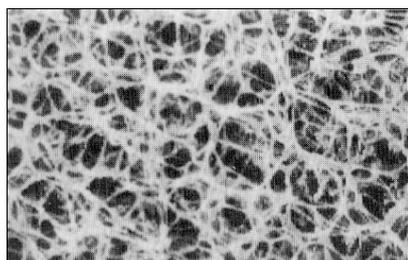
<b>F292</b>	Filter membrane 13mm Ø, 0.8µm pore size white, plain	pack of 100
<b>F122</b>	Filter membrane 13mm Ø, 0.45µm pore size white, plain	pack of 100
<b>F124</b>	Filter membrane 13mm Ø, 0.2µm pore size white, plain	pack of 100

#### 25mm filter discs

<b>F293</b>	Filter membrane 25mm Ø, 0.8µm pore size white, plain	pack of 100
<b>F294</b>	Filter membrane 25mm Ø, 0.65µm pore size white, plain	pack of 100
<b>F123</b>	Filter membrane 25mm Ø, 0.45µm pore size white, plain	pack of 100
<b>F125</b>	Filter membrane 25mm Ø, 0.2µm pore size white, plain	pack of 100

Other diameters available - 30mm, 47mm, 50mm, 85mm, 90mm, 100mm, 142mm, 293mm. Please ask.

### RC Membrane Discs for Organic Solvents



Hydrophilic membrane discs for the removal of particles from solvents see list page 4.1.

#### Specifications

<i>Adsorption</i>	Approx. 24µg/cm <sup>2</sup> for 0.2µm pore size, 18µg/cm <sup>2</sup> for 0.45µm pore size
<i>Compatibility</i>	See list page 4.1. Also resistant to aqueous solutions pH 3-12
<i>Extractables</i>	With water less than 1%
<i>Flow rates</i>	Average values per cm <sup>2</sup> area for water at 1 bar (100kPa) pressure, 20ml/min for 0.2µm, 47ml/min for 0.45µm
<i>Material</i>	Regenerated cellulose, reinforced with non-woven cellulose
<i>Sterilisation</i>	By autoclaving at 121°C or 134°C, dry heat (180°C), γ-radiation or ethylene oxide
<i>Thickness</i>	Average value 160µm

#### Order numbers for 13mm diameter RC filter membranes type 184

<b>F295</b>	0.45µm	pack of 100
<b>F296</b>	0.2µm	pack of 100
<b>25mm filter discs</b>		
<b>F297</b>	0.45µm	pack of 100
<b>F298</b>	0.2µm	pack of 100

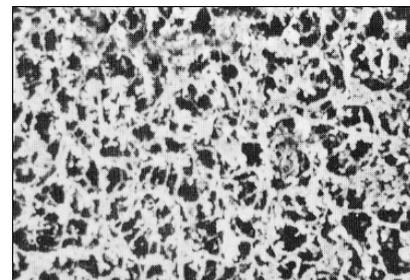
Other sizes available 47mm, 50mm, 100mm, 142mm, 293mm - please ask

## Cellulose Nitrate

Cellulose nitrate gives very uniform pore structure over a wide range of pore sizes.

### Specifications

<i>Bubble points</i>	On request
<i>Compatibility</i>	Chemically resistant to aqueous solutions in the pH range 4-8, to hydrocarbons and some other organic solvents
<i>Extractables</i>	Less than 1% with water
<i>Flow rates</i>	750ml/min for 8µm pore size 570ml/min for 5µm pore size 430ml/min for 3µm pore size 320ml/min for 1.2µm pore size 130ml/min for 0.65µm pore size 69ml/min for 0.45µm pore size 33ml/min for 0.3µm pore size 22ml/min for 0.2µm pore size 5ml/min for 0.1µm pore size
<i>Heat stability</i>	Do not expose to temperatures above 130°C
<i>Sterilisation</i>	By autoclaving at 121°C, $\gamma$ -radiation or ethylene oxide
<i>Thickness</i>	Varies with pore size, 90µm (0.1µm) to 140µm (8µm)



### Order numbers for 13mm cellulose nitrate filter discs type 113

<b>F135</b>	Filter membrane 13mm Ø 0.45µm pore size, white, plain	pack of 100
<b>F299</b>	Filter membrane 13mm Ø 0.2µm pore size, white, plain	pack of 100

### 25mm filter discs

<b>F300</b>	Filter membrane 25mm Ø 0.45µm pore size, white, plain	pack of 100
<b>F301</b>	Filter membrane 25mm Ø 0.2µm pore size, white, plain	pack of 100

**Additional pore sizes** as above specification (see *flow rates*) in other diameters of 20mm, 30mm, 37mm, 40mm, 47mm, 50mm, 80mm, 85mm, 90mm, 100mm, 120mm, 142mm, 150mm, 257mm, 293mm. The 47mm and 50mm filter discs are available in pre-sterilised packs. **Please ask.**

## Polyamide Filter Membranes

Type 250 for the filtration of **alkaline solutions** and **organic solvents**. These filters are specified for the isolation of legionella and their high adsorption and good mechanical strength make them very useful for blotting procedures. They are both hydrophilic and chemically resistant to most bases including 1N NaOH so are very good general purpose particle removing or sterilising filters for alkaline solutions. Their compatibility with many organic solvents and their favourable price compared with PTFE membranes, makes them an economical choice for particle removal for HPLC. They are not recommended for applications such as sterilising filtration of tissue culture solutions as their relatively high adsorption could cause loss of important trace substances. For these applications cellulose acetate is best used.

