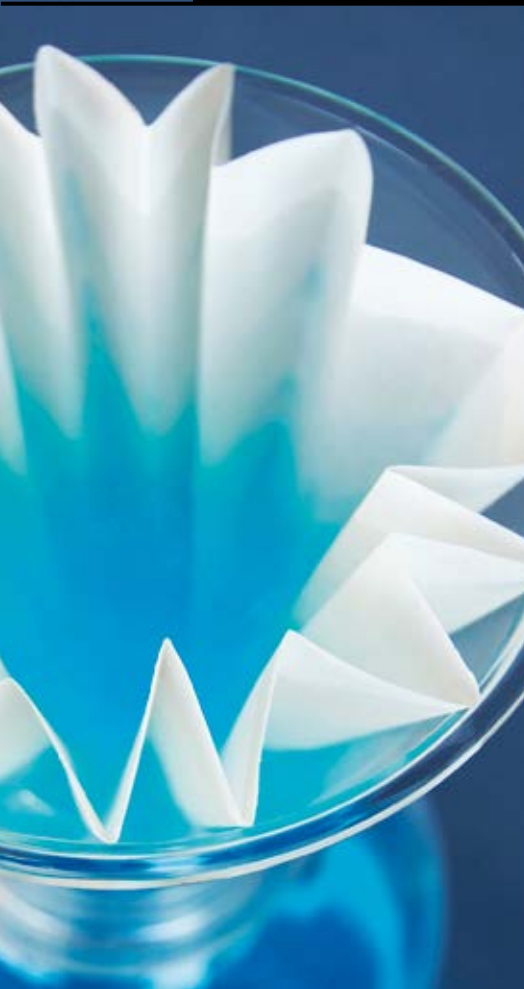




# FILTRATION & MICROFILTRATION

## NEW POSSIBILITIES IN FILTRATION



**chm**  
SHIFT\_filtration  
by CHMLAB Group

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# 01

## FILTRATION

QUANTITATIVE ASHLESS FILTER PAPER

QUALITATIVE FILTER PAPER

GENERAL PURPOSE FILTER PAPER

GLASS MICROFIBER

QUARTZ MICROFIBER

EXTRACTION THIMBLES

SURFACE PROTECTION

PHASE SEPARATION PAPERS

pH INDICATOR AND TEST PAPERS



# 01 FILTRATION

Filtration is the mechanical-physical operation which is used for the separation of solids from fluids (liquids or gases) by interposing a porous media through which only the fluid can pass. Oversize solids in the fluid are retained on the surface as well as within the matrix of the filter media.

Filtration has a wide range of applications: from laboratory analytical procedures to techniques in big production lines.

*Guidance to use the correct filter*

TYPE OF FILTERS		
<b>FILTER PAPER</b>	<b>GLASS AND QUARZ MICROFIBER</b>	<b>EXTRACTION THIMBLES (CELLULOSE, GLASS &amp; QUARTZ MICROFIBER)</b>
<ul style="list-style-type: none"> <li>· Quantitative and qualitative analysis</li> <li>· General laboratory procedures (clarifying filtration)</li> <li>· Technical applications</li> <li>· Special applications</li> </ul>	<ul style="list-style-type: none"> <li>· Very small particles</li> <li>· Aggressive substances</li> <li>· Temperatures up to 1000 °C</li> <li>· Water analysis</li> <li>· Biochemical determinations</li> <li>· Air monitoring</li> <li>· As a membrane pre-filter</li> </ul>	<ul style="list-style-type: none"> <li>· Extraction solid/liquid with Soxhlet</li> <li>· Powder and aerosol particles collection in gases</li> </ul>

Filter papers retain the impurities or particles of the liquid fluids on the surface as well as within the matrix of the filters. The particles or impurities are settled into the filter, modifying its filtration properties. Within the filter fibers arranged in an anarchic way into the filter paper, it creates a secondary filtration layer.

This is the reason why it is not possible to determine a nominal porosity for the filter papers.

As guidance it is possible to find the retention ranges into our technical specifications tables.

Often the filter papers are named as depth filters; they have a high capacity to retain particles and allow process big quantities of sample.

## 1.1 QUANTITATIVE ASHLESS FILTER PAPER

These CHM® filter papers are used for quantitative analysis and designed for preparation of samples and gravimetric analysis. They are made of refined pulp and linters with virtually 100% of alpha-cellulose content. These filter papers are guaranteed free of possible residual acids used in some production methods.

Extremely low percentage of ash content (maximum ash content of 0.007%).

Ashless filter papers for quantitative analyses are suitable for Buechner funnels and for filtration under pressure.

### F2040 GRADE – Medium slow-filtration

The classic general purpose ashless filter paper with a medium-to-slow filtering rate.

Suitable for typical applications include gravimetric analysis for numerous components and for all kind of pre-filtrations.

Used as a primary filter for separating solid matter from aqueous extracts, in tests for fat and oil in water, in general soil analysis, quantitative determination of sediments in milk, as well as in analytical grade clean-up filter for solutions prior to AA spectro-photometry. Suitable for finer precipitates such as hot barium sulphate.

### F2041 GRADE – Fast filtration

Fast ashless filter paper in the CHM® quantitative range together with F2045.

It is particularly suitable for analytical procedures and tests involving large particles or gelatinous precipitates (e.g. metal hydroxides and sulphides).

It is also used in metal (Pb) tests in water testing analysis, quantitative air pollution analysis, food industry, paper industry, etc.

### F2042 GRADE – Very slow filtration

An ashless world standard filter for critical gravimetric analysis.

With slow filtering rate and fine particle retention.

Typical analytical precipitates such as cold barium sulphate, lead sulphate, zinc and nickel sulphides, etc.



### F2043 GRADE - Medium filtration

Ashless filter with medium filtration speed and good retention (between Grade F2040 and Grade F2041) of medium and thick particles.

Suitable for gravimetric measurements of gypsum/lime suspensions in power plants.

F2043 Grade is particularly applied in metallurgical industry laboratories for metal tests. Typical applications include foodstuffs analysis, soil analysis, particle collection in air pollution monitoring, COD and TOC determination, inorganic analysis in the construction, mining and steel industries, for Blaine test in the cement industry (standards UNE 80-112-91 and EN 196-6), and for carrying out other chemical analysis on cement.

### F2044 GRADE - Slow filtration

Thinner version of No. F2042 but with higher flow rate (twice as fast as No. F2042).

Very fine particles but with lower ash weight per sample.

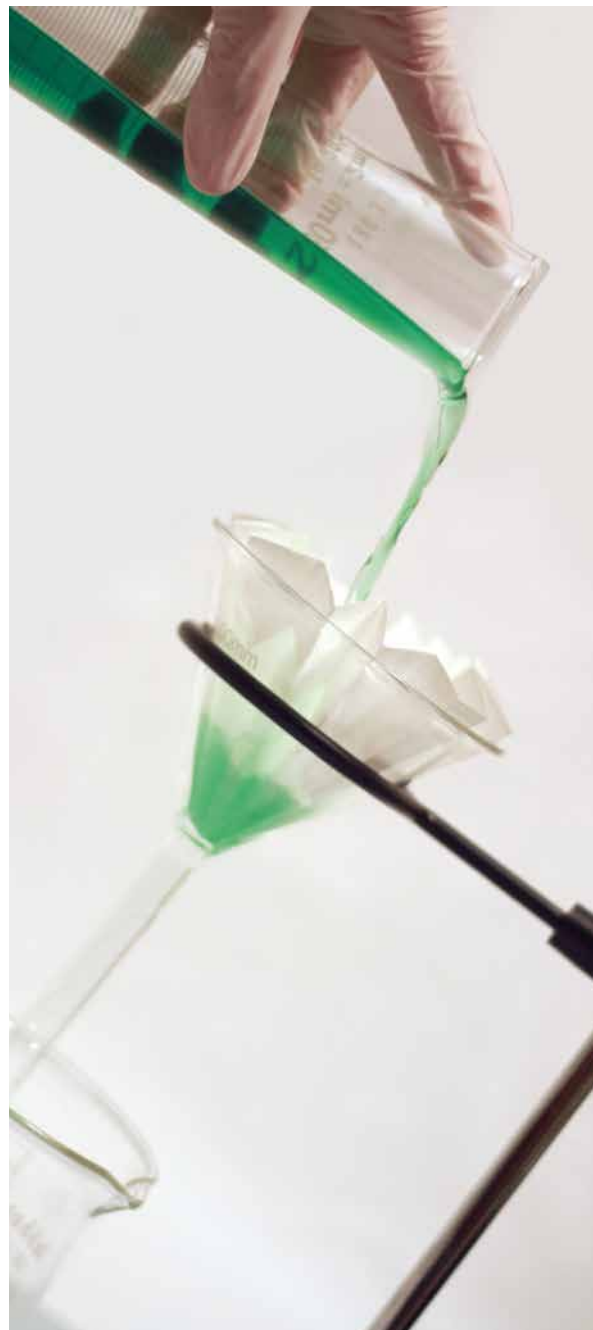
### F2045 GRADE - Very fast filtration

Filter paper of very high rate of filtration, wide-pored, soft, spongy structure, extremely low-ash content.

Food industry applications: determination of ash contents and PCB determination in foodstuffs.

Beverage industry applications: processing (ashing) fruit juice samples for photometric determinations (e.g. phosphate).

Environmental analysis: Determination of filterable substances and the residue on ignition (dry weight) for the examination of water, waste water and sludge (DIN 38 409 part 2)





#### TECHNICAL SPECIFICATIONS

GRADE	PROPERTIES	WEIGHT g/m <sup>2</sup>	THICKNESS µm	RETENTION RANGE µm	ASH CONTENT %
F2040	Medium-slow	85	170	7-9	<0.007
F2041	Fast	85	190	20-25	<0.007
F2042	Very slow	100	160	2-3	<0.007
F2043	Medium	85	180	14-17	<0.007
F2044	Slow	85	160	2-4	<0.007
F2045	Very fast	85	210	25-30	<0.007

#### ORDER INFORMATION

DIAMETER (mm)	F2040	F2041	F2042	F2043	F2044	F2045
<b>CIRCLES (1000/box)</b>						
12.7	F2040-012	F2041-012	F2042-012	F2043-012	F2044-012	F2045-012
25	F2040-025	F2041-025	F2042-025	F2043-025	F2044-025	F2045-025
<b>CIRCLES (*) (100/box)</b>						
37	F2040-037	F2041-037	F2042-037	F2043-037	F2044-037	F2045-037
40.5	F2040-040	F2041-040	F2042-040	F2043-040	F2044-040	F2045-040
42.5	F2040-042	F2041-042	F2042-042	F2043-042	F2044-042	F2045-042
47	F2040-047	F2041-047	F2042-047	F2043-047	F2044-047	F2045-047
50	F2040-050	F2041-050	F2042-050	F2043-050	F2044-050	F2045-050
55	F2040-055	F2041-055	F2042-055	F2043-055	F2044-055	F2045-055
70	F2040-070	F2041-070	F2042-070	F2043-070	F2044-070	F2045-070
80	F2040-080	F2041-080	F2042-080	F2043-080	F2044-080	F2045-080
90	F2040-090	F2041-090	F2042-090	F2043-090	F2044-090	F2045-090
100	F2040-100	F2041-100	F2042-100	F2043-100	F2044-100	F2045-100
110	F2040-110	F2041-110	F2042-110	F2043-110	F2044-110	F2045-110
125	F2040-125	F2041-125	F2042-125	F2043-125	F2044-125	F2045-125
150	F2040-150	F2041-150	F2042-150	F2043-150	F2044-150	F2045-150
185	F2040-185	F2041-185	F2042-185	F2043-185	F2044-185	F2045-185
200	F2040-200	F2041-200	F2042-200	F2043-200	F2044-200	F2045-200
240	F2040-240	F2041-240	F2042-240	F2043-240	F2044-240	F2045-240
270	F2040-270	F2041-270	F2042-270	F2043-270	F2044-270	F2045-270
320	F2040-320	F2041-320	F2042-320	F2043-320	F2044-320	F2045-320
<b>SHEETS (100/pack)</b>						
460x570	F2040-460570	F2041-460570	F2042-460570	F2043-460570	F2044-460570	F2045-460570
580x580	F2040-580580	F2041-580580	F2042-580580	F2043-580580	F2044-580580	F2045-580580

(\*) Add an F at the end of the reference for folded circles (e.g. F2040-150F) | Other sizes and packaging are available under request.



## Ashless hardened filter paper for quantitative analysis

Hardened Ashless Filter papers are acid hardened which reduces the ash content to an extremely low level. These filters are produced by a complex elaborate washing process under stringently controlled conditions. Firstly, acid washing is arranged. Then a series of washes in demineralised water comes, which increase the strength of the paper, thus making them particularly suitable for Buechner filter funnels and for a wide range of critical analytical filtration operations.

Through this process, a maximum ash content of 0.006% is attained, which means that no contaminants are introduced when filtering and also that full compliance with international standards on this subject is achieved.

### F2140 GRADE – Medium filtration

Hardened ashless filter paper with medium retention and flow rate.

Extremely strong and pure. With a hard surface, it is recommended for filtering medium-sized precipitates such as most metal sulphides.

High chemical resistance. Used in the gravimetric analysis of metals in acid and slightly alkalized solutions, pressure filtration.

### F2141 GRADE - Fast filtration

Hardened ashless filter paper with fast flow rate. Preferably used in filtration of coarse flocculent and bulky precipitates (as aluminium, chromium or hydroxides of iron, bismuth, cobalt, sulphides of copper, various organic metal precipitates, etc.) and gelatinous precipitates in acid/alkaline solutions during gravimetric analysis.

### F2142 GRADE - Slow filtration

Hardened ashless filter paper with high retention and slow flow rate.

High chemical resistance. Often used for filtering very fine precipitates and in gravimetric metal determinations.



### TECHNICAL SPECIFICATIONS

GRADE	PROPERTIES	WEIGHT g/m <sup>2</sup>	THICKNESS µm	RETENTION RANGE µm	ASH CONTENT %
F2140	Medium	84	160	7-12	<0.006
F2141	Fast	84	170	20-25	<0.006
F2142	Slow	95	150	2-4	<0.006



ORDER INFORMATION			
DIAMETER (mm)	F2140	F2141	F2142
<b>CIRCLES (1000/box)</b>			
25	F2140-025	F2141-025	F2142-025
<b>CIRCLES(*) (100/box)</b>			
42.5	F2140-042	F2141-042	F2142-042
47	F2140-047	F2141-047	F2142-047
50	F2140-050	F2141-050	F2142-050
55	F2140-055	F2141-055	F2142-055
70	F2140-070	F2141-070	F2142-070
80	F2140-080	F2141-080	F2142-080
90	F2140-090	F2141-090	F2142-090
100	F2140-100	F2141-100	F2142-100
110	F2140-110	F2141-110	F2142-110
125	F2140-125	F2141-125	F2142-125
150	F2140-150	F2141-150	F2142-150
185	F2140-185	F2141-185	F2142-185
200	F2140-200	F2141-200	F2142-200
240	F2140-240	F2141-240	F2142-240
270	F2140-270	F2141-270	F2142-270
320	F2140-320	F2141-320	F2142-320

(\*) Add an F at the end of the reference for folded circles (e.g. F2140-150F) | Other sizes and packaging are available under request.

## Hardened low ash filter paper for quantitative analysis

These filters, made from cotton linters fiber, are put through a washing process and treated with strong acids. Then they are washed in demineralised water to produce high wet strength (makes them appropriate for filtering in low pressure or vacuum conditions) and chemical resistance (makes them suitable to work with acids or alkaline solutions in moderate concentrations). A very low ash-content filter with a 0.015% (the maximum ash contents of these filters is intermediate between CHM® qualitative grades and ashless quantitative grades).

A very smooth surface makes easy to recover the whole of the precipitate after the filtration which is particularly indicated for Buchner filtrations.

### F2050 GRADE – Slow filtration

CHM filter with slow filtering rate, with excellent retention of very fine particles, such as barium sulphate, zinc sulphide, etc. Hardened and glazed surface makes this paper suitable for use in the electronic industry in carriers of electronic components or boards.

### F2052 GRADE - Medium-fast filtration

General purpose hardened filter paper with medium-rate filtering, with good retention of medium particles, such as calcium oxalate and metal sulphides.

Suitable for various tests on the intake of atmospheric pollution (sulphur oxides, ammonia gases, etc) as well as for microbiological water analysis.

They are used in fat extraction equipment as well in the oilseed and food industries, and in a large number of routine analytic procedures.

### F2054 GRADE - Fast filtration

The fastest filter paper in the range.

Suitable for filtering coarse, gelatinous or dense liquids. Good load capacity.

TECHNICAL SPECIFICATIONS					
GRADE	PROPERTIES	WEIGHT g/m <sup>2</sup>	THICKNESS µm	RETENTION RANGE µm	ASH CONTENT %
F2050	Slow	90	180	2-3	<0.015
F2052	Medium-Fast	90	190	7-8	<0.015
F2054	Fast	90	200	20	<0.015

ORDER INFORMATION			
DIAMETER (mm)	F2050	F2052	F2054
CIRCLES (100/box)			
42.5	F2050-042	F2052-042	F2054-042
47	F2050-047	F2052-047	F2054-047
50	F2050-050	F2052-050	F2054-050
55	F2050-055	F2052-055	F2054-055
70	F2050-070	F2052-070	F2054-070
80	F2050-080	F2052-080	F2054-080
90	F2050-090	F2052-090	F2054-090
100	F2050-100	F2052-100	F2054-100
110	F2050-110	F2052-110	F2054-110
125	F2050-125	F2052-125	F2054-125
150	F2050-150	F2052-150	F2054-150
185	F2050-185	F2052-185	F2054-185
200	F2050-200	F2052-200	F2054-200
240	F2050-240	F2052-240	F2054-240
270	F2050-270	F2052-270	F2054-270
320	F2050-320	F2052-320	F2054-320
SIZE (mm) SHEETS (*) (100/box)			
460x570	F2050-460570	F2052-460570	F2054-460570
580x580	F2050-580580	F2052-580580	F2054-580580

(\*) Add an F at the end of the reference for folded circles (e.g. F2050-150F) | Other sizes and packaging are available under request.

## 1.2 QUALITATIVE FILTER PAPER

### *Ashless hardened filter paper for qualitative analysis*

These filter papers are used for qualitative analysis.

Qualitative filters are made of refined pulp and pure cotton linters with an alpha-cellulose content of nearly 100%, which gives them a number of diverse filtration properties.

The ash content of less than 0,06% is not reduced by post-treatment.

Qualitative filter papers are available in sheets, discs and folded filters.

#### **F1001 GRADE - Medium filtration**

The most widely used filter paper in the CHM® range.

Medium retention and flow rate. This grade covers a wide range of laboratory applications and is frequently used for clarifying liquids. Traditionally this grade is used in qualitative analytical separations for routine laboratory work as well as rapid filtration of fine precipitates such as lead sulphate, calcium oxalate (hot) and calcium carbonate.

In agriculture, it is used for soil analysis and seed testing procedures.

In the food industry, Grade F1001 is used for numerous routine techniques to separate solid foodstuffs from associated liquid or extracting liquid.

It is widely used in education for teaching simple qualitative analytical separations.

In air pollution monitoring, using circles or rolls, atmospheric dust is collected from airflow and the stain-intensity measured photometrically.

For gas detection, the paper is impregnated with a chromogenic reagent and colour formation quantified by optical reflectance.

#### **F1002 GRADE - Medium-slow filtration**

Slightly more retentive and absorbent than Grade F1001 and therefore with a moderate to slow filtration speed.

In addition to general filtration this grade F1002 is used for monitoring specific contaminants in the atmosphere, filtration of fine precipitates, soil testing, it is often used as folded filter in an analytical funnel.

#### **F1003 GRADE - Medium-slow filtration (thick)**

Medium to low rate of filtration with double the thickness comparing with CHM® Grade F1001.

Fine particle retention and excellent loading capacity.

The extra thickness gives increased wet strength and allows a higher solute loading.

Preferably used for liquids hard to clarify, essences, oils, tinctures, particularly useful for use in Buechner-funnels.

#### **F1004 GRADE - Very fast filtration**

Very high rate of filtration with excellent retention of coarse precipitates such as metal hydroxides and sulphides or gelatinous substances.

Preferably used as rapid filter for various organic metal precipitates, routine cleanup of biological fluids, food industry analysis, air pollution monitoring (high rates and the fine particles collection is not critical).

#### **F1005 GRADE - Very slow filtration**

Lowest rate of filtration in the CHM® qualitative range and maximum degree of fine particle filtration or retention.

Preferably used as clarifying filter for cloudy suspensions and for water and soil analysis. Particularly used in difficult filtration conditions and extra fine-grained precipitates, barium sulphate, cuprous oxide, often specified for clarification of wine.

#### **F1006 GRADE - Slow filtration**

Similar particle retention as Grade F1005 with higher filtration speed.

Often used for boiler water analysis.





#### TECHNICAL SPECIFICATIONS

GRADE	PROPERTIES	WEIGHT g/m <sup>2</sup>	THICKNESS µm	RETENTION RANGE µm	ASH CONTENT %
F1001	Medium	85	180	10-13	<0.06
F1002	Medium - Slow	100	190	7-8	<0.06
F1003	Medium - Slow/Thick	200	320	5-7	<0.06
F1004	Very Fast	85	210	15-20	<0.06
F1005	Very Slow	85	170	3-5	<0.06
F1006	Slow	85	150	2-4	<0.06

#### ORDER INFORMATION

DIAMETER (mm)	F1001	F1002	F1003	F1004	F1005	F1006
<b>CIRCLES (1000/box)</b>						
25	F1001-025	F1002-025	F1003-025	F1004-025	F1005-025	F1006-025
<b>CIRCLES (*) (100/box)</b>						
37	F1001-037	F1002-037	F1003-037	F1004-037	F1005-037	F1006-037
40.5	F1001-040	F1002-040	F1003-040	F1004-040	F1005-040	F1006-040
42.5	F1001-042	F1002-042	F1003-042	F1004-042	F1005-042	F1006-042
47	F1001-047	F1002-047	F1003-047	F1004-047	F1005-047	F1006-047
50	F1001-050	F1002-050	F1003-050	F1004-050	F1005-050	F1006-050
55	F1001-055	F1002-055	F1003-055	F1004-055	F1005-055	F1006-055
70	F1001-070	F1002-070	F1003-070	F1004-070	F1005-070	F1006-070
80	F1001-080	F1002-080	F1003-080	F1004-080	F1005-080	F1006-080
90	F1001-090	F1002-090	F1003-090	F1004-090	F1005-090	F1006-090
100	F1001-100	F1002-100	F1003-100	F1004-100	F1005-100	F1006-100
110	F1001-110	F1002-110	F1003-110	F1004-110	F1005-110	F1006-110
125	F1001-125	F1002-125	F1003-125	F1004-125	F1005-125	F1006-125
150	F1001-150	F1002-150	F1003-150	F1004-150	F1005-150	F1006-150
185	F1001-185	F1002-185	F1003-185	F1004-185	F1005-185	F1006-185
200	F1001-200	F1002-200	F1003-200	F1004-200	F1005-200	F1006-200
240	F1001-240	F1002-240	F1003-240	F1004-240	F1005-240	F1006-240
270	F1001-270	F1002-270	F1003-270	F1004-270	F1005-270	F1006-270
320	F1001-320	F1002-320	F1003-320	F1004-320	F1005-320	F1006-320
<b>SHEETS (100/pack)</b>						
460x570	F1001-460570	F1002-460570	F1003-460570	F1004-460570	F1005-460570	F1006-460570
580x580	F1001-580580	F1002-580580	F1003-580580	F1004-580580	F1005-580580	F1006-580580

(\*) Add an F at the end of the reference for folded circles (e.g. F1001-150F) | Other sizes and packaging are available under request.

## 1.3 GENERAL PURPOSE FILTER PAPER

These general purpose filters have a high wet strengthened.

They are made of high-purity cotton linters and other vegetable fibers. These filter papers have fast or very fast filtration rates, and are particularly useful in filtering coarse precipitates or relatively straightforward substances. These filters are not recommended for Kjeldahl estimations.

### F1091 GRADE - Very fast filtration

Crêped surface filter paper with medium flow rate.

For general laboratory use in less-critical analyses.

Used around the world in laboratories to assay sugar cane or beet. The fruit is mashed and further analyzed according to the aluminium sulphur method.

### F1093 GRADE - Fast filtration

Smooth Grade F1093 is a general purpose filter paper for qualitative analysis.

This wet strengthened paper is used for general filtration and sample preparation for food, sugar processing plants, hospitals, educational and research centres, colleges, universities and labs (with a very high usage and less critical analysis), etc.

### F1113 GRADE - Extra fast filtration (thick)

High particle retention and extremely high loading capacity.

Preferably used for filtration of gelatine, resin solutions and other viscous liquids, such as syrups, oils, essences and fats.

The folded format enables bigger volumes to be dealt at atmospheric pressures.

TECHNICAL SPECIFICATIONS					
GRADE	PROPERTIES	WEIGHT g/m <sup>2</sup>	THICKNESS µm	RETENTION RANGE µm	ASH CONTENT %
F1091	Very Fast. Thick	75	280	10-13	0.1
F1093	Very Fast	65	180	7-10	0.1
F1113	Extra-Fast. Thick	160	470	60-65	0.2

ORDER INFORMATION			
DIAMETER (mm)	F1091	F1093	F1113
<b>CIRCLES (*) (100/box)</b>			
42.5	F1091-042	F1093-042	F1113-042
47	F1091-047	F1093-047	F1113-047
50	F1091-050	F1093-050	F1113-050
55	F1091-055	F1093-055	F1113-055
70	F1091-070	F1093-070	F1113-070
80	F1091-080	F1093-080	F1113-080
90	F1091-090	F1093-090	F1113-090
100	F1091-100	F1093-100	F1113-100
110	F1091-110	F1093-110	F1113-110
125	F1091-125	F1093-125	F1113-125
150	F1091-150	F1093-150	F1113-150
185	F1091-185	F1093-185	F1113-185
200	F1091-200	F1093-200	F1113-200
240	F1091-240	F1093-240	F1113-240
270	F1091-270	F1093-270	F1113-270
320	F1091-320	F1093-320	F1113-320
<b>SIZE (mm) SHEETS (100/box)</b>			
460x570	F1091-460570	F1093-460570	F1113-460570

(\*) Add an F at the end of the reference for folded circles (e.g. F1093-150F) | Other sizes and packaging are available under request.





## 1.4 GLASS MICROFIBER

CHMLAB offers a wide range of glass microfiber filters made of 100% borosilicate glass fibers without binders. The depth structure of the filter with its large surface area provides an outstanding impurity retention capacity combined with a low filter resistance. Glass fiber filters adsorb the finest particles down to 1  $\mu\text{m}$  from liquids and < 1  $\mu\text{m}$  in air and gases (even aerosols with this particle diameter are separated), as the electrostatic interaction between the glass fibers and gases is better than between glass fibers and liquids.

Temperature resistant up to 500°C (with organic binders up to 180°C)

### GF1 GRADE (1.6 $\mu\text{m}$ )

Particularly suited to atmospheric pollution controls, intake controls and ozone level measurements.

This product is used in testing for algae in water, in general water controls and in waste water analysis.

Its use for filtering solvents in high-resolution laboratories is recommended. The Trace Element Levels were obtained with an AAS (Atomic Absorption Spectrometer) with 100% dissolved fiberglass.

### GF2 GRADE (1.0 $\mu\text{m}$ )

It is mainly used in membrane pre-filtration.

The Trace Element Levels were obtained with an AAS (Atomic Absorption Spectrometer) with 100% dissolved fiberglass.

### GF3 GRADE (1.2 $\mu\text{m}$ )

This is the most suitable filter to test for solids in suspension in water in accordance with the parameters set by the EN European regulations. In general it is suitable for any work in water control or waste water analysis, including clarification processes.

In biochemical tests, it is very useful for analysing carbohydrates, cellular cultures, etc.

The Trace Element Levels were obtained with an AAS (Atomic Absorption Spectrometer) with 100% dissolved fiberglass.

### GF4 GRADE (2.7 $\mu\text{m}$ )

The most widespread use of this is in membrane pre-filtering.

Its high particle retention ensures that the sample is properly clarified before passing through surface filters (membrane filters).

The Trace Element Levels were obtained with an AAS (Atomic Absorption Spectrometer) with 100% dissolved fiberglass.

### GF5 GRADE (0.7 $\mu\text{m}$ )

This is the filter with the highest retention performance of the range. It is particularly suited to filter samples and solvents for HPLC, being this pre-filtration most important for ensuring the success of the test. It is also suitable for biochemical test, such as clarifications, protein filtrations, cellular cultures, etc.

The Trace Element Levels were obtained with an AAS (Atomic Absorption Spectrometer) with 100% dissolved fiberglass.

### GF6 GRADE (1.5 $\mu\text{m}$ )

Suitable for atmospheric pollution control, particularly in testing for air intake levels. It is also appropriate for waste water control, testing for solids in suspension, dissolved solids and volatile matter in accordance with the parameters set by the American Standard Methods.

It is also suitable for cellular cultures.

The Trace Element Levels were obtained with an AAS (Atomic Absorption Spectrometer) with 100% dissolved fiberglass.





#### TECHNICAL SPECIFICATIONS

GRADE	RETENTION RANGE µm	WEIGHT g/m <sup>2</sup>	THICKNESS mm	RETENTION DOP %	BINDER
GF1	1.6	52	0.26	99.998	NO
GF2	1.0	143	0.70	99.998	NO
GF3	1.2	53	0.26	99.998	NO
GF4	2.7	120	0.53	99.998	NO
GF5	0.7	75	0.45	99.998	NO
GF6	1.5	65	0.28	99.998	NO

#### ORDER INFORMATION

DIAMETER (mm)	GF1	GF2	GF3	GF4	GF5	GF6
<b>CIRCLES (100/box)</b>						
21	GF1-021	GF2-021	GF3-021	GF4-021	GF5-021	GF6-021
25	GF1-025	GF2-025	GF3-025	GF4-025	GF5-025	GF6-025
37	GF1-037	GF2-037	GF3-037	GF4-037	GF5-037	GF6-037
47	GF1-047	GF2-047	GF3-047	GF4-047	GF5-047	GF6-047
50	GF1-050	GF2-050	GF3-050	GF4-050	GF5-050	GF6-050
55	GF1-055	GF2-055	GF3-055	GF4-055	GF5-055	GF6-055
70	GF1-070	GF2-070	GF3-070	GF4-070	GF5-070	GF6-070
80	GF1-080	GF2-080	GF3-080	GF4-080	GF5-080	GF6-080
90	GF1-090	GF2-090	GF3-090	GF4-090	GF5-090	GF6-090
100	GF1-100	GF2-100	GF3-100	GF4-100	GF5-100	GF6-100
110	GF1-110	GF2-110	GF3-110	GF4-110	GF5-110	GF6-110
125	GF1-125	GF2-125	GF3-125	GF4-125	GF5-125	GF6-125
150	GF1-150	GF2-150	GF3-150	GF4-150	GF5-150	GF6-150
185	GF1-185	GF2-185	GF3-185	GF4-185	GF5-185	GF6-185
200	GF1-200	GF2-200	GF3-200	GF4-200	GF5-200	GF6-200
240	GF1-240	GF2-240	GF3-240	GF4-240	GF5-240	GF6-240
270	GF1-270	GF2-270	GF3-270	GF4-270	GF5-270	GF6-270
293	GF1-293	GF2-293	GF3-293	GF4-293	GF5-293	GF6-293
320	GF1-320	GF2-320	GF3-320	GF4-320	GF5-320	GF6-320
<b>SHEETS (100/pack)</b>						
<b>SIZE (mm)</b>						
203x254	GF1-203254	GF2-203254	GF3-203254	GF4-203254	GF5-203254	GF6-203254
460x570	GF1-460570	GF2-460570	GF3-460570	GF4-460570	GF5-460570	GF6-460570

## 1.5 QUARTZ MICROFIBER

The CHM® quartz microfiber filters are made with pure quartz microfibers and are free of binders or additives of any kind. These filters have retention, loading and air permeability features similar to those of the glass microfiber filters. However, since they have greater chemical resistance at high temperatures, they can be used in environments in which extreme conditions are present, replacing the glass microfiber filters in such cases.

They are specially suited to emission monitoring and in general they allow gravimetric testing in any gas evacuation control process. They are suitable for ascertaining the level of heavy metals in atmospheric pollution studies.

### Characteristics:

**Retention:** Excellent retention levels for very fine particles, on account of the adsorption mechanisms of the quartz fibers.  
**Permeability to the air:** Very high, enabling large volumes of air to pass through, thus they are appropriate for use in high-volume intakes.

**Temperature stability:** Their temperature stability is higher than the glass microfiber filters. It is very good up to 900°C, some loss of their usual properties setting in beyond that point.

**Chemical stability:** Excellent stability, with practically no filter-mass losses through chemical reactions under extreme conditions with the presence of acid gases (HCl, SO<sub>2</sub>, SO<sub>3</sub>, H<sub>2</sub>, SO<sub>4</sub>, NO and NO<sub>3</sub>).

TECHNICAL SPECIFICATIONS					
GRADE	WEIGHT g/m <sup>2</sup>	THICKNESS mm	RETENTION DOP %	MAXIMUM TEMPERATURE (°C)	BINDER
QF1	85.0	0.44	99.998	900	NO

ORDER INFORMATION	
DIAMETER (mm)	QF1
<b>CIRCLES (25/box)</b>	
21	QF1-021
25	QF1-025
37	QF1-037
40	QF1-040
42	QF1-042
47	QF1-047
50	QF1-050
55	QF1-055
70	QF1-070
80	QF1-080
90	QF1-090
100	QF1-100
110	QF1-110
125	QF1-125
142	QF1-150
150	QF1-185
185	QF1-200
240	QF1-240
270	QF1-270
293	QF1-293
320	QF1-320
<b>SHEETS (25/pack)</b>	
203x254	QF1-203254



## 1.6 EXTRACTION THIMBLES

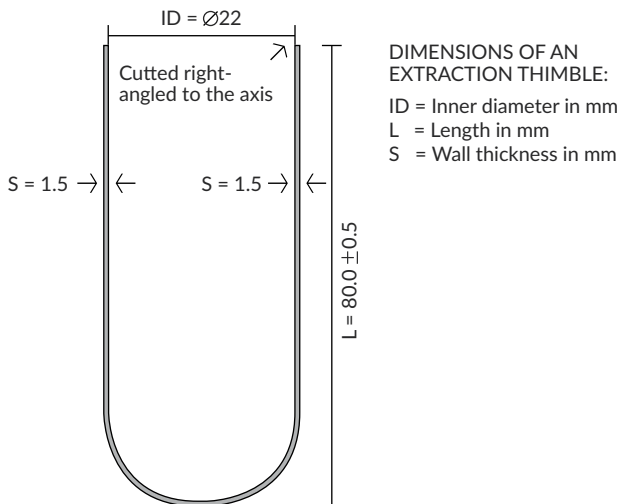
CHM® extraction thimbles are manufactured in three versions:

1. High purity cellulose
2. Pure borosilicate glass microfiber
3. High purity quartz microfiber

They are used for reliable and fast analysis in the pharmaceutical formulations, food controls and environmental monitoring. The extraction thimbles are suitable for Soxhlet-type, Tecator type or similar devices.

They are located in the extractor body, used to accommodate a sample of solid material to extract certain components out, with the addition of an appropriate solvent.

e.g. F5800-2208



### Cellulose extraction thimbles

CHM® F5800 high quality Cellulose Extraction Thimbles are made from high-alpha cellulose cotton linters with rounded bottom.

Their main features of high purity and the strong mechanical structure and retentivity offer a special combination of advantages to the laboratory user. Indicated for fat extraction in food industry, extraction of polymers, environmental pollutants determination, etc.

Maximum working temperature 120°C.

They are usually used in extractors of the "Soxhlet", "Tecator" or similar types, in order to collect solid material from which some component must be separated out by dissolving in a suitable solvent.

The thimbles size selection should be done carefully to fit extractors correctly. The references sizes are internal diameter and the length in mm (an extra allowance for wall thickness should be added when selecting external diameters).

Tolerances according to DIN 12449:

- Internal diameter +0/-3mm
- Thimble height ±1mm
- Wall thickness 1.5 ±0.5mm
- Ash content <0.1%





ORDER INFORMATION					
SIZE (mm) Int x lenght	ORDER NUMBER	SIZE (mm) Int x lenght	ORDER NUMBER	SIZE (mm) Int x lenght	ORDER NUMBER
25/box					
10x50	F5800-10050	26x60 T	F5800-26060T	33x94*	F5800-33094
19x90	F5800-19090	27x80	F5800-27080	33x100	F5800-33100
20x80	F5800-20080	28x22***	F5800-28022	33x118	F5800-33118
22x80*	F5800-22080	28x100	F5800-28100	35x100	F5800-35100
22x100	F5800-22100	30x77	F5800-30077	35x150	F5800-35150
25x60	F5800-25060	30x80	F5800-30080	40x123	F5800-40123
25x80	F5800-25080	30x100	F5800-30100	43x123	F5800-43123
25x100*	F5800-25100	33x80**	F5800-33080	48x145	F5800-48145

\* Fits Büchi B-811 | \*\* Fits Gerhard Soxterm Automatic, Foss Tecator Systems, Velp Solvent Extractors | \*\*\* Fits Foss Soxtec 2050

## Glass microfiber thimbles

CHM® F5900 high quality glass microfiber thimbles are made from 100% pure borosilicate fibers. They have special advantages since no binders of any kind are used in their manufacture process.

They are particularly suitable when solvents that are incompatible with cellulose thimbles are present. They are widely used for gas emission controls for industrial chimneys, for gas pre-filtration upstream of measuring apparatus, for gravimetric testing for dust in hot gases, etc. Maximum operating temperature for glass microfiber 500°C.

They have all the associated properties (high loading capacity, high retention of very small particles, high air permeability and good stability at high temperatures) and the same limitation when working with highly concentrated acid or alkaline solutions, for which the use of CHM® F5990 micro-quartz extraction thimbles is recommended.

Tolerances for F5900 glass microfiber thimbles:

- Internal diameter +1/-3mm
- Thimble height  $\pm 1$ mm
- Wall thickness  $2 \pm 0.5$ mm





TECHNICAL SPECIFICATIONS			
GRADE	PENETRATION % (0.3 µm)	MAXIMUM TEMPERATURE (°C)	BINDER
F5900	<0.002	500	NO

ORDER INFORMATION	
SIZE (mm) (*) Int x lenght	ORDER NUMBER
25/box	
10x50	F5900-10050
19x90	F5900-19090
22x80	F5900-22080
26x60	F5900-26060
30x80	F5900-30080
30x100	F5900-30100
33x80	F5900-33080
33x94	F5900-33094
33x150	F5900-33150
43x123	F5900-43123
53x145	F5900-53145



(\*) Other sizes are available under request.

## Quartz microfiber thimbles

CHM® F5990 thimbles are made from high purity quartz microfiber. These thimbles are able to withstand high temperatures (up to 900°C), and meet the highest requirements for purity, especially because of their low heavy metal content.

Suitable for both solvent extraction and air sampling applications.

Tolerances for F5990 micro-quartz extraction thimbles:

- Internal diameter +0/-3mm
- Thimble height ±1mm
- Wall thickness 2 ±0.5mm

TECHNICAL SPECIFICATIONS			
GRADE	PENETRATION % (0.3 µm)	MAXIMUM TEMPERATURE (°C)	BINDER
F5990	<0.002	900	NO

ORDER INFORMATION	
SIZE (mm) (*) Int x lenght	ORDER NUMBER
25/box	
19x90	F5990-19090
25x80	F5990-25080
25x100	F5990-25100
30x77	F5990-30077
30x100	F5990-30100
33x94	F5990-33094



(\*) Other sizes are available under request.

## 1.7 SURFACE PROTECTION

### Filter paper in reams

The range of CHM® filter paper reams is made from high quality cellulose fibers, assuring good wet strength and high absorption capacity, being these essential features of these papers.

#### F4573 GRADE - Thick paper

This is the thickest quality in the range. Particularly suitable for general laboratory work requiring high absorption power.

#### F4560 GRADE - Medium thickness

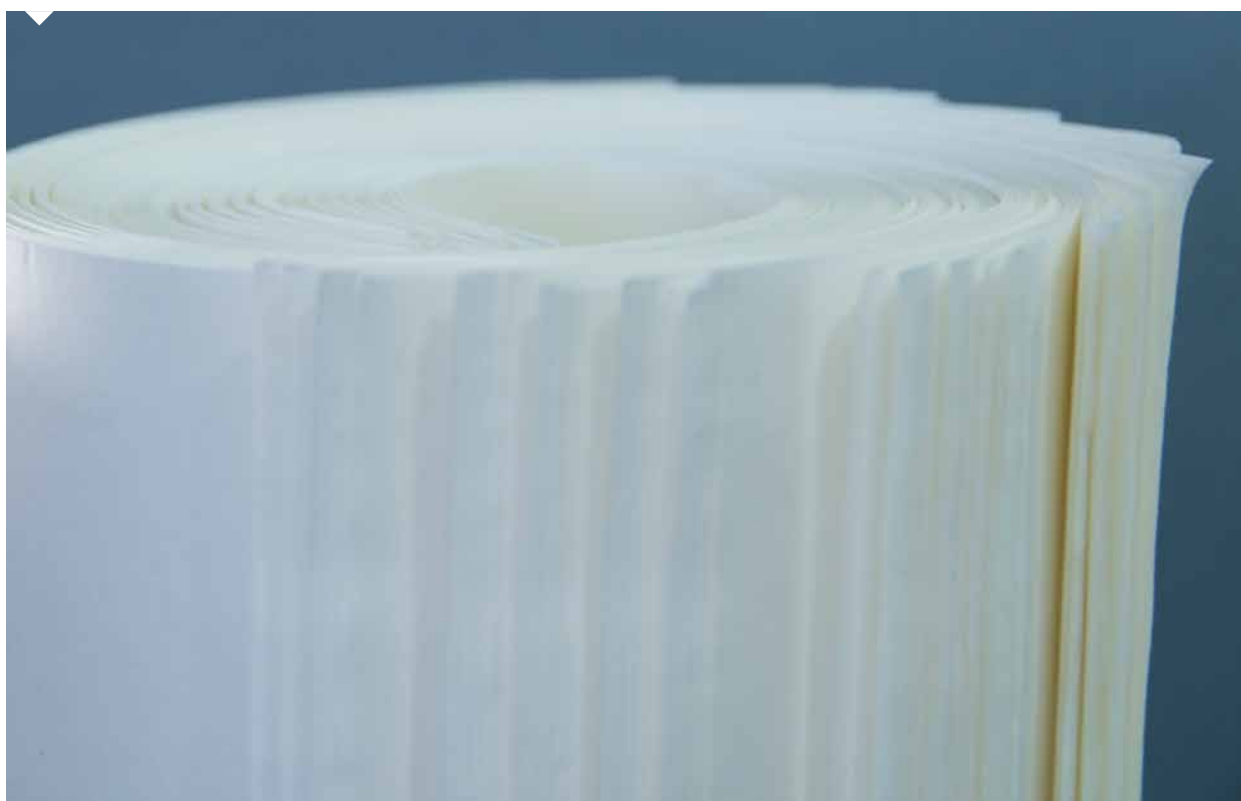
Filter paper of medium thickness and basis weight with excellent absorption properties. Available in reams and other formats.

#### F4550 GRADE - Fine

This paper is finer and has a lower basis weight than the other references.

TECHNICAL SPECIFICATIONS				
GRADE	WEIGHT g/m <sup>2</sup>	THICKNESS mm	ABSORPTION KLEMM	WET TRACTION RESISTANCE
F4573	73	0.170	75/70	0.290/0.260
F4560	60	0.130	60/55	0.280/0.230
F4550	50	0.115	55/55	0.260/0.190

ORDER INFORMATION			
SIZE (mm)	F4573	F4560	F4550
500 sheets/box			
32x42	F4573-320420Q	F4560-320420Q	F4550-320420Q
42x52	F4573-420520Q	F4560-420520Q	F4550-420520Q
50x50	F4573-500500Q	F4560-500500Q	F4550-500500Q
52x52	F4573-520520Q	F4560-520520Q	F4550-520520Q
58x58	F4573-580580Q	F4560-580580Q	F4550-580580Q



## Coated paper

S1505 and S1506 GRADE are two layer highly absorptive grades of paper coated. Top layer to capture any spills consists of highly absorbent cellulose. The bottom layer with polyethylene prevents the covered surface from contamination. Used with the polyethylene side up, the papers are highly useful for recovery of valuable or toxic liquids. Coated surface protection papers can be treated with disinfectants for use in clinical laboratories to prevent biological contamination.

### Applications:

- Preventing radioactive contamination of work surfaces in radiochemical laboratories
- Recovering spilled solutions containing expensive reagents
- Protecting laboratory bench surfaces from spillage or splashes of liquids by preventing absorption and seepage of these liquids into work surfaces
- Lining animal cages for protection and hygiene
- Reducing the risk of objects breaking after falling on hard surfaces because the carrier material reduces impact



### TECHNICAL SPECIFICATIONS

GRADE	WEIGHT g/m <sup>2</sup>	WATER ABSORPTION	FEATURES
S1505	135	150%	Highly absorbent
S1506	185	300%	Ultra absorbent

### ORDER INFORMATION

SIZE (mm)	S1505	S1506
<b>100 sheets/box</b>		
46x57	S1505-460570H	
48x60	S1505-480600H	S1506-480600H
<b>1 reel/pack</b>		
500x50m	S1505-50050B	
600x50m		S1506-60050B

## 1.8 PHASE SEPARATION PAPERS

The CHM® P1000 hydrophobic paper separates aqueous from organic phases.

The solvent phase allows passage through the organic phase while retaining the aqueous phase.

The process terminates when the entire organic phase has passed through the filter, thereby providing a clean, particle-free organic phase. The phase separator paper can be used for all types of organic solutions, such as ether, petroleum, chloroform, etc.