### Specification

<i>Extractables</i>	With water less than 0.2%
<i>Compatibility</i>	Stable within pH range 3-14 and resistant to many solvents
<i>Flow rates</i>	Average values per cm <sup>2</sup> area for water at 1 bar, 23ml/min for 0.2µm, 46ml/min for 0.45µm
<i>Sterilisation</i>	By autoclaving at 121°C, $\gamma$ -radiation or ethylene oxide
<i>Thickness</i>	Average value 125µm

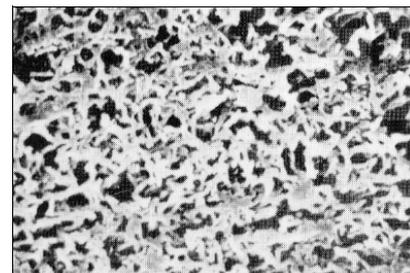
### Order numbers for 13mm diameter polyamide type 250 filters

<b>F302</b>	0.45µm	pack of 100
<b>F303</b>	0.2µm	pack of 100

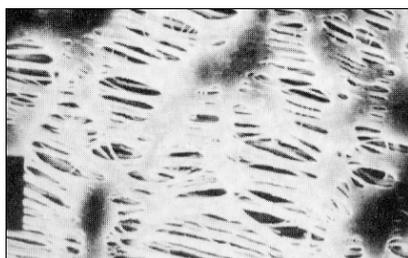
### 25mm diameter filters

<b>F304</b>	0.45µm	pack of 100
<b>F305</b>	0.2µm	pack of 100

**Other diameters available** - 47mm, 50mm, 90mm, 142mm, 293mm **please ask**



### PTFE Membrane Filters



Type 118 **hydrophobic** membranes for the filtration of **air, gases** and **chemicals**.

These membranes are made purely from PTFE. They allow unhindered passage of moist air or other gases even at low differential pressures as, unlike the hydrophilic membranes, they are not wetted and blocked by the moisture.

The extreme chemical resistance of PTFE makes these filters very useful for the filtration of those solvents or aggressive chemicals for which other membranes are unsuitable. When used for filtration of aqueous solutions they must be pre-wetted with a solvent such as ethanol or isopropanol before water passage can occur.

#### Specifications

<i>Adsorption</i>	8µg/cm <sup>2</sup> for $\chi$ -globulin for 0.2µm pore size
<i>Compatibility</i>	Resistant to almost all solvents and chemicals
<i>Extractables</i>	With water none detectable
<i>Flow rates</i>	Average values per cm <sup>2</sup> area for air at p=0.05 bar. 0.2l/min for 0.2µm, 0.3l/min for 0.45, 1.6l/min for 1.2µm and 4l/min for 5µm
<i>Sterilisation</i>	By autoclaving at 121°C or 131°C, $\chi$ -radiation or with ethylene oxide
<i>Thickness</i>	Average value from 65µm for 0.2µm pore size to 100µm for 5µm

#### Order numbers for 13mm PTFE filters type 118

<b>F306</b>	1.2µm pore size	pack of 100
<b>F307</b>	0.45µm pore size	pack of 100
<b>F308</b>	0.2µm pore size	pack of 100

#### 25mm diameter PTFE membrane

<b>F309</b>	5µm pore size	pack of 100
<b>F310</b>	1.2µm pore size	pack of 100
<b>F311</b>	0.45µm pore size	pack of 100
<b>F312</b>	0.2µm pore size	pack of 100

### Glass Fibre Filters

Normally used as a depth prefilter and placed directly on top of a membrane filter (please choose the prefilter diameter specified for the holder).

**Type 13400 'standard'** contains an acrylic latex binder and has a high loading capacity.

**Type 13430** as 13400 but is thicker and more effective for 'dirty liquids'.

**Type 13440** is a finer binder-free type recommended for the prefiltration of relatively clean solutions such as tissue culture media.



#### Type 13400 standard filters

<b>F313/13</b>	13mm	pack of 200
<b>F313/25</b>	25mm	pack of 200

#### Type 13430 extra thick standard filters

<b>F314/13</b>	13mm	pack of 200
<b>F314/25</b>	25mm	pack of 200

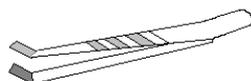
#### Type 13440 binder-free filters

<b>F315/13</b>	13mm	pack of 200
<b>F315/25</b>	25mm	pack of 200

Many other diameters available - -please ask

### Forceps for Membrane Filters

Membrane filters should only be handled with suitable forceps to avoid contamination that can result from hand contact. These stainless steel forceps have smooth, flat tips. They are autoclavable and can be flamed.



<b>T169</b>	Stainless steel membrane forceps
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