ORDER INFORMATION		
DIAMETER (mm)	ORDER NUMBER	QUANTITY/BOX
70	P1000-070	100
80	P1000-080	100
90	P1000-090	100
100	P1000-100	100
110	P1000-110	100
125	P1000-125	100
150	P1000-150	100
185	P1000-185	100
200	P1000-200	100
240	P1000-240	100
270	P1000-270	100
320	P1000-320	100

(\* Add an F at the end of the reference for folded circles (e.g. P1000-150F) | Other sizes and packaging are available under request.



## 1.9 pH INDICATOR AND TEST PAPERS

CHMLAB offers a wide range of high quality test papers for rapid determination of pH values

- High quality full range test papers
- Instant and portable pH reading
- Available in reels and strips
- Simple to use and economical

**CHM® E2000 & E2001 pH Test Strips** combine ease-of-use with accuracy, reliability and consistency.

The convenience of using indicator papers for the simple and rapid determination of pH values has led to many applications in laboratories and in industry.

### Universal indicator strips (non-bleed)

The indicator pads on these environmentally friendly strips are prepared as a non bleed system therefore the resultant colour change remains far longer and readable until the pad is dry.

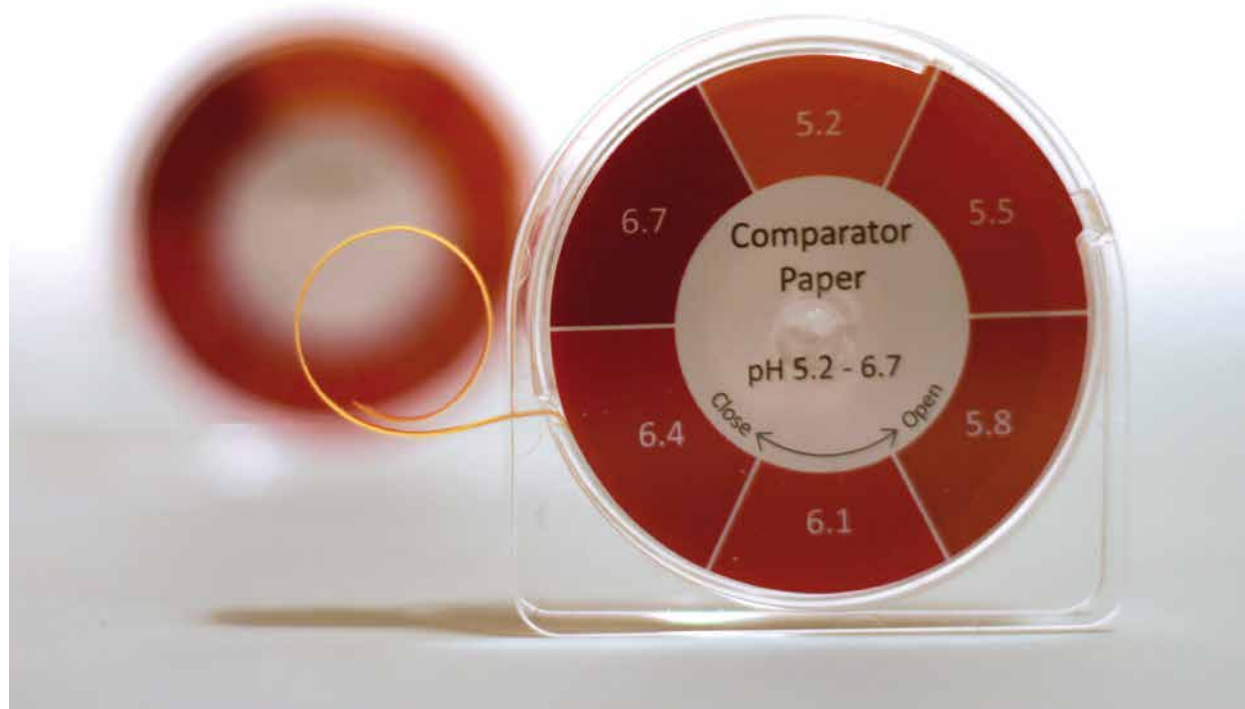
Each strip is long enough to protect the user from the test solution as the test pads are at the extreme end of the strip.

For accurate pH readings, these strips use 4 different indicator pads and the colours on the enclosed colour chart match the colour and position of each pad on the strip. This allows these strips to provide a rapid method of measuring the pH of a solution while producing high quality results each time.

Strips with the non-bleed system provide precise pH values as the different colours do not mix at the point of testing.

### Test papers

Universal Test Indicator Paper is one of the most popular pH test papers. They provide a quick and easy method of indicating the pH of a solution by using a single colour change which can be matched to the colour chart. Universal pH indicator papers are available in different ranges of pH to give the user the level of accuracy needed (intervals of 0.2 - 0.5 - 1.0 pH).





## ORDER INFORMATION

SCALE	DESCRIPTION	PRESENTATION	ORDER NUMBER
pH 1.0 - 3.5	pH 1.0 - 1.5 - 2.0 - 2.5 - 3.0 - 3.5	200 strips per pack	E2001-1035D
		1 reel (5 m x 7 mm)	E2001-1035R
pH 3.6 - 5.1	pH 3.6 - 3.9 - 4.2 - 4.8 - 5.1	200 strips per pack	E2001-3651D
		1 reel (5 m x 7 mm)	E2001-3651R
pH 5.2 - 6.7	pH 5.2 - 5.5 - 5.8 - 6.1 - 6.4 - 6.7	200 strips per pack	E2001-5267D
		1 reel (5 m x 7 mm)	E2001-5267R
pH 6.8 - 8.3	pH 6.8 - 7.1 - 7.4 - 7.7 - 8.0 - 8.3	200 strips per pack	E2001-6883D
		1 reel (5 m x 7 mm)	E2001-6883R
pH 8.3 - 10.0	pH 8.4 - 8.7 - 9.0 - 9.3 - 9.6 - 10.0	200 strips per pack	E2001-8310D
		1 reel (5 m x 7 mm)	E2001-8310R
pH 4.0 - 8.0	pH 4.0 - 4.5 - 5.0 - 5.5 - 6.0 - 6.5 - 7.0 - 7.5 - 8.0	200 strips per pack	E2001-4080D
		1 reel (5 m x 7 mm)	E2001-4080R
pH 4.0 - 5.6	pH 4.0 - 4.2 - 4.4 - 4.6 - 4.8 - 5.0 - 5.2 - 5.4 - 5.6	200 strips per pack	E2001-4056D
		1 reel (5 m x 7 mm)	E2001-4056R
pH 6.2 - 7.8	pH 6.2 - 6.4 - 6.6 - 6.8 - 7.0 - 7.2 - 7.4 - 7.6 - 7.8	200 strips per pack	E2001-6278D
		1 reel (5 m x 7 mm)	E2001-6278R
pH 0 - 14 pad (4 pad)	Universal Indicator Strips pH 0 - 14, pH 0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14	100 strips per pack	E2000-0014H
pH 0 - 14	pH 0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14	1 reel (5 m x 7 mm)	E2000-0014R

Other test papers available under request.





## MICROFILTRATION

MEMBRANE FILTERS

SYRINGE FILTERS

VENTING FILTERS

BLOOTING MEMBRANES

MEMBRANE DISPENSER

MICROBIOLOGICAL MONITORS

MEMBRANE HARDWARE

STERILE DISPOSABLE VACUUM FILTRATION UNITS



# MICROFILTRATION

Microfiltration is a membrane technical filtration process which removes contaminants from a fluid (liquid or gas) by passing through a microporous membrane.

Membrane filters are surface filters with a precise micro-porous structure. They are used to separate, remove particles or collect micro-organisms for analysis from a fluid.

Particles bigger than the nominal porosity remain on the filter surface, whilst smaller particles go through the filter unless other interactions into the filter retain them into the filter matrix.

The microfiltration is slower than the filtration with the filter papers (depth filters).

Membranes are made of different polymers and are available in several diameters and pore sizes.

Membrane filters are used in microbiological quality control procedures for a wide range of industries; food, beverage, pharmaceutical, cosmetics, etc.

## 2.1 MEMBRANE FILTERS

### *CHM® MCA Cellulose Acetate membrane filters*

Cellulose Acetate membranes type MCA, are recommended for the aqueous samples, biological applications and protein filtration.

Filtration membranes are composed of pure cellulose acetate that is internally supported by an inert polyester web. Its uniform pore size and consistent flow rates ensure reliable performance.

These membranes combine high flow rates and thermal stability with very low adsorption characteristics, making the 0.2 µm pore size perfectly suited for use in disc filter holders to sterilize aqueous solutions, buffers and media. They are also low in extractables and can be repeatedly autoclaved.

They are supplied in four pore sizes, 0.2, 0.45, 0.65 and 0.80 µm, and in seven different diameters, 13, 25, 47, 50, 90, 142 and 293 mm (other diameters available under request).

#### Features:

- Hydrophilic membrane
- Compatible to aqueous solutions with pH 4-8, most alcohols, hydrocarbons and oils
- Low extractables: ensures tests will be clean with consistent results
- Exceptional dimensional strength and low binding characteristics
- High flow rate

#### Applications:

- Aqueous solutions filtration
- Protein and enzyme filtration
- Biological and clinical analysis
- Tissue culture media sterilization

### TECHNICAL SPECIFICATIONS

PORE SIZES	0,2 µm	0,45 µm	0,65 µm	0,8 µm
Bubble point minimum value, wetted with water	3.5 bar (350 kPa)	2.0 bar (200 kPa)	1.3 bar (130 kPa)	0.80 bar (80 kPa)
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	22 ml/min	69 ml/min	130 ml/min	200 ml/min
Filter diameter	13 mm, 25mm, 47mm, 50 mm, 90mm, 142 mm, 293 mm (other sizes available under request)			
Material	Cellulose acetate membrane			
Thickness average value	135 µm			
Sterilization	By autoclaving at 121 °C or 134°C, with gamma-radiation or with ethylene oxide			
Thermal stability	Max. 180 °C			
Chemical compatibility	Resistant to aqueous solutions in pH range 4-8, to most alcohols, hydrocarbons and to oils (see chemical compatibility table)			
Extractables	With water less than 1%			



### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MCA020013H	0.2	13	NO	100
MCA020025H	0.2	25	NO	100
MCA020047H	0.2	47	NO	100
MCA020050H	0.2	50	NO	100
MCA020090T	0.2	90	NO	25
MCA020142T	0.2	142	NO	25
MCA020293T	0.2	293	NO	25
MCA045013H	0.45	13	NO	100
MCA045025H	0.45	25	NO	100
MCA045047H	0.45	47	NO	100
MCA045050H	0.45	50	NO	100
MCA045090T	0.45	90	NO	25
MCA045142T	0.45	142	NO	25
MCA045293T	0.45	293	NO	25
MCA065025H	0.65	25	NO	100
MCA065047H	0.65	47	NO	100
MCA065050H	0.65	50	NO	100
MCA065090T	0.65	90	NO	25
MCA065142T	0.65	142	NO	25
MCA065293T	0.65	293	NO	25
MCA080013H	0.8	13	NO	100
MCA080025H	0.8	25	NO	100
MCA080047H	0.8	47	NO	100
MCA080050H	0.8	50	NO	100
MCA080090T	0.8	90	NO	25
MCA080142T	0.8	142	NO	25
MCA080293T	0.8	293	NO	25

## CHM® MRC Regenerated Cellulose membrane filters

CHM® MRC - Regenerated Cellulose membranes for the filtration of organic solvents. These solvent-resistant hydrophilic membrane filters are perfectly suited for particle removal from solvents. Often used for ultra-cleaning and de-gassing solvents and mobile phases for HPLC in combination with the All-glass holder (our references FS047300T and FS047300S).

They are compatible with:

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

### Features:

- Hydrophilic
- Excellent chemical compatibility and resistance to organic solvents
- Low non-specific adsorption
- Superior thermal resistance
- High mechanical strength

### Applications:

- Filtration of aqueous and organic solutions
- Particle removal from organic solvents or mixtures of aqueous and non-aqueous samples
- Ultra-cleaning and de-gassing solvents and mobile phases for HPLC
- Clarification
- Protein chemistry



### TECHNICAL SPECIFICATIONS

PORE SIZES	0,2 µm	0,45 µm
Bubble point minimum value, wetted with water	4.7 bar (470 kPa)	3.0 bar (300 kPa)
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	16 ml/min	28 ml/min
Filter diameter	13 mm, 25 mm, 47 mm, 50 mm, 90 mm, 142 mm, 293 mm. (Other sizes available under request).	
Material	Regenerated cellulose membrane reinforced with no-woven cellulose	
Thickness average value	160-200 µm	
Sterilization	By autoclaving at 121 °C or 134°C, with gamma-radiation or with ethylene oxide	
Chemical compatibility	Resistant to almost all solvents (see table above) and to aqueous solutions in the pH range 3-12 (see chemical compatibility table)	
Extractables	With water less than 1%	

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MRC020013H	0.2	13	NO	100
MRC020025H	0.2	25	NO	100
MRC020047H	0.2	47	NO	100
MRC020050H	0.2	50	NO	100
MRC020090T	0.2	90	NO	25
MRC020142T	0.2	142	NO	25
MRC020293T	0.2	293	NO	25
MRC045013H	0.45	13	NO	100
MRC045025H	0.45	25	NO	100
MRC045047H	0.45	47	NO	100
MRC045050H	0.45	50	NO	100
MRC045090T	0.45	90	NO	25
MRC045142T	0.45	142	NO	25
MRC045293T	0.45	293	NO	25



## CHM® MCN Cellulose Nitrate (Ester) membrane filters

Cellulose Nitrate membranes for sample pre-treatment, particle testing and chemotaxis.

Available in white, black or green, gridded (3.1 x 3.1 mm) or plain, sterile or non-sterile

They are ready-to use membranes and save preparatory time. Filter identification and lot number are printed on the box or on each individual envelope for the sterile versions.

### Features:

- Hydrophilic membrane
- Made of Cellulose Nitrate. This material assures excellent retention and optimum colony growth
- Very uniform pore structure which ensures homogeneous distribution of the particles retained on the filter surface
- Various colours give the best contrast to the colonies which are to be counted
- Maximum temperature 130°C
- Autoclavable
- Very high flow rate

### Applications:

- Clarification and sterilisation of aqueous solutions
- Microbiological analysis and particle counts
- Particle size analysis
- Pre-filtration and clarification of samples prior to further analysis
- Removal of particles in suspensions to determine the degree of impurity

### TECHNICAL SPECIFICATIONS

PORE SIZES	0,2 µm	0,45 µm	0,65 µm	0,8 µm	1,2 µm	3 µm	5 µm	8 µm
Bubble point minimum value, wetted with water	4.0 bar (470 kPa)	2.5 bar (000 kPa)	2.0 bar (000 kPa)	1.4 bar (000 kPa)	1.0 bar (000 kPa)	0.6 bar (000 kPa)	0.5 bar (000 kPa)	0.3 bar (000 kPa)
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	20 ml/min	69 ml/min	130 ml/min	200 ml/min	320 ml/min	430 ml/min	570 ml/min	750 ml/min
Filter diameter	13 mm, 25 mm, 47 mm, 50 mm, 90 mm, 142 mm, 293 mm. (Other sizes available under request).							
Material	Cellulose Nitrate							
Thickness average value	Between 90 µm and 140 µm according to different pore size							
Sterilization	By autoclaving (at 121 °C), with gamma radiation or with ethylene oxide							
Thermal stability	Max. 130 °C							
Chemical compatibility	Resistant to aqueous solutions in the pH range 4-8, to hydrocarbons and to some solvents (see chemical compatibility table)							
Extractables	With water less than 1%							

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MCN020013H	0.2	13	NO	100
MCN020025H	0.2	25	NO	100
MCN020047H	0.2	47	NO	100
MCN020050H	0.2	50	NO	100
MCN020090T	0.2	90	NO	25
MCN020142T	0.2	142	NO	25
MCN020293T	0.2	293	NO	25
MCN045013H	0.45	13	NO	100
MCN045025H	0.45	25	NO	100
MCN045047H-S	0.45	47	YES	100



ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MCN045047H	0.45	47	NO	100
MCN045050H	0.45	50	NO	100
MCN045090T	0.45	90	NO	25
MCN045142T	0.45	142	NO	25
MCN045293T	0.45	293	NO	25
MCN065025H	0.65	25	NO	100
MCN065047H-S	0.65	47	YES	100
MCN065047H	0.65	47	NO	100
MCN065050H-S	0.65	50	YES	100
MCN065050H	0.65	50	NO	100
MCN065090T	0.65	90	NO	25
MCN065142T	0.65	142	NO	25
MCN065293T	0.65	293	NO	25
MCN080013H	0.8	13	NO	100
MCN080025H	0.8	25	NO	100
MCN080047H-S	0.8	47	YES	100
MCN080047H	0.8	47	NO	100
MCN080050H	0.8	50	NO	100
MCN080090T	0.8	90	NO	25
MCN080142T	0.8	142	NO	25
MCN080293T	0.8	293	NO	25
MCN120025H	1.2	25	NO	100
MCN120047H-S	1.2	47	YES	100
MCN120047H	1.2	47	NO	100
MCN120050H	1.2	50	NO	100
MCN120090T	1.2	90	NO	25
MCN120142T	1.2	142	NO	25
MCN120293T	1.2	293	NO	25
MCN300013H	3	13	NO	100
MCN300025H	3	25	NO	100
MCN300047H-S	3	47	YES	100
MCN300047H	3	47	NO	100
MCN300050H	3	50	NO	100
MCN300142T	3	142	NO	25
MCN300293T	3	293	NO	25
MCN500013H	5	13	NO	100
MCN500025H	5	25	NO	100
MCN500047H	5	47	NO	100
MCN500050H	5	50	NO	100
MCN500142T	5	142	NO	25
MCN500293T	5	293	NO	25
MCN800013H	8	13	NO	100
MCN800025H	8	25	NO	100
MCN800037H	8	37	NO	100
MCN800047H-S	8	47	YES	100
MCN800047H	8	47	NO	100
MCN800050H	8	50	NO	100
MCN800142T	8	142	NO	25
MCN800293T	8	293	NO	25

## CHM® MNW, MNB, MNG Cellulose Nitrate gridded membrane filters for microbiological analysis

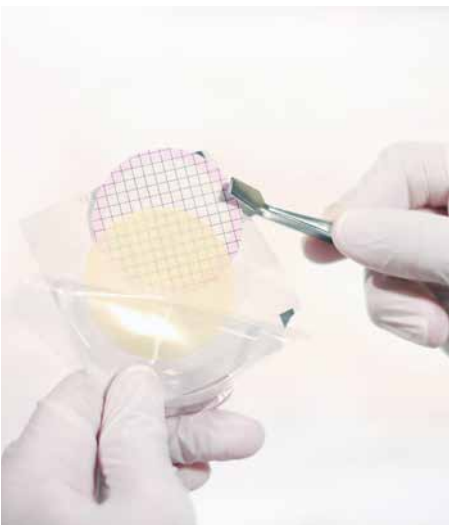
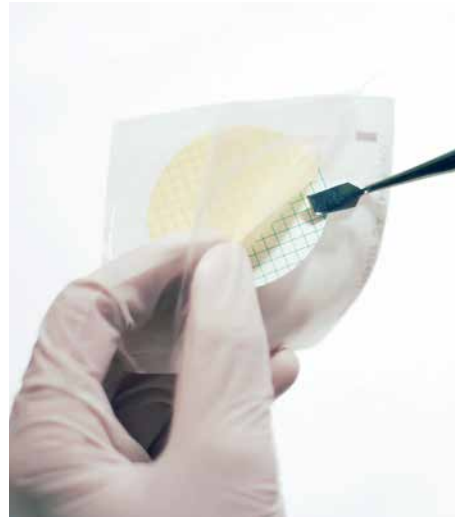
Cellulose Nitrate gridded membranes, sterile and individually packed, for colony counts in routine microbiological quality control.

They are ready-to use membranes and save preparatory time. Filter identification and lot number are printed on the box or on each individual envelope for the sterile versions.

The grid size is 3.1x3.1 mm. Available in various colours which the best contrast to the colonies to be counted (white, black and green).

Hydrophobic edge membranes are used mainly in the sterility testing solutions containing antibiotics.

ORDER INFORMATION				
ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
CHM® MNW - Cellulose Nitrate white membranes. Black grid				
MNW020047H-SG	0.2	47	YES	100
MNW020047M-SG	0.2	47	YES	1000
MNW020047H-G	0.2	47	NO	100
MNW045025H-G	0.45	25	NO	100
MNW045047H-SG	0.45	47	YES	100
MNW045047M-SG	0.45	47	YES	1000
MNW045047H-G	0.45	47	NO	100
MNW045047R-SG (*)	0.45	47	YES	300
MNW065047H-SG	0.65	47	YES	100
MNW065047M-SG	0.65	47	YES	1000
MNW065047H-G	0.65	47	NO	100
MNW080047H-SG	0.8	47	YES	100
MNW080047M-SG	0.8	47	YES	1000
MNW080047H-G	0.8	47	NO	100
MNW120025H-G	1.2	25	NO	100
MNW120047H-SG	1.2	47	YES	100
MNW120047M-SG	1.2	47	YES	1000
MNW120047H-G	1.2	47	NO	100
CHM® MNB - Cellulose Nitrate black membranes. White grid. For the detection of yeasts and moulds				
MNB045047H-SW	0.45	47	YES	100
MNB045047M-SW	0.45	47	YES	1000
MNB065047H-SW	0.65	47	YES	100
MNB080047H-SW	0.8	47	YES	100
MNB080047M-SW	0.8	47	YES	1000
CHM® MNG - Cellulose Nitrate Green membranes. Dark green grid. For colony counts				
MNG045047H-SV	0.45	47	YES	100
MNG045047M-SV	0.45	47	YES	1000
CHM® MNW - Cellulose Nitrate white membranes. Green grid and for E.coli and coliforms				
MNW045047H-SV	0.45	47	YES	100
MNW045047M-SV	0.45	47	YES	1000
CHM® MNW - Cellulose Nitrate membranes. Black grid and pink hydrophobic edge				
MNW020047H-SGP3 3 mm edge	0.2	47	YES	100
MNW020050H-SGP3 3 mm edge	0.2	50	YES	100
MNW045047H-SGP3 3 mm edge	0.45	47	YES	100
MNW045050H-SGP3 3 mm edge	0.45	50	YES	100
MNW045047H-SGP6 6 mm edge	0.45	47	YES	100
(*) pack for membrane dispenser				



## CHM® MPC Polycarbonate membranes

CHM® MPC Polycarbonate membranes are manufactured from high grade polycarbonate film using track-etch technology. The resulting membrane is a thin, translucent and microporous polycarbonate film with a smooth flat surface.

Their capillary pore structure is uniform and precise with a narrow pore size distribution. The surface makes them ideal for particle identification by microscopy.

Provides flow control for liquids moving through the membrane capturing 100 percent of cells larger than pore size.

Available as standard in six different pore sizes: 0.1, 0.2, 0.4, 0.6, 0.8 and 1.0 µm and in 2 different diameters 25 and 47 mm. Other pore sizes (2, 3, 5, 8, 12, 14 and 20 µm) are available under request.

### Features:

- Made of high grade polycarbonate film
- Hydrophilic
- High translucency.
- High flow rate
- A very smooth and shiny surface on both sides facilitates easy sample examination
- Low extractables
- Low protein binding
- Available as hydrophilic or hydrophobic
- Sterilisation: by autoclaving at 121°C or 134°C, γ-radiation or ethylene oxide

### Applications:

- Particulate analysis
- Epifluorescence microscopy
- Fluid clarification
- Cytology
- Biological tests, cell biology and cell cultures
- Removal of red blood cells from plasma
- Water microbiology (analysis for Legionella in drinking water)
- Environmental analysis (detection of AOX in water)

### TECHNICAL SPECIFICATIONS

PORE SIZES	0.1 µm	0.2 µm	0.4 µm	0.6 µm	0.8 µm	1.0 µm
Bubble point minimum value, wetted with water	30 psi	20 psi	12 psi	9 psi	7 psi	6 psi
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	2.5 ml/min	10 ml/min	33 ml/min	60 ml/min	90 ml/min	130 ml/min
Filter diameter	25 mm, 47 mm					
Material	Polycarbonate					
Thickness average value	Between 5 µm and 12 µm according to different pore size					
Sterilization	By autoclaving at 121 °C					
Chemical compatibility	See chemical compatibility table					
Extractables	Low extractables					

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm) (*)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MPC010025H	0.1	25	NO	100
MPC010047H	0.1	47	NO	100
MPC020025H	0.2	25	NO	100

ORDER INFORMATION				
ORDER NUMBER	PORE SIZE (µm) (*)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MPC020047H	0.2	47	NO	100
MPC040025H	0.4	25	NO	100
MPC040047H	0.4	47	NO	100
MPC060025H	0.6	25	NO	100
MPC060047H	0.6	47	NO	100
MPC080025H	0.8	25	NO	100
MPC080047H	0.8	47	NO	100
MPC100025H	1.0	25	NO	100
MPC100047H	1.0	47	NO	100

(\*) Also available in other pore sizes under request

## CHM® MTF PTFE membrane filters

They are made purely of PTFE (polytetrafluoroethylene) and are therefore permanently hydrophobic. Unlike other (hydrophilic) filter types, they are not wetted by air humidity, allowing unhindered passage of air at low differential pressures.

CHM® MTF membrane filters have an excellent chemical compatibility; they are also used for the filtration of aggressive chemicals, and acids, to which other filter types are not resistant.

Due to their hydrophobic characteristics, they must be pre-wetted with ethanol or methanol before the filtration of aqueous media.

The main application of this membrane filter type is air/gas filtration.

### Features:

- Naturally hydrophobic
- Compatible with strong acids and aggressive solutions
- Allowing passage of air even at low differential pressure
- Sterilisation by at 121 °C or 134°C or by ethylene oxide
- Extractables with water not detected

### Applications:

- Filtration of strong acids and aggressive solutions
- Clarifying corrosive substances, strong acids and alkalis (0.45 µm)
- Clarification of samples and mobile phases of HPLC and GC (0.45 µm)
- Sterilisation of air and gases (0.2 µm)
- Venting applications
- Phase separations

TECHNICAL SPECIFICATIONS				
PORE SIZES	0.1 (air), 0.05, 0.1, 0.22, 0.45, 1.0, 3.0, 5.0, 10.0			
Bubble point minimum value, wetted with water	1.2 bar (0.2 µm)	0.8 bar (0.45 µm)	0.45 bar (1 µm)	0.1 bar (5 µm)
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	0.2 ml/min (0.2 µm)	0.3 ml/min (0.45 µm)	1.6 ml/min (1 µm)	4 ml/min (5 µm)
Filter diameter	13 mm, 25 mm, 47 mm, 50 mm, 90 mm, 142 mm, 293 mm. (Other sizes available under request).			
Material	Polytetrafluoroethylene			
Thickness average value	Between 150 µm and 250 µm according to different pore size			
Sterilization	By autoclaving at 121 °C or 134 °C and with ethylene oxide			
Chemical compatibility	Resistant to almost all chemicals (see chemical compatibility table)			
Extractables	With water none detectable			

## ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm) (*)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MTF020013H	0.2	13	NO	100
MTF020025H	0.2	25	NO	100
MTF020047H	0.2	47	NO	100
MTF020050H	0.2	50	NO	100
MTF020090T	0.2	90	NO	25
MTF020142T	0.2	142	NO	25
MTF045013H	0.45	13	NO	100
MTF045025H	0.45	25	NO	100
MTF045047H	0.45	47	NO	100
MTF045050H	0.45	50	NO	100
MTF045090T	0.45	90	NO	25
MTF045142T	0.45	142	NO	25
MTF100025H	1	25	NO	100
MTF100047H	1	47	NO	100
MTF100142T	1	142	NO	25
MTF500025H	5	25	NO	100
MTF500047H	5	47	NO	100
MTF500142T	5	142	NO	25

(\*) Also available in other pore sizes between 0.01 and 10 µm under request

## CHM® MNY Nylon membrane filters

CHM® MNY nylon membrane filters are membranes of hydrophilic nature and chemically resistant to most bases, making them particularly indicated for clarification and sterilization of alkaline solutions.

This type of membranes is compatible with most aqueous samples and some organic solvents, being a good alternative for sterilization and clarification of the mobile phases for HPLC.

These membranes have high non-specific adsorption, which makes them very useful in blotting techniques, mainly for transfer and immobilization of nucleic acids.

They are not recommended for use sterilizing cellular solutions, for which application it is advisable to use the CHM®MCA cellulose acetate membranes.

### Features:

- Made entirely of polyamide
- Hydrophilic
- High non-specific adsorption
- High mechanical stability
- Low extractables
- Sterilization by autoclaving (at 121°C) or ethylene oxide

### Applications:

- Sterilization and clarification of aqueous and organic solvent solutions
- HPLC sample preparation
- Isolating Legionella





### TECHNICAL SPECIFICATIONS

PORE SIZES	0.1, 0.2, 0.45, 0.65, 1, 2, 3, 5, 10	
Bubble point minimum value, wetted with water	3.4 bar (0.2 µm)	2.2 bar (0.45 µm)
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	14 ml/min (0.2 µm)	28 ml/min (0.45 µm)
Filter diameter	13 mm, 25 mm, 47 mm, 90 mm, 142 mm, 293 mm. (Other sizes available under request).	
Material	Nylon	
Thickness average value	125 µm	
Sterilization	By autoclaving at 121 °C and with ethylene oxide	
Thermal stability	Max. 140 °C	
Chemical compatibility	See chemical compatibility table	
Extractables	Low extractables	

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm) (*)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MNY020013H	0.2	13	NO	100
MNY020025H	0.2	25	NO	100
MNY020047H	0.2	47	NO	100
MNY020050H	0.2	50	NO	100
MNY020090T	0.2	90	NO	25
MNY020142T	0.2	142	NO	25
MNY020293T	0.2	293	NO	25
MNY045013H	0.45	13	NO	100
MNY045025H	0.45	25	NO	100
MNY045047H	0.45	47	NO	100
MNY045050H	0.45	50	NO	100
MNY045090T	0.45	90	NO	25
MNY045142T	0.45	142	NO	25
MNY045293T	0.45	293	NO	25

(\*) Also available in other pore sizes between 0.1 and 5 µm under request

## CHM® MPV PVDF membrane filters

CHM® MPV membrane filters are made of Polyvinylidene Fluoride, and provide high flow rates and throughput, low extractables and broad chemical compatibility.

These membrane filters are non-sterile, and are supplied in pore sizes 0.2 and 0.45 µm, and in 6 different diameters: 25, 47, 50, 90, 142 and 293 mm (other sizes available under request).

#### Features:

- Hydrophilic
- Low extractables
- Excellent chemical compatibility with aggressive solvents, acids and alcohols
- Sterilisation: by autoclaving at 121°C at 1 bar, γ-radiation or ethylene oxide

#### Applications:

- Filtration of aqueous and organic solutions
- Analytical sample preparation
- Chromatography
- Clarification
- Protein chemistry



#### TECHNICAL SPECIFICATIONS

PORE SIZES	0.2 $\mu\text{m}$	0.45 $\mu\text{m}$
Flow rates Typical values per $\text{cm}^2$ for water at 1 bar (100 kPa) differential pressure:	3 ml/min	7 ml/min
Filter diameter	25 mm, 47 mm, 50 mm, 90 mm, 142 mm, 293 mm. (Other sizes available under request).	
Material	Polyvinylidene Fluoride (PVDF)	
Thickness average value	Between 90 $\mu\text{m}$ and 100 $\mu\text{m}$ according to different pore size	
Sterilization	By autoclaving at 121 °C and with ethylene oxide	
Thermal stability	Max. 85 °C	
Chemical compatibility	See chemical compatibility table	

#### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (*) ( $\mu\text{m}$ )	DIAMETER (mm)	STERILE	QUANTITY/BOX
MPV020025H	0.2	25	NO	100
MPV020047H	0.2	47	NO	100
MPV020050H	0.2	50	NO	100
MPV020090T	0.2	90	NO	25
MPV020142T	0.2	142	NO	25
MPV020293T	0.2	293	NO	25
MPV045025H	0.45	25	NO	100
MPV045047H	0.45	47	NO	100
MPV045050H	0.45	50	NO	100
MPV045090T	0.45	90	NO	25
MPV045142T	0.45	142	NO	25
MPV045293T	0.45	293	NO	25

(\*) Also available in other pore sizes between 0.1 and 5  $\mu\text{m}$  under request

## CHM® MPP Polypropylene membrane filters

CHM® MPP polypropylene membrane filters are composed of pure polypropylene with absolute pore size ratings. The exceptionally uniform strength of the device means that the membrane will not crack, tear, break or distort when picked up by hand or forceps.

These filters offer broad chemical compatibility allowing its use with aqueous and organic solvent samples.

CHM® MPP polypropylene membrane filters are suitable for numerous applications in chromatography and biotechnology laboratories.

They are available in 0.2 and 0.45 µm pore sizes, and in 6 different diameters: 25, 47, 50, 90, 142 and 293 mm (other sizes available under request).

### Features:

- Hydrophilic
- Low extractables
- Broad chemical compatibility

### Applications:

- Used as a support for cell growth, filtration of media and sterilization of tissue culture media
- Aqueous and organic solvent filtration
- Pharmaceuticals and other solutions used for biological work
- HPLC sample preparation requiring low detection levels (< 230 nm)
- Ion chromatography

### TECHNICAL SPECIFICATIONS

PORE SIZES	0.2 µm	0.45 µm
Bubble point minimum value, wetted with water	15 psi	11 psi
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	13 ml/min	22 ml/min
Filter diameter	25 mm, 47 mm, 50 mm, 90 mm, 142 mm, 293 mm. (Other sizes available under request).	
Material	Polypropylene	
Thickness average value	Between 110 µm and 120 µm according to different pore size	
Sterilization	Autoclave, gamma irradiation	
Chemical compatibility	See chemical compatibility table	

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MPP020025H	0.2	25	NO	100
MPP020047H	0.2	47	NO	100
MPP020050H	0.2	50	NO	100
MPP020090T	0.2	90	NO	25
MPP020142T	0.2	142	NO	25
MPP020293T	0.2	293	NO	25
MPP045025H	0.45	25	NO	100
MPP045047H	0.45	47	NO	100
MPP045050H	0.45	50	NO	100
MPP045090T	0.45	90	NO	25
MPP045142T	0.45	142	NO	25
MPP045293T	0.45	293	NO	25

## CHM® MPE PES membrane filters

This strong micro-porous film membrane is constructed from a high temperature polyethersulfone polymer that is acid and base resistant.

These membrane filters are recommended for aqueous solutions biological applications and protein filtration.

They are designed to remove particulates during general filtration and their low protein and drug binding characteristics make them ideally suited for use in life science applications.

Excellent flow speed, even with viscous liquids

They are supplied as standard in pore size 0.2 and 0.45 µm, and with 6 diameters: 13, 25, 47, 50, 90 and 142 mm (other sizes available under request).

### Features:

- Made entirely from polyethersulfone
- Hydrophilic
- Very low non-specific adsorption
- Low drug and protein binding
- Low extractables
- Sterilisation: by autoclaving at 121°C, with γ-radiation, or ethylene oxide

### Applications:

- Protein and enzyme filtration and sterilization
- Sterilisation of biological fluids, serum and tissue culture media
- Biological and clinical analysis
- Filtration and sterilisation of pharmaceutical solutions

### TECHNICAL SPECIFICATIONS

PORE SIZES	0.2 µm	0.45 µm
Bubble point minimum value, wetted with water	50 - 70 psi	35 - 50 psi
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	15 ml/min	35 ml/min
Filter diameter	13 mm, 25 mm, 47 mm, 50 mm, 90 mm, 142 mm. (Other sizes available under request).	
Material	Polyethersulfone (PES)	
Thickness average value	Between 110 µm and 150 µm according to different pore size	
Sterilization	By autoclaving at 121°C, with γ-radiation, or ethylene oxide	
Chemical compatibility	See chemical compatibility table	
Extractables	< 2% (< 0.015 mg/cm <sup>2</sup> )	

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
MPE020013H	0.2	13	NO	100
MPE020025H	0.2	25	NO	100
MPE020047H	0.2	47	NO	100
MPE020050H	0.2	50	NO	100
MPE020090T	0.2	90	NO	25
MPE020142T	0.2	142	NO	25
MPE045013H	0.45	13	NO	100
MPE045025H	0.45	25	NO	100
MPE045047H	0.45	47	NO	100
MPE045050H	0.45	50	NO	100
MPE045090T	0.45	90	NO	25
MPE045142T	0.45	142	NO	25

## 2.2 SYRINGE FILTERS

CHMLAB offers a wide range of syringe filters designed to provide efficient and fast filtration of organic and aqueous solutions. CHM® Premium and Chrodisc line are available in a variety of sizes, formats and membranes to cover a wide range of applications in the pharmaceutical, biotechnology, agricultural, food, beverages and environmental labs.

### Premium syringe filters

CHM® Premium syringe filters are the best choice to raise your filtration standards.

We have designed our syringe filters to provide filtration fast, efficient, effective and easy.

With a wide range of membranes (Cellulose Acetate, Nylon, Regenerated Cellulose, PTFE, PVDF, PP, PES and glass micro-fiber), pore sizes (0.2, 0.45, 0.7, 0.8, 1, 1.2 and 3.1) and diameters (4, 13 and 25), and with sterile and non-sterile versions, the syringe filters cover most of the applications in laboratories for pharma, biotechnology, agricultural, food and environmental labs.

### SCA Cellulose Acetate syringe filters

CHM® SCA syringe filters are designed for the quick and efficient filtration up to 100 ml of liquid. Ready-to-use units, offer high flow rates at low inlet pressures, presented in 5 pore sizes: 0.2, 0.45, 0.8, 1.2 and 5 µm and in 2 diameters: 13 and 25 mm, to fulfil your filtration requirements for clarifying/ultra cleaning.

They are supplied in sterile and non-sterile versions.

#### Features:

- Hydrophilic membrane
- Low protein binding
- High throughput
- Superior strength and stability
- Up to 100 ml of sample

#### Applications:

- HPLC sample preparation
- Biological sample preparation
- Protein and enzyme filtration
- Cell culture
- Clarification of aqueous and alcohol solutions



TECHNICAL SPECIFICATIONS					
PORE SIZES	0.2 µm	0.45 µm	0.8 µm	1.2 µm	5 µm
Colouring code	Blue	Yellow	Green	Red	Brown
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	60 ml/min	180 ml/min	350 ml/min	400 ml/min	500 ml/min
Filter diameter	25 mm (also available in 13 mm)				
Filtration area	5.3 cm <sup>2</sup>				
Hold-up volume	0.1 ml				
Limits for use	Max. Recommended operating pressure: 4.5 bar (450 kPa) Housing resists bursting up to 6 bar (600 kPa) Max. Temperature 50 °C				
Material	Cellulose acetate membrane Cylolite (CY/RO Industries trademarked MBS copolymer) housing				
Connectors	Female Luer lock inlet, male Luer lock outlet				



ORDER INFORMATION				
ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
SCA020013K-S	0.2	13	YES	50
SCA020013Q	0.2	13	NO	500
SCA020025K-S	0.2	25	YES	50
SCA020025H	0.2	25	NO	100
SCA020025Q	0.2	25	NO	500
SCA045013K-S	0.45	13	YES	50
SCA045013Q	0.45	13	NO	500
SCA045025K-S	0.45	25	YES	50
SCA045025H	0.45	25	NO	100
SCA045025Q	0.45	25	NO	500
SCA080013K-S	0.8	13	YES	50
SCA080013Q	0.8	13	NO	500
SCA080025K-S	0.8	25	YES	50
SCA080025H	0.8	25	NO	100
SCA080025Q	0.8	25	NO	500
SCA120013K-S	1.2	13	YES	50
SCA120013Q	1.2	13	NO	500
SCA120025K-S	1.2	25	YES	50
SCA120025H	1.2	25	NO	100
SCA120025Q	1.2	25	NO	500
SCA500013K-S	5	13	YES	50
SCA500013Q	5	13	NO	500
SCA500025K-S	5	25	YES	50
SCA500025H	5	25	NO	100
SCA500025Q	5	25	NO	500



## SNY Nylon syringe filters

CHM® SNY syringe filters offers a nylon membrane in a polypropylene housing.

Due to their high chemical compatibility and physical strength, these syringe filters are recommended for clarifying and sterilizing HPLC samples up to 200 ml volume.

They are supplied in two pore sizes, 0.2 and 0.45 µm, and in three diameters 4, 13 and 25 mm.

### Features:

- Hydrophilic
- Wide chemical compatibility range
- Up to 200 ml sample
- Autoclaved

### Applications:

- Filtration and clarification of small volumes
- Sterilization of aqueous and dilute organic solvents
- HPLC sample preparation
- Biological sample preparation



### TECHNICAL SPECIFICATIONS

PORE SIZES	0.2 µm	0.45 µm
Bubble point	3.4 bar	2.0 bar
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	65 ml/min (25 mm)	110 ml/min (25 mm)
Filter diameter	4 mm, 13 mm, 25 mm	
Filtration area	4.8 cm <sup>2</sup> (25 mm)	
Hold-up volume	0.15 ml (25 mm)	
Limits for use	Max. Recommended operating pressure: 6 bar (600 kPa) Max. Temperature 121 °C/ 30 min (autoclave)	
Materials	Nylon membrane Polypropylene housing	
Connectors	Female Luer Lock inlet, Luer slip outlet	

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
SNY020004H	0.2	4	NO	100
SNY020004Q	0.2	4	NO	500
SNY020013H	0.2	13	NO	100
SNY020013Q	0.2	13	NO	500
SNY020025H	0.2	25	NO	100
SNY020025Q	0.2	25	NO	500
SNY045004H	0.45	4	NO	100
SNY045004Q	0.45	4	NO	500
SNY045013H	0.45	13	NO	100
SNY045013Q	0.45	13	NO	500
SNY045025H	0.45	25	NO	100
SNY045025Q	0.45	25	NO	500

## SRC Regenerated Cellulose syringe filters

CHM® SRC units contains hydrophilic and solvent-resistant regenerated cellulose membranes. These CHM® ready-to-use syringe filter units are resistant to a wide range of solvents for simple, rapid and reliable ultra-cleaning of small-volume samples for HPLC or GC analysis. They are supplied in two pore sizes, 0.2 and 0.45 µm, and in three diameters 4, 13, and 25 mm.

The choice of diameter depends on the volume to be filtered:

- vol. <1 ml - Ø 4 mm
- vol. <5 ml - Ø 13 mm
- vol. <100 ml - Ø 25 mm

### Features:

- Hydrophilic membrane
- Suitable for aqueous solutions and organic solvents.
- Low protein adsorption
- Resistant to a wide range of solvents
- Extremely versatile
- Autoclaved

### Applications:

- Filtration of aqueous and organic solutions
- Sample preparation for HPLC and GC
- Clarification
- Protein chemistry

### TECHNICAL SPECIFICATIONS

FILTER DIAMETER	4 mm	4 mm	13 mm	13 mm	25 mm	25 mm
Pore	0.20 µm	0.45 µm	0.20 µm	0.45 µm	0.20 µm	0.45 µm
Bubble point (water)	> 3.4 bar (0.2 µm) > 2.0 bar (0.45 µm)					
Filtration area	0.07 cm <sup>2</sup>	0.07 cm <sup>2</sup>	1.7 cm <sup>2</sup>	1.7 cm <sup>2</sup>	4.8 cm <sup>2</sup>	4.8 cm <sup>2</sup>
Flow rates Typical values at 1 bar (100 kPa) Differential pressure	a) for hexane					
	3.5 ml/min	10 ml/min	140 ml/min	280 ml/min	230 ml/min	430 ml/min
	b) for methanol					
	1.5 ml/min	3 ml/min	55 ml/min	105 ml/min	160 ml/min	325 ml/min
	c) for water					
	0.5 ml/min	1.5 ml/min	10 ml/min	30 ml/min	60 ml/min	100 ml/min
Limits for use	Max. operating pressure: 4.5 bar (450 kPa) Burst pressure: 6 bar (600 kPa) Max. Temperature 121 °C, 30 min (autoclave)					
Materials	Regenerated cellulose membrane. Polypropylene housing					
Connectors	Female Luer lock inlet, Luer Slip outlet					



## ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
SRC020004H	0.2	4	NO	100
SRC020004Q	0.2	4	NO	500
SRC020013H	0.2	13	NO	100
SRC020013Q	0.2	13	NO	500
SRC020025H	0.2	25	NO	100
SRC020025Q	0.2	25	NO	500
SRC045004H	0.45	4	NO	100
SRC045004Q	0.45	4	NO	500
SRC045013H	0.45	13	NO	100
SRC045013Q	0.45	13	NO	500
SRC045025H	0.45	25	NO	100
SRC045025Q	0.45	25	NO	500

## STF PTFE syringe filters

CHM® STF syringe filters are indicated to clean small volume samples for HPLC or GC analysis, where higher chemical resistance is required than offered by CHM® SRC (Regenerated cellulose).

They are supplied in two pore sizes, 0.2 and 0.45 µm, and in three diameters 4, 13 and 25 mm.

The choice of diameter depends on the volume to be filtered:

vol. <1 ml - Ø 4 mm

vol. <5 ml - Ø 13 mm

vol. <100 ml - Ø 25 mm

### Features:

- Hydrophobic
- High chemical resistance to most solvents and acids
- Up to 100 ml sample
- Autoclaved

### Applications:

- Filtration of strong acids and aggressive solutions
- Cleaning of small volume samples for HPLC or GC application which require greater chemical resistance than regenerated cellulose syringe filters.
- Venting applications
- Degassing solvents
- Phase separation



TECHNICAL SPECIFICATIONS						
FILTER DIAMETER	4 mm	4 mm	13 mm	13 mm	25 mm	25 mm
Pore	0.20 µm	0.45 µm	0.20 µm	0.45 µm	0.20 µm	0.45 µm
Bubble point (water)	> 1.4 bar (0.2 µm) > 0.9 bar (0.45 µm)					
Filtration area	0.07 cm <sup>2</sup>	0.07 cm <sup>2</sup>	1.7 cm <sup>2</sup>	1.7 cm <sup>2</sup>	4.8 cm <sup>2</sup>	4.8 cm <sup>2</sup>
Flow rates Typical values at 1 bar (100 kPa) Differential pressure	a) for ethanol					
		2.0 ml/min	25 ml/min	65 ml/min	70 ml/min	130 ml/min
	b) for methanol					
		4.5 ml/min	55 ml/min	105 ml/min	160 ml/min	260 ml/min
	c) for air					
		0.06 ml/min	0.5 ml/min	1.1 ml/min	1.7 ml/min	2.2 ml/min
Limits for use	Max. operating pressure: 4.5 bar (450 kPa) Burst pressure: 6 bar (600 kPa) Max. Temperature 121 °C, 30 min (autoclave)					
Wetting water penetration pressure	4 bar (400kPa)	3.0 bar (400kPa)	4 bar (400kPa)	3.0 bar (400kPa)	4 bar (400kPa)	3.0 bar (400kPa)
Materials	Regenerated cellulose membrane. Polypropylene housing					
Connectors	Female Luer lock inlet, Luer Slip outlet					

ORDER INFORMATION				
ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
STF020004H	0.2	4	NO	100
STF020004Q	0.2	4	NO	500
STF020013H	0.2	13	NO	100
STF020013Q	0.2	13	NO	500
STF020025H	0.2	25	NO	100
STF020025Q	0.2	25	NO	500
STF045004H	0.45	4	NO	100
STF045004Q	0.45	4	NO	500
STF045013H	0.45	13	NO	100
STF045013Q	0.45	13	NO	500
STF045025H	0.45	25	NO	100
STF045025Q	0.45	25	NO	500



## SPV PVDF Polyvinylidene Fluoride syringe filters

CHM® SPV units contains polyvinylidene fluoride (PVDF) membrane.

These CHM® ready-to-use syringe filter units are ideal for sterilizing and clarifying filtration of biological solutions. They are compatible with a wide range of solvents, even with aggressive acids and alcohols. Up to 100 ml of sample. Also available in individual sterile peel-pack.

They are supplied in two pore sizes, 0.2 and 0.45 µm, and in three diameters 4, 13 and 25 mm.

### Features:

- Hydrophilic membrane
- Low protein adsorption
- High binding capacity
- Excellent chemical compatibility
- High flow rates
- Autoclaved

### Applications:

- Filtration of aqueous and organic solutions
- Sterilization of aggressive and non-aggressive solvent-based mobile phases
- Sterilizing and clarifying filtration of biological solutions
- Chromatography
- Protein sequencing

### TECHNICAL SPECIFICATIONS

DIAMETERS	13 mm	13 mm	25 mm	25 mm
Pore Size	0.20 µm	0.45 µm	0.20 µm	0.45 µm
Bubble point	2.3 bar	1.1 bar	2.3 bar	1.1 bar
Filtration area	1.7 cm <sup>2</sup>		4.5 cm <sup>2</sup>	
Flow rates Typical values for water at 15 psi and 23°C (100 kPa) differential pressure	13 ml/min	50 ml/min	50 ml/min	200 ml/min
Materials	PVDF membrane Polypropylene housing			
Connectors	Female Luer Lock inlet, Luer Lock outlet			

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
SPV020004H	0.2	4	NO	100
SPV020004Q	0.2	4	NO	500
SPV020013K-S	0.2	13	YES	50
SPV020013Q	0.2	13	NO	500
SPV020025K-S	0.2	25	YES	50
SPV020025H	0.2	25	NO	100
SPV020025Q	0.2	25	NO	500
SPV045004H	0.45	4	NO	100
SPV045004Q	0.45	4	NO	500
SPV045013K-S	0.45	13	YES	50
SPV045013Q	0.45	13	NO	500
SPV045025K-S	0.45	25	YES	50
SPV045025H	0.45	25	NO	100
SPV045025Q	0.45	25	NO	500

## SPP Polypropylene syringe filters

CHM® SPP units contains Polypropylene (PP) membrane.

Due to their broad chemical compatibility, these CHM® ready-to-use syringe filters can be used with aqueous and organic solvents. They have low extractable levels to provide accurate and consistent analysis results for sensitive ion chromatography applications.

These polypropylene syringe filters are used in HPLC where detection levels are below 230 nm.

They are supplied in two pore sizes 0.2 and 0.45  $\mu\text{m}$ , and in two diameters 13 and 25 mm

### Features:

- Broad chemical compatibility
- Hydrophobic membrane
- Negligible protein binding

### Applications:

- Filtration of aqueous and organic solvents
- HPLC applications. Detection levels < 230 nm
- Ion chromatography
- Total digest for heavy metals

### TECHNICAL SPECIFICATIONS

DIAMETERS	13 mm	13 mm	25 mm	25 mm
Pore size	0.2 $\mu\text{m}$	0.45 $\mu\text{m}$	0.2 $\mu\text{m}$	0.45 $\mu\text{m}$
Materials	PP membrane Polypropylene housing			
Connectors	Female Luer Lock inlet, Luer Lock outlet			

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE ( $\mu\text{m}$ )	DIAMETER (mm)	STERILE	QUANTITY/BOX
SPP020013Q	0.2	13	NO	500
SPP020025H	0.2	25	NO	100
SPP020025Q	0.2	25	NO	500
SPP045013Q	0.45	13	NO	500
SPP045025H	0.45	25	NO	100
SPP045025Q	0.45	25	NO	500





## SPE Polyethersulfone syringe filters

CHM® SPE units contains Polyethersulfone (PES) membrane.

These CHM® ready-to-use syringe filter units are designed to remove particles during general filtration. They are ideal for use in life science applications.

Preparation of aqueous, biological or protein based solutions for chromatography analysis.

Up to 100 ml of sample. Also available in individual sterile peel-pack.

They are supplied in two pore sizes, 0.2 and 0.45 µm, and in two diameters 13 and 25 mm.

### Features:

- Hydrophilic membrane
- Low protein binding
- Fast flow rates
- Wide range of chemical compatibility
- High flow rates
- Not autoclaved. Sterilization only by gamma irradiation or ethylene oxide

### Applications:

- Purification and sterilization of aqueous solutions and/or biological samples
- Protein and enzyme filtration sterilization
- IC chromatography
- Cell culture
- Tissue culture media sterilization

### TECHNICAL SPECIFICATIONS

DIAMETERS	13 mm	13 mm	25 mm	25 mm
Pore size	0.20 µm	0.45 µm	0.20 µm	0.45 µm
Bubble point	2.0 bar	0.7 bar	2.0 bar	0.7 bar
Filtration area	1.7 cm <sup>2</sup>		4.8 cm <sup>2</sup>	
Flow rates Typical values for water at 15 psi and 23 °C (100 kPa) differential pressure	8 ml/min	12 ml/min	100 ml/min	150 ml/min

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
SPE020013K-S	0.2	13	YES	50
SPE020013Q	0.2	13	NO	500
SPE020025K-S	0.2	25	YES	50
SPE020025H	0.2	25	NO	100
SPE020025Q	0.2	25	NO	500
SPE045013K-S	0.45	13	YES	50
SPE045013Q	0.45	13	NO	500
SPE045025K-S	0.45	25	YES	50
SPE045025H	0.45	25	NO	100
SPE045025Q	0.45	25	NO	500



## SGF Glass microfiber syringe pre-filter

Glass microfiber syringe pre-filter

CHM® SGF syringe filters contain a glass fibre filter with a retention efficiency of 98% for 1.2 µm spherical particles. It is very useful when relatively dirty solutions have to be clarified, or as a pre-filter of 0.2 µm or 0.45 µm CHM® SCA. They are available in 0.7 µm, 1.0 µm, 1.2 µm and 3.1 µm.

### Features:

- Hydrophilic material
- Acrylic binder
- High flow rates
- Up to 500 ml of sample volume
- Not autoclaved. Sterilization only by gamma irradiation or ethylene oxide

### Applications:

- Filtration of aqueous and organic solutions
- Fast pre-filtration of samples with high particle load
- Pre-filter of small volume liquids to avoid saturation of small-porosity membranes
- Fuel hydraulic fluids and machined parts



### TECHNICAL SPECIFICATIONS

PORE SIZE	0.7 µm	1.0 µm	1.2 µm	3.1 µm
Filter diameter	25 mm			
Filtration area	6.2 cm <sup>2</sup>			
Max. operational pressure	4.5 bar			
Burst pressure	6 bar			
Max. temperature	50 °C			
Connectors	Female Luer Lock inlet, Male Luer Lock outlet			

### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
SGF070025Q	0.7	25	NO	500
SGF100025Q	1.0	25	NO	500
SGF120025Q	1.2	25	NO	500
SGF310025Q	3.1	25	NO	500

## S+GF Syringe filter + glass microfiber prefilter

Glass microfiber pre-filter combined with membrane filter enhance sample preparation efficiency.

The membrane materials, Cellulose Acetate, Nylon, Polyethersulfone (PSE) and PTFE, are combined with 1.0  $\mu\text{m}$  glass microfiber filter.

Membrane porosity: 0.45  $\mu\text{m}$ , filter diameter 25 mm

### Applications:

- Filtration of aqueous solutions
- Filtration of organic solutions
- Prefiltration
- HPLC, GC and IC chromatography

### ORDER INFORMATION

ORDER NUMBER	MATERIAL	PORE SIZE ( $\mu\text{m}$ )	DIAMETER (mm)	STERILE	QUANTITY/BOX
SNY045025Q+GF	Glass microfiber prefilter + Nylon membrane	1.00 + 0.45	25	NO	500
STF045025Q+GF	Glass microfiber prefilter + PTFE membrane	1.00 + 0.45	25	NO	500
SPE045025Q+GF	Glass microfiber prefilter + Polyethersulfone membrane	1.00 + 0.45	25	NO	500
SCA045025Q+GF	Glass microfiber prefilter + Cellulose Acetate membrane	1.00 + 0.45	25	NO	500



## Chrodisc syringe filters

CHRODISC filter units offer high quality membrane, consistency and reliability which convert this syringe filter into one of your best choices of the laboratory filter products in the industry.

These CHRODISC filter units are excellent for the clarification of aqueous solutions.

The special design of the coloured gear edge combined with the different media (Nylon, PTFE, PP and PVDF) contributes to a fast and efficient filtration.

These syringe filters are suitable for a wide range of applications in pharmaceutical, environmental, biotechnology, food and beverage, and agricultural testing laboratories.

### Features and benefits:

- Special design
- Low extractables and low binding
- Sample volume:
  - <10ml (13mm)
  - <100ml (25mm)
  - <150ml (33mm)
- Minimum sample hold-up: syringe filters' housings are specifically designed to maximize sample recovery
- High resolution print: easy to identify pore size and media
- Colour coding to identify filter membrane
- 0.45  $\mu\text{m}$  for most clarification applications and 0.22  $\mu\text{m}$  when fine particulate removal is required.

### Applications:

- General particle removal
- Dissolution testing
- HPLC, UHPLC, IC, GC
- Routine QC analysis
- Environmental samples
- Food analysis
- Biofuel analysis
- Composite assays



## ORDER INFORMATION

ORDER NUMBER	MEMBRANE TYPE	PORE SIZE (µm)	COLOUR	DIAMETER (mm)	STERILE	QUANTITY/ BOX
XTF020013D	PTFE	0.2	RED	13	NO	200
XTF045033M	PTFE	0.2	RED	13	NO	1000
XTF045013D	PTFE	0.45	RED	13	NO	200
XTF045013M	PTFE	0.45	RED	13	NO	1000
XTF020025D	PTFE	0.2	RED	25	NO	200
XTF020025M	PTFE	0.2	RED	25	NO	1000
XTF045025D	PTFE	0.45	RED	25	NO	200
XTF045025M	PTFE	0.45	RED	25	NO	1000
XTF020033D	PTFE	0.2	RED	33	NO	200
XTF020033M	PTFE	0.2	RED	33	NO	1000
XTF045033D	PTFE	0.45	RED	33	NO	200
XTF045033M	PTFE	0.45	RED	33	NO	1000
XPV020013D	PVDF	0.2	YELLOW	13	NO	200
XPV020013M	PVDF	0.2	YELLOW	13	NO	1000
XPV045013D	PVDF	0.45	YELLOW	13	NO	200
XPV045013M	PVDF	0.45	YELLOW	13	NO	1000
XPV020025D	PVDF	0.2	YELLOW	25	NO	200
XPV020025M	PVDF	0.2	YELLOW	25	NO	1000
XPV045025D	PVDF	0.45	YELLOW	25	NO	200
XPV045025M	PVDF	0.45	YELLOW	25	NO	1000
XPV020033D	PVDF	0.2	YELLOW	33	NO	200
XPV020033M	PVDF	0.2	YELLOW	33	NO	1000
XPV045033D	PVDF	0.45	YELLOW	33	NO	200
XPV045033M	PVDF	0.45	YELLOW	33	NO	1000
XNY020013D	NYLON	0.2	PURPLE	13	NO	200
XNY020013M	NYLON	0.2	PURPLE	13	NO	1000
XNY045013D	NYLON	0.45	PURPLE	13	NO	200
XNY045013M	NYLON	0.45	PURPLE	13	NO	1000
XNY020025D	NYLON	0.2	PURPLE	25	NO	200
XNY020025M	NYLON	0.2	PURPLE	25	NO	1000
XNY045025D	NYLON	0.45	PURPLE	25	NO	200
XNY045025M	NYLON	0.45	PURPLE	25	NO	1000
XNY020033D	NYLON	0.2	PURPLE	33	NO	200
XNY020033M	NYLON	0.2	PURPLE	33	NO	1000
XNY045033D	NYLON	0.45	PURPLE	33	NO	200
XNY045033M	NYLON	0.45	PURPLE	33	NO	1000
XPP020013D	PP	0.2	ORANGE	13	NO	200
XPP020013M	PP	0.2	ORANGE	13	NO	1000
XPP045013D	PP	0.45	ORANGE	13	NO	200
XPP045013M	PP	0.45	ORANGE	13	NO	1000
XPP020025D	PP	0.2	ORANGE	25	NO	200
XPP020025M	PP	0.2	ORANGE	25	NO	1000
XPP045025D	PP	0.45	ORANGE	25	NO	200
XPP045025M	PP	0.45	ORANGE	25	NO	1000
XPP020033D	PP	0.2	ORANGE	33	NO	200
XPP020033M	PP	0.2	ORANGE	33	NO	1000
XPP045033D	PP	0.45	ORANGE	33	NO	200
XPP045033M	PP	0.45	ORANGE	33	NO	1000

## 2.3 VENTING FILTERS

### SVT Venting filters

CHM® SVT venting filters are reusable units that contain a reinforced PTFE membrane with polypropylene gauze, in a polypropylene housing.

These units are easily connected to fermenters or containers. They can work at high pressure. The large filtering surface (20 cm<sup>2</sup>) makes it possible to work at high air flow rates even with a low pressure differential.

They are supplied in two pore sizes, 0.2 and 0.45 µm

#### Features:

- Hydrophobic
- Reusable filter units (at least 20 autoclaving)
- Light weight (approx. 20 g)
- High flow rates
- Autoclaved
- Sterile and non-sterile versions

#### Applications:

- Venting of autoclaves
- Sterilization of air and gases

#### TECHNICAL SPECIFICATIONS

PORE SIZE	0.2 µm	0.45 µm
Air flow (1 bar)	27 l/min	32 l/min
Sterilization	Autoclave at 121°C or ETO Autoclave up to 10 times	
Filtration area	20 cm <sup>2</sup>	
Filter diameter	50 mm	
Filter housing	62 mm	
Hold-up volume	0,5 ml	
Max. operational pressure	3.5 bar	
Max. temperature	134 °C	
Materials	Membrane: Reinforced PTFE Housing: Polypropylene	
Connectors	6-12 mm or stepped barb	

#### ORDER INFORMATION

ORDER NUMBER	PORE SIZE (µm)	DIAMETER (mm)	STERILE	QUANTITY/BOX
STF020050T	0.2	50	NO	10
STF020050T-S	0.2	50	YES	10
STF045050T	0.45	50	NO	10
STF045050T-S	0.45	50	YES	10



## 2.4 BLOOTING MEMBRANES

### CHM® BIO-tr@ns blotting membrane

Blotting membranes are used widely in molecular biology, biotechnology and genetics, as a method of transferring proteins, DNA or RNA. CHMLAB offers 3 kinds of BIO-tr@ns blotting membranes PVDF transfer membrane, nitrocellulose membrane and nylon membrane. Selecting the appropriate membrane is critical to the success of a nucleic acid or protein transfer procedure. The several types of Bio-tr@ns transfer membranes exhibit different performance characteristics which can directly affect the outcome of a specific technique.

We can custom blotting membrane, like the shape, size, contents, package and different use as per your requirements.

CHM® BIO-tr@ns NC

CHM® BIO-tr@ns PVDF

CHM® BIO-tr@ns NY

### BIO-tr@ns Pure NC membrane

CHMLAB Bio-tr@ns Pure NC membrane is one of the most widely used in analytical and research applications. Minimize amounts of wetting agent and have a lower water extractable content. The high sensitivity of pure cellulose nitrate ensures excellent results in all the transfers, specially in protein blotting.

#### Features:

- 100% Pure Nitrocellulose
- For process requiring optimum resolution
- Compatible with Chromogenic, Radioactive, Fluorescent detection methods
- Excellent strength
- No detergents added
- Binding Interaction: hydrophobic & electrostatic

#### Applications:

- Westerns
- Protein & immunoblotting
- Northern
- Southern
- Dot/slot blots

CHMLAB Bio-tr@ns Supported NC membrane recommended for DNA/RNA/Protein transfers with procedures requiring rigorous handling.

#### Features:

- Supported Nitrocellulose
- Multiple reprobings
- Nucleic acid binding up to 100 µg/cm<sup>2</sup>
- High sensitivities, low backgrounds

#### Applications:

- Multiple re-hybridations
- Colony/plaque lifts
- Northern
- Southern
- Dot/slot blots
- Biotinylated detection systems
- Chemiluminescent detection systems



ORDER INFORMATION				
	PURE NITROCELLULOSE		SUPPORTED NITROCELLULOSE	
PORE SIZE	0.45 $\mu\text{m}$	0.20 $\mu\text{m}$	0.45 $\mu\text{m}$	0.20 $\mu\text{m}$
<b>CIRCLES (mm) (50/box)</b>				
82	BCN045082K	BCN020082K	BCNS045082K	BCNS020082K
85	BCN045085K	BCN020085K	BCNS045085K	BCNS020085K
132	BCN0450132K	BCN020220220V	BCNS0450132K	BCNS020132K
137	BCN0450137K	BCN020137K	BCNS0450137K	BCNS020137K
<b>SHEETS (cm) (5/box)</b>				
15 x 15 cm	BCN045150150V	BCN020150150V	BCNS045150150V	BCNS020220220V
20 x 20 cm	BCN045200200V	BCN020200200V	BCNS045200200V	BCNS020200200V
22 x 22 cm	BCN045220220V	BCN020220220V	BCNS045220220V	BCNS020220220V
<b>ROLLS (1/PACK)</b>				
30 cm x 3 m	BCN04530300R	BCN02030300R	BCNS04530300R	BCNS02030300R
20 cm x 3 m	BCN04520300R	BCN02020300R	BCNS04520300R	BCNS02020300R

## BIO-tr@ns PVDF membrane

CHMLAB Bio-tr@ns PVDF membrane has high protein adsorption, so proteins during transfer or reprobing won't be lost. Open pore structure makes accessing bound proteins and removing unbound probes easily. Membranes optimized for fluorescent blots dramatically increase signal for high sensitivity in quantitative, multiplexing applications.

### Features:

- Composition unsupported Polyvinylidene Fluoride
- Ideal for protein sequencing
- Chemical resistance
- No discoloration
- Nonflammable
- Hydrophobic

### Applications:

- Western blots
- Western blotting
- Binding assays
- Amino acid analysis
- N-terminal protein sequencing
- Dot/slot blotting
- Glycoprotein visualization
- Lipopolysaccharide analysis

ORDER INFORMATION		
PORE SIZE	0.45 $\mu\text{m}$	0.20 $\mu\text{m}$
<b>SHEETS (cm) (5/box)</b>		
	<b>SHEETS (5/box)</b>	
15 x 15 cm	BPV045150150V	BPV020150150V
20 x 20 cm	BPV045200200V	BPV020200200V
22 x 22 cm	BPV045220220V	BPV020220220V
<b>ROLLS (1/PACK)</b>		
30 cm x 3 m	BPV04530300R	BPV02030300R
20 cm x 3 m	BPV04520300R	BPV02020300R

## BIO-tr@ns NYLON membrane

CHMLAB Bio-tr@ns Neutral Nylon. Open pore structure permits maximum accessibility of target sequences to the probe and allows efficient removal of unhybridized probe, thereby reducing background.

### Features:

- High strength
- High sensitivity
- Versatile adsorption properties
- Chemical resistance
- Hydrophilic

### Applications:

- Colony/plaque lifts
- Dot/slot blotting
- Cell culture
- Clarification of aqueous solutions
- Chromogenic, radioactive, fluorescent detection systems
- Northern
- Southern
- Protein binding
- Microarrays
- Macroarrays

CHMLAB Bio-tr@ns Reprobing Charged Nylon is an inherently charged nylon membrane, specifically designed to allow for numerous reprobing.

### Features:

- Positively Supported charged nylon membrane
- Nucleic acid binding is 450  $\mu\text{g}/\text{cm}^2$
- Provide consistent results through 12 or more reprobing

### Applications:

- Northern
- Southern
- Radiolabelled and non-radiolabelled detection systems
- Multiple reprobing
- UV crosslinking
- Alkaline blotting



ORDER INFORMATION		
	NYLON	NYLON REPROBING CHARGED
PORE SIZE	0.45 µm	0.45 µm
CIRCLES (mm) (50/box)		
82	BNY045082K	BNYR045082K
85	BNY045085K	BNYR045085K
132	BNY0450132K	BNYR0450132K
137	BNY0450137K	BNYR0450137K
SHEETS (cm) (50/box)		
15 x 15 cm	BNY045150150V	BNYR045150150V
20 x 20 cm	BNY045200200V	BNYR045200200V
22 x 22 cm	BNY045220220V	BNYR045220220V
ROLLS (1/PACK)		
30 cm x 3 m	BNY04530300R	BNYR04530300R
20 cm x 3 m	BNY04520300R	BNYR04520300R

## 2.5 MEMBRANE DISPENSER

The completely new membrane filter dispenser meets all requirements placed on advanced laboratory equipment. This membrane dispenser is designed for individually sterile-packaged cellulose nitrate membranes packed in reels. Each membrane reel box contains 300 membrane filters individually sealed on a special pleated band, and its design makes it easy to open and seal for storage. Thanks to the special pack in reels, the dispenser makes each membrane quickly and reliably accessible; avoids filter band slippage or even damaged membranes.

### Features:

- Compact and robust design
- Easy insertion of the membrane reels, even without having a complete membrane package
- The control system prevents unwanted dispensing of several membranes at the same time
- The design allows quick and easy cleaning
- Low weight for easy transport

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	QUANTITY
MD001	Membrane dispenser	1
MNW020047R-SG	Cellulose nitrate membrane. Gridded. Pore size 0.20 µm Diameter 47 mm	300
MNW045047R-SG	Cellulose nitrate membrane. Gridded. Pore size 0.45 µm Diameter 47 mm	300
MNW080047R-SG	Cellulose nitrate membrane. Gridded. Pore size 0.80 µm Diameter 47 mm	300
MNB020047R-SW	Black cellulose nitrate membrane. Pore size 0.20 µm Diameter 47 mm	300
MNB045047R-SW	Black cellulose nitrate membrane. Pore size 0.45 µm Diameter 47 mm	300
MNB080047R-SW	Black cellulose nitrate membrane. Pore size 0.80 µm Diameter 47 mm	300



## 2.6 MICROBIOLOGICAL MONITORS

### CHM® Biofun microbiological monitors

CHM® Biofun sterile microbiological monitors are designed to be used in the membrane filtration technique to recover microorganisms from aqueous samples.

Each monitor is a single-use, pre-sterilized filtering unit consisting of a measured filter funnel, base, pad, membrane, removable lid and plug.

The all-in-one sterile construction of these microbiological filter funnels makes them ideal for microbiological analysis. These ready-to-use 100 ml units are suited for monitoring contaminants in all types of aqueous samples and they are specifically designed for the detection and enumeration of microorganisms in pharmaceuticals, cosmetics, food, beverages, water and other liquids.

Filtration unit easily converts to a Petri dish, which can be labelled and incubated for culturing.

No flaming required and with no need to sterilize funnels or filter base between samples, testing time can be reduced by up to 70%.

Reduced contamination thank to the single-use materials that virtually eliminate cross-contamination between funnel and membrane.

All-in-one filtration units reduce the chance of external error and make reproducible results due to this reduction.

Biofun® 100 Monitors are ready to use filter units designed to be placed onto the bases of a vacuum manifold.

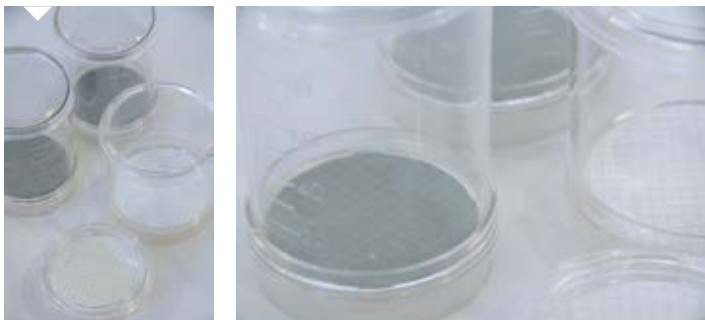
Funnel adaptors onto bases are provided in each box. All units are supplied sterile and individually wrapped.

#### Features and Benefits:

- All-in-one system.
- Rapid testing. Testing time can be reduced by up to 70%
- No flaming required: minimizes the risk of cross-contamination
- Reduced contamination.
- Reproducible results
- Easy handling

#### Applications. Microbiological analysis of:

- Water (potable and waste)
- Soft drinks
- Dairy products
- Beer
- Wine



#### ORDER INFORMATION

ORDER NUMBER	MEMBRANE TYPE	PORE SIZE (µm)	DIAMETER (mm)	STERILE	UNITS/PACK
M100-MNW020047K-SG	White MCE gridded membrane with pad	0.2	47	YES	50
M100-MNW020056K-SG	White MCE gridded membrane with pad	0.2	56	YES	50
M100-MNW045047K-SG	White MCE gridded membrane with pad	0.45	47	YES	50
M100-MNW045056K-SG	White MCE gridded membrane with pad	0.45	56	YES	50
M100-MNW080047K-SG	White MCE gridded membrane with pad	0.8	47	YES	50
M100-MNB020047K-SW	Black MCE gridded membrane with pad	0.2	47	YES	50
M100-MNB045047K-SW	Black MCE gridded membrane with pad	0.45	47	YES	50
M100-MNB045056K-SW	Black MCE gridded membrane with pad	0.45	56	YES	50
M100-MNB080047K-SW	Black MCE gridded membrane with pad	0.8	47	YES	50
M100-MNB080056K-SW	Black MCE gridded membrane with pad	0.8	56	YES	50

## 2.7 MEMBRANE HARDWARE

### 1-, 3- and 6-branch CHM®FR manifold

CHM®FR manifolds allow independent usage of any one port with a stopcock.

They have been designed specifically for applications in which the particles or microorganisms retained on the membrane filter surface are of interest.

The manifolds are made of AISI 304 and are available with 1, 3 and 6 filtration funnels, and in 40, 100 ml and 500 ml capacity funnels.

In the 3 or 6 branch units, due to the stainless steel taps on the manifold ports, the vacuum for each holder can be turned on and off individually. The stainless steel frit ensures a homogenous distribution of the residues on the membrane filter surface.

Highly polished surface facilitates easy and efficient cleaning and rinsing

Funnel and filter support can be autoclavable and flame sterilisable

TECHNICAL SPECIFICATIONS	
FILTRATION AREA	12.5 cm <sup>2</sup>
Materials	Stainless steel manifold, funnels, lids, clamps and filter supports. Silicone flat gaskets. Silicone sealing rings for lid, cap and hose nipple connector
Membrane filter	47 / 50 mm diameter
Sterilization	By autoclaving at (121°C or 134 °C) or dry heat (180 °C). Sanitization with flaming

ORDER INFORMATION		
ORDER NUMBER	NO. OF BRANCH MANIFOLD	FUNNELS VOLUME
FR1x040	1	40 ml
FR1x100	1	100 ml
FR1x500	1	500 ml
FR3x100	3	100 ml
FR3x500	3	500 ml
FR6x100	6	100 ml
FR6x500	6	500 ml

ORDER INFORMATION VACUUM PUMPS				
ORDER NUMBER	PUMP HEAD	DIAPHRAGM	VALVES	MAX FLOW (Rate (l/min))
VP022AT18	Aluminium	PTFE-coated	Stainless steel	15
VP086KN18	PPS	EPDM	FPM	6



## Filter holders

### CHM® Glass filter holders

These versatile all-glass filter holders are supplied with a glass frit filter support. It ensures the uniform distribution of retained particles on the filter surface.

Recommended for colony counting and for collection of suspended solids.

The system composed of glass funnel and base with vacuum connector and receiving flask is supplied with: ground glass outer and inner joints to connect to the receiving glass or with silicon stopper connector.

ORDER INFORMATION	
ORDER NUMBER	DESCRIPTION
FS047300T	Glass filtration system for 47 mm (or 50 mm) membranes with stopper
FS047300S	Glass filtration system for 47 mm (or 50 mm) membranes without stopper



### Re-usable CHM® filter holders

The filter holders are specially designed for clarification and sterilisation of aqueous and aggressive samples. These reusable devices are made in different materials in function of the applications.

Depending on the volume and the type of sample to be filtered, CHMLAB is offering 3 ranges of filter holders:

- Filter holder for volumes up to 10 ml (13 mm membrane diameter)
- Filter holder for volumes up to 100 ml (25 mm membrane diameter)
- Filter holder for volumes with more than 100 ml (47 and 50 mm membrane diameter)



## CHM® HIN Stainless steel filter holder

CHM® HIN inox holder for solvents and chemicals.

The PTFE-coated surface on the top part is an important property of the filter holder and ensures leak proof sealing without a sealing ring.

The temperature resistance is extremely good, and the chemical compatibility depends only on the used membrane filter type.

Sterilisation: by autoclaving (max. 134 °C) or by dry heat (max. 180 °C).

The top part can easily be mounted on the bottom part using the tightening tool supplied.

Filter supports in the top and bottom parts allow filtration in either direction.

TECHNICAL SPECIFICATIONS		
MEMBRANE FILTER	25 mm	47 mm (in line)
Filtration area	3 cm <sup>2</sup>	13 cm <sup>2</sup>
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	45 ml/min (0.2 µm filter) 80 ml/min (0.45 µm filter)	0.5 l/min (0.2 µm filter) 1.0 l/min (0.45 µm filter)
Max. operating pressure	7 bar (700 kPa)	20 bar (2000 kPa)
Chemical compatibility	As for stainless steel and PTFE	
Sterilization	By autoclaving (max 134 °C) or by dry heat (max 180 °C)	
Connectors	Female Luer Lock inlet, Luer slip outlet	Hose nipples DN10



ORDER INFORMATION			
ORDER NUMBER	MATERIAL	DIAMETER (mm)	QUANTITY/PACK
HIN025001	INOX	25	1
HIN047001	INOX	47	1

## CHM® HPC Polycarbonate filter holder

CHM® HPC Polycarbonate holder for aqueous solutions.

This CHM® HPC filter holder is made of stable polycarbonate and contains a silicone gasket for leak proof sealing.

The polycarbonate material withstands numerous working and washing cycles.

It can be sterilized by autoclaving (max. 121°C).

Filter supports in the top and bottom parts allow filtration in either direction.

The holder has an excellent resistance to pressure; up to 7 bar of operating pressure.

The transparent top part allows the visual control of the correct fit.

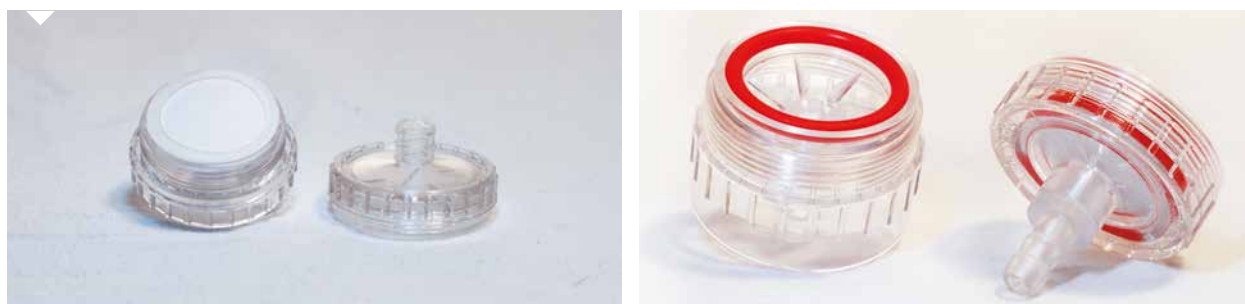
TECHNICAL SPECIFICATIONS			
MEMBRANE FILTER	13 mm	25 mm	47 mm (in line)
Filtration area	0.5 cm <sup>2</sup>	3 cm <sup>2</sup>	12.5 cm <sup>2</sup>
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	18 ml/min (0.2 µm filter) 35 ml/min (0.45 µm filter)	70 ml/min (0.2 µm filter) 110 ml/min (0.45 µm filter)	150 ml/min (0.2 µm filter) 320 ml/min (0.45 µm filter)

continue on next page >>



TECHNICAL SPECIFICATIONS			
MEMBRANE FILTER	13 mm	25 mm	47 mm (in line)
Max. operating pressure	7 bar (700 kPa)		
Materials	Polycarbonate top and bottom parts Silicone gasket 20.5x26.5 mm		
Chemical compatibility	As for polycarbonate and silicone		
Sterilization	By autoclaving (max 121 °C)		
Connectors	Female Luer Lock inlet, Luer slip outlet		Hose nipples

ORDER INFORMATION			
ORDER NUMBER	MATERIAL	DIAMETER (mm)	QUANTITY/PACK
HPC013001	Polycarbonate	13	1
HPC013012	Polycarbonate	13	12
HPC025001	Polycarbonate	25	1
HPC025012	Polycarbonate	25	12
HPC047001	Polycarbonate	47	1
HPC047012	Polycarbonate	47	12



## CHM® HTF PTFE filter holder

CHM® HTF filter holder for organic solvents and aggressive chemicals.

Made completely of PTFE, this holder has a broad chemical compatibility and contains no trace elements which could be released into the liquid being filtered.

Easy cleaning. Autoclavable by dry heat at 180°C.

It is indicated for particle removal from samples and reagents for analytical methods.

The construction of the holder ensures leak proof sealing without a sealing ring, and avoids twisting of the membrane filter when the top is tightened onto the base.

TECHNICAL SPECIFICATIONS	
MEMBRANE FILTER	13 mm
Filtration area	0.5 cm <sup>2</sup>
Flow rates Typical values per cm <sup>2</sup> for water at 1 bar (100 kPa) differential pressure:	10 ml/min (0.2 µm filter) 18 ml/min (0.45 µm filter)
Max. operating pressure	5 bar (500 kPa)
Materials	PTFE top and bottom part
Chemical compatibility	As for PTFE
Sterilization	By autoclaving (max 134 °C) or by dry heat (max 180 °C)
Connectors	Female Luer Lock inlet, Luer slip outlet

ORDER INFORMATION			
ORDER NUMBER	MATERIAL	DIAMETER (mm)	QUANTITY/PACK
HTF013001	PTFE	13	1

## 2.8 STERILE DISPOSABLE VACUUM FILTRATION UNITS

### CHM® VacFILSeries sterile disposable vacuum filtration units

CHM® VacFILSeries are single-use vacuum filtration units for sterile and vacuum filtration, mainly used for filtering and storing cell culture, tissue culture media, biological fluids and other aqueous solutions. The units contain a high quality membranes (PES, MCE, Cellulose Acetate, Nylon and Hydrophilic PVDF) and combine highest flow-rates and throughput with extremely low protein binding and extractable. The new system consists of a polystyrene receiver bottle and filter funnel with a variety of membrane filter choices. Also includes a polyethylene neck adaptor with hose connector for vacuum filtration of your valuable laboratory samples.

#### Features:

- Available in 5 different membranes: PES, MCE, Cellulose Acetate, Nylon and Hydrophilic PVDF
- Two membrane pore sizes: 0.22 µm and 0.45 µm
- Two funnel volumes: 250 and 500 ml
- Three receiver bottle volumes: 250, 500 and 1000 ml
- Membrane diameter: 50 and 90 mm
- Light weight and heavy wall construction
- Non-pyrogenic
- Detergent-free
- Sterile, individually packed

#### Membranes:

- PES (Polyethersulfone) with low protein binding and low extractable are the best choice for sterile filtration of cell culture media, serum, additives and buffers. Substantially faster flow rates than PVDF.
- MCE (Mixed Cellulose Ester) for sterile filtration, prefiltration or clarification of buffers and other aqueous solutions when protein binding trace is not a concern.
- CA (Cellulose Acetate). Fast flow rates and low protein binding are good for filtering cell culture media.
- Nylon. Provides a broad range of chemical compatibility for the filtration of either aqueous or organic solvents; hydrophilic; it can be used in a broad pH range. Surfactant-free and offer the lowest extractable.
- PVDF (Polyvinylidene fluoride). Extremely low protein-binding. For filtration of non-aggressive aqueous and mild organic solutions, or were maximizing protein recovery is important.



ORDER INFORMATION

ORDER NUMBER	FUNNEL CAPACITY	DIAMETER (mm)	PORE SIZE (µm)	MEMBRANE MATERIAL	QUANTITY/BOX	
VF02250PE022T-S	Funnel capacity: 250 ml Receiver capacity: 250 ml	50	0.22	PES	24	
VF02250CN022T-S		50		MCE	24	
VF02250CA022T-S		50		CA	24	
VF02250NY022T-S		50		NYLON	24	
VF02250PV022T-S		50		PVDF	24	
VF02250PE045T-S		50	50	0.45	PES	24
VF02250CN045T-S			50		MCE	24
VF02250CA045-T-S			50		CA	24
VF02250NY045T-S			50		NYLON	24
VF02250PV045T-S			50		PVDF	24
VF05250PE022T-S	Funnel capacity: 250 ml Receiver capacity: 500 ml	50	0.22	PES	24	
VF05250CN022T-S		50		MCE	24	
VF05250CA022T-S		50		CA	24	
VF05250NY022T-S		50		NYLON	24	
VF05250PV022T-2		50		PVDF	24	
VF05250PE045T-S		50	50	0.45	PES	24
VF05250CN045T-S			50		MCE	24
VF05250CA045T-S			50		CA	24
VF05250NY045T-S			50		NYLON	24
VF05250PV045T-S			50		PVDF	24
VF05500PE022T-S	Funnel capacity: 500 ml Receiver capacity: 500 ml	90	0.22	PES	24	
VF05500CN022T-S		90		MCE	24	
VF05500CA022T-S		90		CA	24	
VF05500NY022T-S		90		NYLON	24	
VF05500PV022T-S		90		PVDF	24	
VF05500PE045T-S		90	90	0.45	PES	24
VF05500CN045T-S			90		MCE	24
VF05500CA045T-S			90		CA	24
VF05500NY045T-S			90		NYLON	24
VF05500PV045T-S			90		PVDF	24
VF10500PE022T-S	Funnel capacity: 500 ml Receiver capacity: 1000 ml	90	0.22	PES	24	
VF10500CN022T-S		90		MCE	24	
VF10500CA022T-S		90		CA	24	
VF10500NY022T-S		90		NYLON	24	
VF10500PW022T-S		90		PVDF	24	
VF10500PE045T-S		90	90	0.45	PES	24
VF10500CN045T-S			90		MCE	24
VF10500CA045T-S			90		CA	24
VF10500NY045T-S			90		NYLON	24
VF10500PV045T-S			90		PVDF	24





## CHROMATOGRAPHY

TLC THIN LAYER CHROMATOGRAPHY

VIALS, CAPS AND SEPTA

SYRINGELESS @MINIVIAL

SPE COLUMNS





# CHROMATOGRAPHY

## 3.1 TLC THIN LAYER CHROMATOGRAPHY

TLC (Thin Layer Chromatography) is like all chromatographic techniques, based on a multistage distribution process. This process involves a suitable adsorbent (the stationary phase), solvents or solvent mixtures (the mobile phase), and the sample molecules. For Thin Layer Chromatography the adsorbent is coated as a thin layer onto a suitable support (e.g. glass, polyester or aluminium plate). On this layer the substance mixture is separated by elution with a suitable solvent. The most frequently used separation technique is ascending TLC in a glass chamber (standard method, linear development). Usually it is applied as single development. However multiple development, with or without change of mobile phase can improve separation results.

For this reason, CHMLAB is offering a wide range of glass tanks as well as plates and sheets.

### CHM® TLC developing chambers (Tanks)

They are manufactured from sturdy moulded glass bricks that will withstand regular use for many years. The clear sides allow unobstructed visual inspection of TLC plates up to 20 x 20 cm. The top of the tanks has been ground to a uniform flatness for perfect lid and the edges have been bevelled to remove any sharp edges. The bottoms are ground to provide a flat, level surface.

A special model with thick-walled clear glass tank grooved is designed to accept up to five 200x200 mm TLC plates, and it is particularly used for quantitative analysis, serving also to store plates in a protected environment.

#### ORDER INFORMATION

ORDER NUMBER	INTERNAL SIZE (mm)	DESCRIPTION
TT2020S	200x200	Rectangular TLC tank with lid for 200x200 mm plates
TT2020M	200x200	Rectangular TLC tank with lid for 200x200 mm plates. Capacity: up to 5 plates
TT1010S	100x100	Rectangular TLC tank with lid for 100x100 mm plates
TT2010S	200x100	Cylindrical TLC tank with lid for 200x100 mm plates



## CHM® TLC plates

The CHM® TLC plates and pre-coated sheets have homogeneous coating, homogeneous thickness of layer, high packing density, firmly adherent layers and consistent chromatographic properties.

The standard silica coating is one of the most frequently used ready-to-use layers for TLC. For these plates CHMLAB uses silica 60 with a mean pore diameter of 60 Å, a specific surface (BET) of about 500 m<sup>2</sup>/g, a specific pore volume of 0.75 ml/g and a particle size of 5 to 17 µm.

Manganese activated zinc silicate is used as fluorescent indicator for short-wave UV light (254 nm). As binder highly polymeric products are used, which are stable in almost all organic solvents and resistant towards aggressive visualisation reagents. The binder systems used for our Polyester pre-coated plates are also completely stable in purely aqueous eluents.

ORDER INFORMATION					
ORDER NUMBER	DESCRIPTION	PLATE SIZE (mm)	THICKNESS OF LAYER (mm)	FLUORESCENT INDICATOR UV254	QUANTITY/PACK
<b>GLASS PLATES</b>					
TP1020GS	Glass TLC silica 60	100x200	0.25	NO	50
TP2020GS	Glass TLC silica 60	200x200	0.25	NO	25
TP1020GSF	Glass TLC silica 60	100x200	0.25	YES	50
TP2020GSF	Glass TLC silica 60	200x200	0.25	YES	25
<b>POLYESTER SHEETS</b>					
TP2020PS	Polyester TLC with silica 60	200x200	0.2	NO	25
TP4020PS	Polyester TLC with silica 60	400x200	0.2	NO	25
TP2020PSF	Polyester TLC with silica 60	200x200	0.2	YES	25
TP4020PSF	Polyester TLC with silica 60	400x200	0.2	YES	25
<b>ALUMINIUM SHEETS</b>					
TP1020AS	Aluminium TLC with silica 60	100x200	0.2	NO	25
TP2020AS	Aluminium TLC with silica 60	200x200	0.2	NO	25
TP1020ASF	Aluminium TLC with silica 60	100x200	0.2	YES	20
TP2020ASF	Aluminium TLC with silica 60	200x200	0.2	YES	25

## CHM® Chromatography papers

CHMLAB offers a complete line of high quality papers for chromatography and electrophoresis to be used in chromatography papers application techniques and gel transfer applications. CHM® chromatography papers are made from pure linters with an α-cellulose content of nearly 100% which give them purity, high quality and consistency. Thicker papers allow higher sample volumes.

The most important features in chromatography papers are their basis weight, thickness and capillary absorption. High weight and thickness of the paper allow a greater load of solutes, obtaining better resolutions in papers with low capillary absorption levels.

### GRADE C3001

The world standard paper for chromatography.

One of the thinnest papers, with medium flow rate that provides optimum resolution. Smooth surface. Suitable for general analytical separations.

### GRADE C3002

Thin paper with a flow rate slower than C3001, for higher resolution applications. Smooth surface. Particularly recommended for optical or radiometric scanning.

### GRADE C3003

This medium thickness paper is normally recommended for general applications with medium-heavy solute loadings. Gives compact spot. Frequently used for separation of non-organic solutions and for electrophoresis.

### GRADE C3003M

Relatively thick paper with medium wet strength. Smooth surface. Used extensively for both electrophoresis and for general chromatography. Most widely used blotting paper. After 3001, the most widely used chromatography paper grade.



#### GRADE C3004

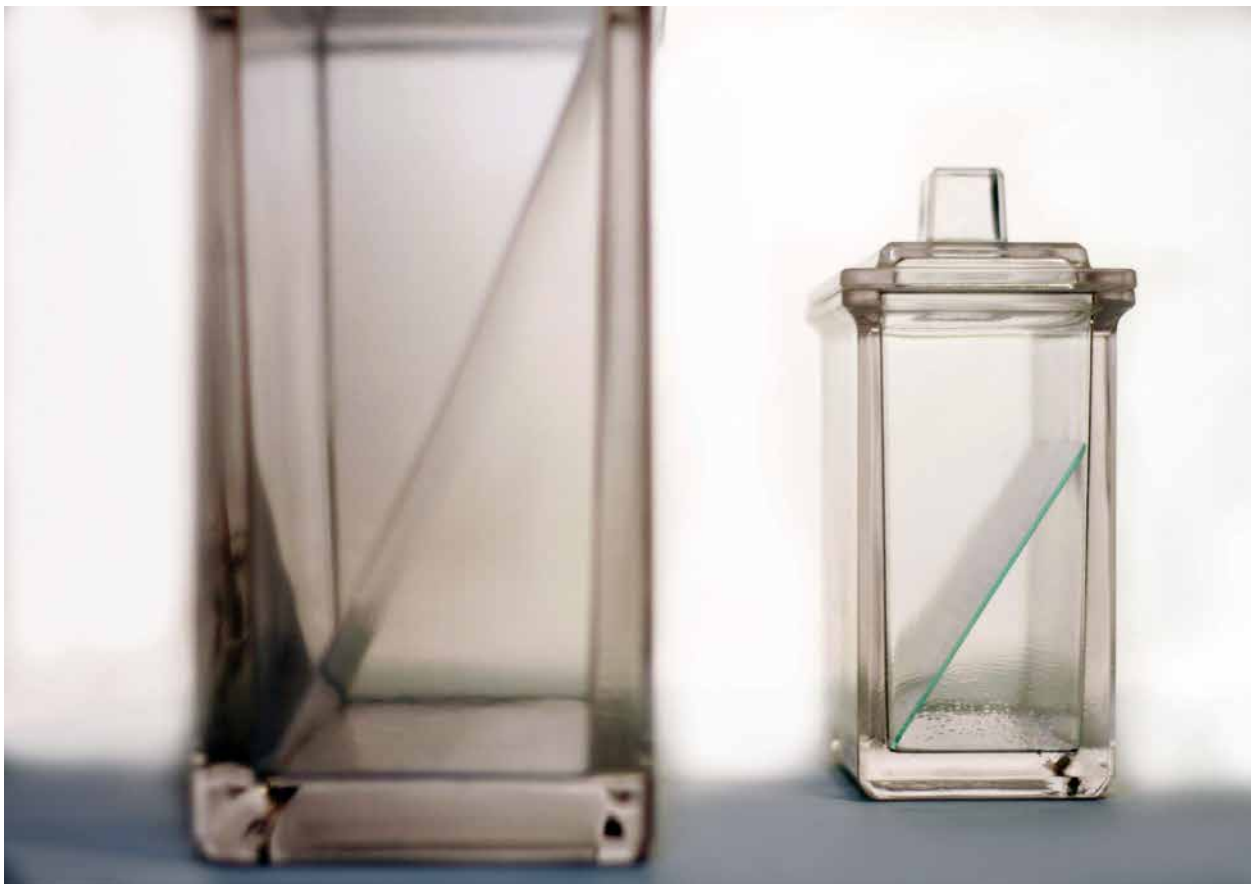
This relatively thin paper with a flow rate faster than C3001 is recommended for the most common chromatography tests when loadings are relatively low. It is also suitable when speed is an important factor and quality control general applications where high resolution is not required.

#### GRADE C3017

This paper is one of the thicknesses of this CHM® line that converts C3017 a suitable paper for heavy loadings. Offers a very high flow rate and is highly absorbent. Suitable for preparative paper chromatography and electrophoresis.

#### GRADE C3031

This paper of a medium thickness offers an extremely high flow rate and it is recommended for electrophoresis of large molecules. CHM® C3031 has a soft surface and uniform.



## 3.2 VIALS, CAPS AND SEPTA

The CHM® sample vials are manufactured from borosilicate glass, and following the international standards type I Class A; they meet ASTM Type I Class A and USP Type I standards. Also available in PP

In order to avoid unexpected problems the certified CHM® vials, caps and septa will help in your analysis, reducing costs and saving time.

Test dimensions are computerized with camera system during the manufacturing process to test the critical dimensions.

### Features:

- Clear or Amber borosilicate glass: High quality Type I, 51-expansion glass
- Clear borosilicate glass: High quality Type 2, 33-expansion glass
- Computerized camera system for quality control during manufacturing process to test the vial dimensions; height, diameter, bottom thickness and neck/thread
- Supplied in packs of 100 or 1000 units.
- Supplied in kits, or by separate: vials, caps and septa.

### Applications:

- Compatible with HPLC, LCMS and GC instruments
- Amber vials are used for light sensitive samples
- Amber vials are ideal for sample storage in chemical and pharmaceutical industry, as well as in research laboratories.

### Type of vials:

- Screw top vials
- Crimp top vials
- Snap top vials

CAP	SEAL	INFORMATION
Crimp	Excellent seal	Require specific tools. Not re-usable
Snap	Moderate seal	Fast, no tools universal required
Screw	Excellent seal	Universal. Re-usable

They are packed in a clean environment in order to avoid external contamination, and they can be selected from different cap colours and a variety of septa.

They are available in 2, 4, 10, 20 and 40 ml.

The accurate manufacturing process for vials and closure avoids common problems during the use of auto-samplers, like dislodged septa, ghost peaks, undetected improper seal, etc, obtaining benefits confidence and accurate results, and chromatographic purity tests.

## CHM® 8-425 Autosampler vials & closures

CHM 2 ml 8-425 neck autosampler vials, caps and septa are compatible with all common autosamplers including Agilent, Waters, Shimadzu, etc... These smaller opening vial with an 8-425 thread size screw cap are uniformly flat bottom for security with the inserts.

PTFE/Silicone septa are most popular for HPLC applications, and pre-slit septa are easier to pierce with needles

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	UNITS/BOX
CHM® Vial 8-425		
SV2-08-GTR	2ml Clear vial, 8-425 screw top	100
SV2-08-GTRL	2ml Clear vial, 8-425 screw top, graduated with writing area	100
SV2-08-GAR	2ml Amber vial, 8-425 screw top	100
SV2-08-GARL	2ml Amber vial, 8-425 screw top, graduated with writing area	100

## CHM® 9-425 Autosampler vials & closures

CHM® 2 ml 9-425 Vials are uniformly flat bottom for security with inserts. It is equivalent in dimensions to 11 mm crimp top vials and 10-425 screw vials and can be used in the same autosampler. Can be used on all common autosamplers due to their geometry, including Agilent, HTA, Shimadzu, Thermo, Varian, Waters, etc.

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	UNITS/BOX
SV2-09-GTR	2ml Clear vial, 9-425 screw top	100
SV2-09-GTRL	2ml Clear vial, 9-425 screw top, graduated with writing area	100
SV2-09-GTC	2ml Clear vial, crimp top	100
SV2-09-GTCL	2ml Clear vial, crimp top, graduated with writing area	100
SV2-09-GTS	2ml Clear vial, snap top	100
SV2-09-GTSL	2ml Clear vial, snap top, graduated with writing area	100
SV2-09-GAR	2ml Amber vial, 9-425 screw top	100
SV2-09-GARL	2ml Amber vial, 9-425 screw top, graduated with writing area	100
SV2-09-GAC	2ml Amber vial, crimp top	100
SV2-09-GACL	2ml Amber vial, crimp top, graduated with writing area	100
SV2-09-GAS	2ml Amber vial, snap top	100
SV2-09-GASL	2ml Amber vial, snap top, graduated with writing area	100

## Pre-assembled caps and septa

PTFE/Silicone septa are most popular for HPLC applications as a cost effective material. Caps are made of high quality polypropylene available in black and blue colour. Our septa use only the highest quality materials to ensure proper function and can be pre-slit to easy pierce with needles.

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	UNITS/BOX
SVAR-09-RPWS	Red PTFE/white silicone septa + Blue screw cap with hole, for 2 ml 9-425 screw top vial	100
SVAR-09-WPRS	White PTFE/red silicone septa + Blue screw cap with hole, for 2 ml 9-425 screw top vial	100
SVBR-08-RPWS	Red PTFE/white silicone septa + Black screw cap with hole, for 2 ml 8-425 screw top vial	100
SVBR-08-WPRS	White PTFE/red silicone septa + Black screw cap with hole, for 2 ml 8-425 screw top vial	100
SVAR-09-BPWS-PS	Blue PTFE/white silicone septa, Pre-slit + Blue screw cap with hole, for 2 ml 9-425 screw top vial	100
SVBR-08-BPWS-PS	Pre-slit, Blue PTFE/White silicone septa+ Black screw cap with hole, for 8-425 screw top vial	100
SVAC-11-RPWS	Red PTFE/white silicone septa + Aluminium cap, for 2 ml crimp top vial	100
SVAC-11-WPRS	White PTFE/red silicone septa+ Aluminium cap, for 2 ml crimp top vial	100
SVAC-11-WPRS-PS	Pre-silt, White PTFE/red silicone septa+ Aluminium cap, for 2 ml crimp top vial	100
SVAC-11-RPWS-PS	Pre-silt, Red PTFE/white silicone septa + Aluminium cap, for 2 ml crimp top vial	100
SV-S-11-WPRS	White PTFE/Red silicone septa + snap cap with hole, for 2 ml snap top vial	100
SV-S-11-RPWS	Red PTFE/White silicone septa + snap cap with hole, for 2 ml snap top vial	100
SV-S-11-WPRS-PS	Pre-slit, White PTFE/Red silicone septa + snap cap with hole, for 2 ml snap top vial	100
SV-S-11-RPWS-PS	Pre-slit, Red PTFE/white silicone septa + snap cap with hole, for 2 ml snap top vial	100



## 13-425 Autosamplers vials & closures

CHM® 4 ml vials are widely used in compound storage as well as for chromatography sample vials. 15x45 mm vials are compatible with 13-425 screw thread closures.

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	UNITS/BOX
SV4-13-GTR	4 ml Clear vial, 15×45 mm, screw top, flat bottom	100
SV4-13-GAR	4 ml Amber vial, 15×45 mm, screw top, flat bottom	100
SVBR-13-RPWS	Red PTFE/White silicone septa + Black cap with hole, for 4 ml screw top vial	100
SVBRT13-RPWS	Red PTFE/White silicone septa + Black cap without hole, for 4 ml screw top vial	100

## Crimp top headspace vials

Clear glass headspace vial for GC autosampler. Specially manufactured to provide uniform glass thickness which ensures uniform heat distribution for consistent sampling reliability.

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	UNITS/BOX
SV10-22-GTC	10 ml Clear vial, 22.5×46 mm, crimp top, flat bottom	100
SV20-22-GTC	20 ml Clear vial, 22.5×75 mm, crimp top, flat bottom	100
SV20R22-GTC	20 ml Clear vial, 22.5×75 mm, crimp top, round bottom	100
SV10R18-GTR	10 ml Clear vial, 18 mm screw top, round bottom	100
SV20R18-GTR	20 ml Clear vial, 18 mm screw top, round bottom	100
SVAC-22-WPWS	White PTFE/White Silicone + Aluminium cap with hole, for 10 ml/20 ml crimp top vial	100
SVAC-22-RPWS	Red PTFE/White Silicone + Aluminium cap with hole, for 10 ml/20 ml crimp top vial	100
SVAR-18-BPWS	Blue PTFE/White silicone septa + Silver screw cap with hole, for 18 mm screw top vial	100

## EPA/VOA/Storage vials

CHMLAB offers many standard vials and vial kits for volatiles sampling, compound storage and other non-chromatography applications. In addition, most products can be deactivated and/or packaged for special applications (package of biological agent, cosmetics, high value chemistry, etc...)

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	UNITS/BOX
SV20-24-GTR	20ml Clear vial, 24-400 screw top	100
SV20-24-GAR	20ml Amber vial, 24-400 screw top	100
SV40-24-GTR	40ml Clear vial, 24-400 screw top	100
SV40-24-GAR	40ml Amber vial, 24-400 screw top	100
SVBRT24-NPNS	Nature PTFE/Nature silicone septa + Black screw cap without hole, for 24-400 screw top vial	100
SVBR-24-NPNS	Nature PTFE/Nature silicone septa + Black screw cap with hole, for 24-400 screw top vial	100



## CHM® Micro Insert

CHMLAB has a variety of micro inserts to limit the volume of a full-capacity sample vial in a simple step. In order to meet your microsampling needs our micro inserts are compatible with all the CHM screw, snap and climp vials.

ORDER INFORMATION		
ORDER NUMBER	DESCRIPTION	UNITS/BOX
SVIFB-GT	Glass insert, flat base. Recommended fill volume 400 µL (max. 440 µL)	100
SVICS-GT	Conical Glass insert, with polyspring. Recommended fill volume 250 µL (max. 320 µL)	100
SVICB-GT	Conical Glass insert. Recommended fill volume 250 µL (max. 320 µL)	100



### 3.3 SYRINGELESS @MINIVIAL

Our CHM Syringeless @miniVIAL is designed to speed up the sample preparation in one step, minimizing the sample lost and reducing the time by avoiding the multistep and liquid transfers. With this disposable vial we only need to fill the sample, insert the plunger, press and the filtered sample is ready for analysis (instead of the classic process of syringe + syringe filter + vial + septa&cap). CHM @miniVIAL is compatible with the most common autosamplers, Agilent, Waters, Thermo, etc... The @miniVIAL is available in Nylon, PTFE, Regenerated Cellulose, PVDF and PES in both pore sizes 0.2 µm and 0.45 µm.

#### Specifications:

- Dimensions: 12 mm Ø x 33 mm height
- Material: Polypropylene
- Septa: PTFE and silicone
- Capacity: 0.48 ml

ORDER INFORMATION				
ORDER NUMBER	DESCRIPTION	PORE SIZE (µm)	COLOR CODE	UNITS/BOX
SVNY045H	miniVIAL with Nylon membrane	0.45	Blue	100
SVNY045M	miniVIAL with Nylon membrane	0.45	Blue	1000
SVNY020H	miniVIAL with Nylon membrane	0.2	Light blue	100
SVNY020M	miniVIAL with Nylon membrane	0.2	Light blue	1000
SVTF045H	miniVIAL with PTFE membrane	0.45	Red	100
SVTF045M	miniVIAL with PTFE membrane	0.45	Red	1000
SVTF020H	miniVIAL with PTFE membrane	0.2	Pink	100
SVTF020M	miniVIAL with PTFE membrane	0.2	Pink	1000
SVRC045H	miniVIAL with Regenerated Cellulose membrane	0.45	Black	100
SVRC045M	miniVIAL with Regenerated Cellulose membrane	0.45	Black	1000
SVRC020H	miniVIAL with Regenerated Cellulose membrane	0.2	Grey	100

### ORDER INFORMATION

ORDER NUMBER	DESCRIPTION	PORE SIZE (µm)	COLOR CODE	UNITS/BOX
SVRC020M	miniVIAL with Regenerated Cellulose membrane	0.2	Grey	1000
SVPV045H	miniVIAL with PVDF membrane	0.45	Orange	100
SVPV045M	miniVIAL with PVDF membrane	0.45	Orange	1000
SVPV020H	miniVIAL with PVDF membrane	0.2	Yellow	100
SVPV020M	miniVIAL with PVDF membrane	0.2	Yellow	1000
SVPE045H	miniVIAL with PES membrane	0.45	Green	100
SVPE045M	miniVIAL with PES membrane </td <td>0.45</td> <td>Green</td> <td>1000</td>	0.45	Green	1000
SVPE020H	miniVIAL with PES membrane	0.2	Light green	100
SVPE020M	miniVIAL with PES membrane	0.2	Light green	1000





## 3.4 SPE COLUMNS

### CHM® CHROMPACK SPE columns

Solid-Phase Extraction (SPE) is a separation process by which compounds that are dissolved or suspended in a liquid mixture are separated from other compounds in the mixture according to their physical and chemical properties. Analytical laboratories use solid-phase extraction to concentrate and purify samples for analysis. Solid-phase extraction can be used to isolate analytes of interest from a wide variety of matrices, including urine, blood, water, beverages, soil and animal tissue. SPE is solvent consumption, convenient, safe and high efficiency. According to the principle of “like dissolves like”, SPE can be classified in four types: inverse SPE, normal phase SPE, ion exchange SPE, absorption SPE. CHM® ChromPACK offer silica-based, organic copolymer or inorganic chemical based SPE columns. The filling material of ChromPACK columns includes C18, C18-ne, C8, NH<sub>2</sub>, CN, GCB, Alumina, Florisil, Silica, SAX, SCX, PSA, PRS PLS, PCX, PAX. Column capacities consist of 1, 3, 6, and 12 ml sizes. Our manufacturing process minimizes variability and improves recovery and cleanup procedures.

#### Applications:

- Biological samples and natural compounds
- Pharmaceuticals and drugs
- Pesticides and antibiotics in food and agricultural matrices
- Environmental samples organic compounds and pollutants

#### Features:

- Available in a range of packing media
- Quality sorbents for consistent results
- With various packing, ensure better selectivity
- High retention rate and recovery
- Very good extraction and flow characteristics

#### CHROMPACK SPE PRODUCTS

SILICA BASED SORBENTS	POLYMER BASED SORBENTS	ADSORPTION BASED SORBENTS	MIX SORBENTS
Silica	PLS	Florisil	GCB/NH <sub>2</sub>
C18	PAX	GCB	GCB/PSA
C18-ne	PCX	Alumina-N	
C8		Alumina-A	
CN		Alumina-B	
NH <sub>2</sub>			
PSA			
SAX			
SCX			





SILICA BASE	TECHNICAL SPECIFICATIONS	FEATURES
ChromPACK C18-ne	Average partical size: 50 µm Silica base: spherical Pore size: 60 Å Endcapped: no Carbon Carbon (C%): 17%	* Non-endcapped bonded phase that enables the silica surface to be more active * Moderately nonpolar and polar secondary interactions * Enhanced the retention of polar and basic compounds than C18
ChromPACK C18	Average partical size: 50 µm Silica base: spherical Pore size: 60 Å Endcapped: no Carbon Carbon (C%): 17%	* Organic analytes extraction: C18 has the broadest spectrum of retention among bonded silica sorbents, since it retains most organic analytes from aqueous matrices, when the compounds of interest vary widely in structure * Desalting: When analyzing small to intermediate molecules, ChromPACK C18 can be used for desalting aqueous matrices prior to ion exchange
ChromPACK C8	Average partical size: 50 µm Silica base: Irregular Pore size: 60 Å Endcapped: Yes Carbon (C%): 11%	* Both normal and reversed-phase chromatography * Less polar compared to silica and less hydrophobic compared to C18 and C8 * Usually used to extract acidic, neutral and basic compounds from aqueous solutions
ChromPACK NH2	Average partical size: 50 µm Silica base: Irregular Pore size: 60 Å Endcapped: No Carbon (C%): 5.0% pKa: 9.8	* Aminopropyl phase, both hydrogen bonding and anion exchange * Weaker anion exchanger retention of very strong anions such as sulfonic acids which may be retained irreversibly on SAX * Separate peptides, drugs and metabolites from physiological fluids, and extraction of mono- and polysaccharides, steroids, cholesterol and triglycerides
ChromPACK PSA	Average partical size: 50 µm Silica base: Irregular Pore size: 60 Å Endcapped: No Carbon (C%): 8.0% pKa: 10.1 and 10.9	* Similar selectivity to NH <sub>2</sub> * Strong affinity and high capacity for removing fatty acids, organic acids, and some polar pigments sugars when conducting multi-residue pesticide analysis in foods * Excellent sorbent for chelation
ChromPACK PSA SAX	Average partical size: 50 µm Silica base: Irregular Pore size: 60 Å Endcapped: No Carbon (C%): 6.0% pKa: completely dissociated	* Strongest anion exchange sorbent because of its quaternary amine functional group * Positive charged, better retention of weaker anions such as carboxylic acids that may not retain strongly enough on PSA or NH <sub>2</sub> * Activate the ion exchanger by conditioning it with appropriate buffers
ChromPACK SCX	Average partical size: 50 µm Silica base: Irregular Pore size: 60 Å Endcapped: No Carbon (C%): 6.0% pKa: <1.0	* Strongest cation exchange sorbent because of its enzenesulfonic acid functional group * Optimized for use in organic applications * Nonpolar character exhibited by benzene ring is useful to compounds with both cationic and nonpolar properties in aqueous solvent
ChromPACK SCX	Average partical size: 50 µm Silica base: Irregular Pore size: 60 Å Endcapped: No Carbon (C%): 6.0% pKa: <1.0	* Strongest cation exchange sorbent because of its enzenesulfonic acid functional group * Optimized for use in organic applications * Nonpolar character exhibited by benzene ring is useful to compounds with both cationic and nonpolar properties in aqueous solvent
POLYMER BASED	TECHNICAL SPECIFICATIONS	FEATURES
ChromPACK PLS	Partical size: 70 µm Pore size: 80 Å area: 600-800 m <sup>2</sup>	* Copolymer of polystyrene/divinylbenzene, contained both hydrophilic and hydrophobic radicals * Good retention on polar and non-polar molecule hydrophilelipophile balance * PLS has higher stability and wider pH range * Common used in food

POLYMER BASED	TECHNICAL SPECIFICATIONS	FEATURES
ChromPACK PCX	Partical size: 50 µm Pore size: 80 Å area: 600-800 m <sup>2</sup>	Sulfonic acid group bonding polystyrene/divinylbenzene copolymer is mixed strong cation exchange sorbent Both cation exchange and reverse phase retention mode, suitable for carboxylic acid compounds pKa between 2-8, mainly amoni compounds
ChromPACK	Partical size: 50 µm Pore size: 80 Å area: 600-800 m <sup>2</sup>	* Quaternary ammonium group bonded copolymer is mixed anion exchange and reverse phase sorbent * Excellent extraction to purified acid, carboxy acid compounds, pKa between 2-8
INORGANIC CHEMICAL BASE	TECHNICAL SPECIFICATIONS	FEATURES
ChromPACK Si	Average partical size: 50 µm Silica base: Irregular Pore size: 60 Å Endcapped: No	* The most polar sorbent, one of the best sorbents available for selectively separating analytes of very similar structure * Extract various compounds from non-polar solvents using hydrogen bonding, accomplishing the elution uccessively with increasing the solvent polarity * Excellent capacity for removing target molecules from reaction by-products and excess reagents
ChromPACK Florisil	Partical size: 150-200 µm Silica base: irregular	* Florisil is a magnesia silica gel, a polar sorbent capable to extract polar compounds from nonpolar matrix * Separate chlorinated pesticides, amines, herbicides, PCBs, ketones, organic acids and phenols
ChromPACK Alumina-A	Acidic pH: ~4.5 (Brockman Act.I) Average partical size: 125 µm Silica base: irregular	* Alumina-A enhances Lewis acid properties, which makes the sorbent more retentive towards electron-rich compounds * Alumina-A has a slightly cationic nature through pretreatment with acidic solutions * Suitable for retention neutral and anionic species
ChromPACK Alumina-B	Acidic pH: ~10.0 (Brockman Act.I) Average partical size: 125 µm Silica base: irregular	* Extremely polar sorbent, similar to silica * More stable under high pH conditions than unbonded silica * An electrically neutral surface retentive for electron-rich compounds like aromatic species and aliphatic amines, and compounds with lectronegative group like oxygen, phosphorus and sulfur atoms * Extrat both nonpolar and polar compounds from aqueous and nonaqueous matrices respectively
ChromPACK Carbon	Sorbent: laminated structure graphitized carbon Average partical Size: 120-400 mesh	* Higher and more stable recovery rates in extracting polar substance, like organochlorine, organophosphorus and nitrogen pesticides * Excellent performance in organic extraction and purification. * Extremely rapid extract processing due to the few-porosity
MIX SORBENTS	TECHNICAL SPECIFICATIONS	FEATURES
ChromPACK GCB/ NH <sub>2</sub>	GCB: Surface area: 170 m <sup>2</sup> /g Partical size: 200-400 mesh NH <sub>2</sub> Average partical size: 50 µm Pore size: 60 Å Carbon (C%): 5.0%	* ChromPACK GCB&NH <sub>2</sub> dual layer SPE column contains GCB (upper layer) and NH <sub>2</sub> (lower layer) SPE sorbents * GCB has a strong affinity towards planar molecules, pigments like chlorophyll and carotinoids, sterols commonly in foods and natural products * NH <sub>2</sub> can effectively retains fatty acids, organic acids, some polar pigments and sugars in food matrices
ChromPACK GCB/ PCA	GCB: Surface Area: 170 m <sup>2</sup> /g Partical size: 200-400 mesh NH <sub>2</sub> Average partical size: 50 µm Pore size: 60 Å Carbon (C%): 8.0%	* ChromPACK GCB/PSA is a dual layer SPE cartridge that contains GCB (upper layer) and PSA (lower layer) SPE sorbents * GCB has a strong affinity towards planar molecules, pigments like chlorophyll and carotinoids, sterols commonly in foods and natural products * PSA can effectively retains fatty acids, organic acids, some polar pigments and sugars in food matrices * Similar to ChromPACK GCB/NH <sub>2</sub> , but GCB/PSA has more retention for analytes because its PSA in the lower layer contains both primary

ORDER INFORMATION

ORDER NUMBER	DESCRIPTION	MASS (mg)	VOLUME (ml)	QUANTITY/BOX
<b>CHM® SPE Columns</b>				
SPEC18501	C18	50	1	100
SPEC181001		100	1	100
SPEC182003		200	3	50
SPEC185003		500	3	50
SPEC185006		500	6	30
SPEC1810006		1000	6	30
SPEC18N501	C18-ne	50	1	100
SPEC18N1001		100	1	100
SPEC18N2003		200	3	50
SPEC18N5003		500	3	50
SPEC18N5006		500	6	30
SPEC18N10006		1000	6	30
SPENH2501	NH <sub>2</sub>	50	1	100
SPENH21001		100	1	100
SPENH22003		200	3	50
SPENH25003		500	3	50
SPENH25006		500	6	30
SPENH210006		1000	6	30
SPESAX501	SAX	50	1	100
SPESAX1001		100	1	100
SPESAX2003		200	3	50
SPESAX5003		500	3	50
SPESAX5006		500	6	30
SPESAX10006		1000	6	30
SPESCX501	SCX	50	1	100
SPESCX1001		100	1	100
SPESCX2003		200	3	50
SPESCX5003		500	3	50
SPESCX5006		500	6	30
SPESCX10006		1000	6	30
SPEPSA501	PSA	50	1	100
SPEPSA1001		100	1	100
SPEPSA2003		200	3	50
SPEPSA5003		500	3	50
SPEPSA5006		500	6	30
SPEPSA10006		1000	6	30
SPESI501	Silica	50	1	100
SPESI1001		100	1	100
SPESI2003		200	3	50
SPESI5003		500	3	50
SPESI5006		500	6	30
SPESI10006		1000	6	30

## ORDER INFORMATION

ORDER NUMBER	DESCRIPTION	MASS (mg)	VOLUME (ml)	QUANTITY/BOX
<b>CHM® SPE Columns</b>				
SPECN501	CN	50	1	100
SPECN1001		100	1	100
SPECN2003		200	3	50
SPECN5003		500	3	50
SPECN5006		500	6	30
SPECN10006		1000	6	30
SPEFL501	Florisil	50	1	100
SPEFL1001		100	1	100
SPEFL2003		200	3	50
SPEFL5003		500	3	50
SPEFL5006		500	6	30
SPEFL10006		1000	6	30
SPEALA501	AL-A	50	1	100
SPEALA1001		100	1	100
SPEALA2003		200	3	50
SPEALA5003		500	3	50
SPEALA5006		500	6	30
SPEALA10006		1000	6	30
SPEALB501	AL-B	50	1	100
SPEALB1001		100	1	100
SPEALB2003		200	3	50
SPEALB5003		500	3	50
SPEALB5006		500	6	30
SPEALB10006		1000	6	30
SPEALN501	AL-N	50	1	100
SPEALN1001		100	1	100
SPEALN2003		200	3	50
SPEALN5003		500	3	50
SPEALN5006		500	6	30
SPEALN10006		1000	6	30
SPEGCB501	GCB	50	1	100
SPEGCB1001		100	1	100
SPEGCB2003		200	3	50
SPEGCB2503		250	3	50
SPEGCB5003		500	3	50
SPEGCB5006		500	6	30
SPEGCB10006		1000	6	30
SPEPLS301		PLS	30	1
SPEPLS601	30		1	100
SPEPLS603	60		3	50
SPEPLS1506	150		3	50
SPEPLS2006	200		6	30
SPEPLS25006	500		6	30

ORDER INFORMATION

ORDER NUMBER	DESCRIPTION	MASS (mg)	VOLUME (ml)	QUANTITY/BOX
<b>CHM® SPE Columns</b>				
SPEPCX301	PCX	30	1	100
SPEPLS601		60	1	100
SPEPCX603		60	3	50
SPEPCX1506		150	6	30
SPEPCX2006		200	6	30
SPEPCX5006		500	6	30
SPEPAX301	PAX	30	1	100
SPEPAX601		60	1	100
SPEPAX603		60	3	50
SPEPAX1506		150	6	30
SPEPAX2006		200	6	30
SPEPAX5006		500	6	30

Cross reference by manufacturer

SORBENT PHASE	CHMLAB	WATERS	AGILENT	PHENOMENEX	SUPELCO
C18	ChromPACK C18	Sep-Pak tC18	Bond Elut C18	Strata C18-E	Supelclean ENVI-18
C18-ne	ChromPACK C18-ne	Sep-Pak C18	Bond Elut C18OH	Strata C18-U	
C8	ChromPACK C8	Sep-Pak C8	Bond Elut C8	Strata C8	Supelclean ENVI-8
CN	ChromPACK CN	Sep-Pak CN	Bond Elut CN-E	Strata CN	Supelclean LC-CN
NH2	ChromPACK NH2	Sep-Pak NH <sub>2</sub>	Bond Elut NH <sub>2</sub>	Strata NH <sub>2</sub>	Supelclean LC-NH <sub>2</sub>
PSA	ChromPACK PSA		Bond Elut PSA	Strata PSA	Supelclean PSA
SAX	ChromPACK SAX		Bond Elut SAX	Strata SAX	Supelclean LC-SAX
SCX	ChromPACK SCX		Bond Elut SCX	Strata SCX	Supelclean LC-SCX
Silica	ChromPACK Si	Sep-Pak Si	Bond Elut Si	Strata Si-1	Supelclean LC-Si
HLB	ChromPACK PLS	Oasis HLP	Bond Elut Plexa	Strata-X	Supel-Select HLB
PCX	ChromPACK PCX	Oasis MCX	Bond Elut PCX	Strata-XC	Supel-Select SCX
PAX	ChromPACK PAX	Oasis MAX	Bond Elut PAX	Strata-XA	Supel-Select SAX
Florisil	ChromPACK Florisil	Sep-Pak FL	Bond Elut FL	Strata FL-PR	Supelclean LC-Florisil
GCB	ChromPACK GCB		Bond Elut Carbon		Supelclean ENVI Carb
Alumina-N	ChromPACK Alumina-N	Sep-Pak Alumina-N	Bond Elut Alumina N	Strata Alumina-N	Supelclean LC-Alumina-N
Alumina-A	ChromPACK Alumina-A	Sep-Pak Alumina-A	Bond Elut Alumina A	Strata Alumina-A	Supelclean LC-Alumina-A
Alumina-B	ChromPACK Alumina-B	Sep-Pak Alumina-B	Bond Elut Alumina B	Strata Alumina-B	Supelclean LC-Alumina-B
GCB/NH <sub>2</sub>	ChromPACK GCB/NH <sub>2</sub>		Bond Elut/NH <sub>2</sub>		Supelclean ENVI Carb/NH <sub>2</sub>
GCB/PSA	ChromPACK GCB/PSA		Bond Elut/PSA		Supelclean ENVI Carb-II/PSA





04

## SPECIALITIES

SPECIMEN COLLECTION PAPER

HEPA/ULPA AIR FILTER MEDIA

PAPER FOR CYTOLOGICAL ANALYSIS

CELLULOSE STOPPER

ANTIBIOTIC TEST PAPER

WEIGHING PAPER AND ALUMINIUM CONTAINERS

LENS CLEANING TISSUE

SMELLING TEST PAPER

GERMINATION TEST PAPER

ACTIVATED CARBON PAPER





# SPECIALITIES

## 4.1 SPECIMEN COLLECTION PAPER

### CHM® SCP Specimen collection paper

SCP specimen collection paper from CHM® is manufactured from high-quality cellulose paper fiber (100% pure cotton linters) without additives. It is used for blood sample collection and newborn screening. The cards are customized by the requirements of the healthcare professionals to standardize sample obtained from multiple sources. All the special designs, printing, etc... are tailor-made for each customer to fulfil all necessary specifications and components for efficient sample collection.

SCP grade comply with Clinical and Laboratory Standards Institute (CLSI) LA4-A5 standard (blood collection on filter paper for newborn screening - 5th Edition).



#### Features:

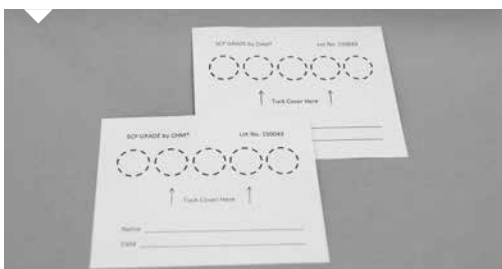
- Untreated filter paper. No impregnated chemicals to interfere with analysis.
- Body fluids and blood spots dry within two hours.
- They can be designed and printed in some different formats: single-part card, two-part card, multi-part card and frame cassette card

#### Applications:

- For micro-volume samples (blood and body fluids)
- Sample carrier of DNA extractions

#### TECHNICAL SPECIFICATIONS

PARAMETER	VALUE
Basis weight (g/m <sup>2</sup> )	180
Thickness (mm)	0,5
Absorptive height longitudinal (mm/10min)	170
Ash content (%)	<0.1



## 4.2 HEPA/ULPA AIR FILTER MEDIA

HEPA filter is an acronym for High-Efficiency Particulate Arrestance, and it is a type of air filter.

They are composed of a mat of randomly arranged fibres. The fibres are typically composed of fiberglass and possess diameters between 0.5 and 2.0  $\mu\text{m}$ . HEPA filters are designed to screen particles larger than 0.3  $\mu\text{m}$  with an efficiency of 99.95%, but they do not filter out gasses and odor molecules.

It works by forcing air through a fine mesh that traps harmful particles such as pollen, pet dander, dust mites, and tobacco smoke.

ULPA is an acronym for Ultra-Low Particulate Air. An ULPA filter can remove from the air at least 99.9999% for 0.12  $\mu\text{m}$  or larger particles.

ULPA filters are closely related to HEPA filters but are even more efficient. These filters are used in air filtration and purification systems to control airborne particulate levels and to stop the spread of toxic agents and infectious diseases. They can remove dust, pollen, mold, bacteria and any airborne particles from 0.12  $\mu\text{m}$ .

CHMLAB manufactures media in all efficiency ranges of interest to the cleanroom industry – efficiencies from 99.95% to 99.9999% for 0.12  $\mu\text{m}$  particle size. CHMLAB air filters are produced on a paper machine especially designed for the processing of micro-glass fibres. Only high-purity borosilicate glass fibres are employed, in thicknesses ranging from 0.2 to 2.0  $\mu\text{m}$ , depending on the required level of efficiency.

These products are then converted into a variety of shapes and configurations to suit a multitude of industrial, medical, electronics and personal protection applications.

### Applications:

HEPA and ULPA filters are used in applications requiring very efficient filtering of airborne pathogens that can cause aggravate asthma and cause allergies or disease. These filters are also useful in manufacturing environments that require very clean air. Some applications include:

- Air pollution
- Biological safety cabinets
- Pharmaceutical
- Surgical/Operating room air purification
- Clinical/healthcare facility air purification
- Vacuum cleaning systems
- Critical product manufacture
- Hazardous material collection
- Biotechnology
- Food processing
- Airline cabin air purifiers

Particle removal efficiencies are closely monitored for each grade enabling the customer to make better decisions in selecting media for your specific HEPA/ULPA application.

The test stand measures particle sizes from 0.05 to 0.5  $\mu\text{m}$  with extreme accuracy.

CHMLAB can also supply specially engineered grades. If your requirements do not meet with our standard grades, please contact us directly as we are able to develop proprietary grades that meet your unique filtration requirements.

GRADE	HE120	HE235	HE265	HE295	HE325	HE355	HE450	HE500
Basis weight (g/m <sup>2</sup> )	75	75	75	75	75	75	75	75
Thickness (mm)	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Density (kg/m <sup>3</sup> )	215	215	215	215	215	215	215	215
Tensile strength (N/m) MD	800	800	800	800	800	800	800	800
Tensile strength (N/m) CD	700	700	700	700	700	700	700	700
Tensile stiffness MD (kN/m)	160	180	180	180	180	180	180	180
Pressure drop (Pa 5.3 cm/s)	120	235	265	295	325	355	450	500
Penetration (%)	5*	0.5*	0.05*	0.3**	0.2**	0.1**	0.005*	0.0005*
Water repellency (s)	>60	>60	>60	>60	>60	>60	>60	>60
Combustible material (%)	6	6	6	6	6	6	6	6
Filter Class	H11	H12	H13	-	-	-	H14	H15

(\*) Air flow velocity 2 cm/s

(\*\*) Air flow velocity 15 cm/s MPPS

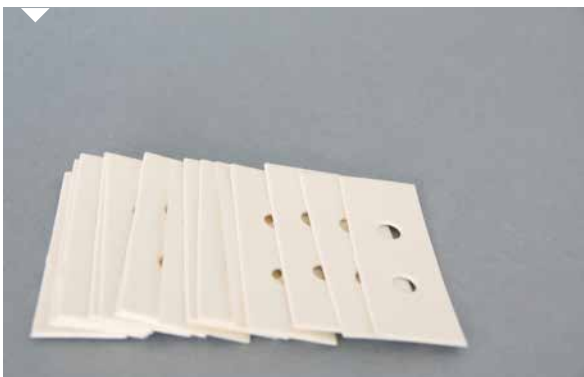


## 4.3 PAPER FOR CYTOLOGICAL ANALYSIS

E1240 Grade. This grade is made of filter board to absorb the excess liquid from the staining of the samples in cytological analysis. For single and multiple chambers.

TECHNICAL SPECIFICATIONS	
PARAMETER	VALUE
Basis weight (g/m <sup>2</sup> )	420

ORDER INFORMATION			
ORDER NUMBER	DIMENSIONS (mm)	HOLES	QUANTITY/BOX
E1240-2575D	25x75	2	200
E1240-2575D-1	25x75	1	200
E1240-2864D	28x64	2	200



## 4.4 CELLULOSE STOPPER

### CHM® Biostopper. Cellulose stopper

Biostopper have been proved as an excellent sealing for microbiological samples and tissue cultures in test tubes and Erlenmeyer flasks. They fit perfectly into the mouth of the container.

#### Features:

- Sterilization up to 200 °C
- Air permeable
- Disposable

ORDER INFORMATION			
ORDER NUMBER	DESCRIPTION	GLASS INTERNAL Ø (mm)	QUANTITY/BOX
<b>CHM® Biostopper. Cellulose Stopper</b>			
E1011-0400	Biostopper No.4	6,5-7	5000
E1011-0502	Biostopper No.5s	5,5-6,5	5000
E1011-0503	Biostopper No.5sk	4,5-6,5	5000
E1011-0604	Biostopper No.6F	6,5-7,5	5000
E1011-0700	Biostopper No.7	8,5-9,5	2000
E1011-0715	Biostopper No.7d	7,5-8,5	4000
E1011-0800	Biostopper No.8	9,5	2000
E1011-0801	Biostopper No.8P	7,5-10,5	1800
E1011-0900	Biostopper No.9	10,5-11,5	2000
E1011-0901	Biostopper No.9P	9-10,5	2000
E1011-0905	Biostopper No.9k	8,5-10,2	2000
E1011-0906	Biostopper No.9D	7-9,5	2000
E1011-1000	Biostopper No.10	9,5-11,5	1000
E1011-1100	Biostopper No.11	12-14,5	1000
E1011-1200	Biostopper No.12	11,5-13,5	1000
E1011-1201	Biostopper No.12P	11,5-13	1000
E1011-1250	Biostopper No.12,5	10,5-12,5	1000
E1011-1300	Biostopper No.13	12,5-14,5	1000
E1011-1307	Biostopper No.13H	12,5-13,5	1000
E1011-1350	Biostopper No.13,5 P	13,5-14,5	1000
E1011-1400	Biostopper No.14	13-14,5	1000
E1011-1401	Biostopper No.14P	12-14	1000
E1011-1406	Biostopper No.14D	11,5-13	1000
E1011-1409	Biostopper No.14LF	14-16	4000
E1011-1410	Biostopper No.14LD	12-14,5	4000
E1011-1424	Biostopper No.14L.v.u.	13-14,5	1000
E1011-1450	Biostopper No.14,5	14-16	1000
E1011-1500	Biostopper No.15	13,5-15,5	500
E1011-1501	Biostopper No.15P	14-16,5	5000
E1011-1513	Biostopper No.15PB	14,5-15,5	4000
E1011-1514	Biostopper No.15PI	14,7-15,5	4000
E1011-1515	Biostopper No.15 thick	13,5-16,0	5000
E1011-1516	Biostopper No.15E	15,5-17	5000
E1011-1517	Biostopper No.15 DD	14-16,5	5000
E1011-1518	Biostopper 15 l.v.u.	13,5-15,5	1000
E1011-1600	Biostopper No.16	16,5-18	5000
E1011-1700	Biostopper No.17	13-16	1000
E1011-1800	Biostopper No.18	17,5-18,5	500
E1011-1801	Biostopper No.18P	17,5-19,5	500

## ORDER INFORMATION

ORDER NUMBER	DESCRIPTION	GLASS INTERNAL Ø (mm)	QUANTITY/BOX
E1011-1806	Biostopper No.18D	17,5-19,5	500
E1011-1808	Biostopper No.18 long	17-19	3000
E1011-1900	Biostopper No.19	19-22	2500
E1011-2000	Biostopper No.20	20,5-22	400
E1011-2001	Biostopper No.20P	19-22,5	2500
E1011-2018	Biostopper No.20M	18,5-19,5	500
E1011-2019	Biostopper No.20A	20,5-22,5	500
E1011-2150	Biostopper No.21,5	17,5-21,5	3000
E1011-2205	Biostopper No.22 short	21,5-23	500
E1011-2208	Biostopper No.22long	22-24	2000
E1011-2350	Biostopper No.23,5P	25-27	2000
E1011-2600	Biostopper No.26	26-27	2000
E1011-2700	Biostopper No.27	27-32,5	1000
E1011-2705	Sealable Biostopper for drosophila culture tube	27-32,5	2500
E1011-2721	Biostopper Magnum	26-30	800
E1011-2723	Biostopper No.MA2/3	25,5-29	250
E1011-2900	Biostopper No.29 850	29,5-31	850
E1011-2905	Biostopper No.29k	26-27	2500
E1011-2919	Biostopper No.29A	29-30	1500
E1011-3200	Biostopper No.32	32,5-35	800
E1011-3201	Biostopper No.32P	32-33	750
E1011-3225	Biostopper No.32PD	30-32,5	750
E1011-3400	Biostopper No.34	33,5-36,5	750
E1011-3600	Biostopper No.36	35,5-39,5	600
E1011-3700	Biostopper No.37	37,5-41,5	600
E1011-3800	Biostopper No.38	40-43,5	500
E1011-4001	Biostopper No.40P	42-46,5	500
E1011-4501	Biostopper No.45P	47-48	300
E1011-4504	Biostopper No.45P DL	47-48	300
E1011-4800	Biostopper Nr.48, 1	47-49	400
E1011-5003	Biostopper Nr. 50 Z, length: 8 cm , 5 cm diameter	47-49	200
E1011-6001	Biostopper No.60P	57-60	200
E1011-7005	Biostopper Nr.70k,	69-71	100



## 4.5 ANTIBIOTIC TEST PAPER

Absorbent thick paper specially designed for identification of pathogens of infectious diseases by determination of the degree of resistance against antibiotics.

- Made from 100% cotton linters without additives to ensure that no inhibition will appear during the incubation.
- Consistent thickness (290 g/m<sup>2</sup>) and absorption volume.

ORDER INFORMATION			
ORDER NUMBER	DESCRIPTION	DIAMETER (mm)	QUANTITY/BOX
E1020-AA040M	Antibiotic testing Paper	4	1000
E1020-AA060M	Antibiotic testing Paper	6	1000
E1020-AA090M	Antibiotic testing Paper	9	1000
E1020-AA120M	Antibiotic testing Paper	12	1000
E1020-AA130M	Antibiotic testing Paper	13	1000



## 4.6 WEIGHING PAPER AND ALUMINIUM CONTAINERS

E4001 grade weighing smooth paper is the best choice to weigh all type of substances.

E4000 aluminium foil dishes with crimped sides, flat bottoms are ideal to weigh of all type of products in scales and dehydrators. Can also be used as evaporating dishes.

ORDER INFORMATION			
ORDER NUMBER	DESCRIPTION	SIZE/DIAMETER (mm)	QUANTITY/BOX
E4001-050050Q	Weighing paper	50x50	500
E4001-100100Q	Weighing paper	100x100	500
E4001-150150Q	Weighing paper	150x150	500
E4000-056Q	Weighing aluminium container	56	500
E4000-072Q	Weighing aluminium container	72	500
E4000-093Q	Weighing aluminium container	93	500



## 4.7 LENS CLEANING TISSUE

E1400 grade is a high quality lens cleaning tissue that provides the ideal solution to avoid scratches in lenses and other optical surfaces made from glass, quartz or plastic. The tissue is lint-free paper (12 g/m<sup>2</sup>). High absorbency ensures the safe removal of surface moisture. Very fine paper made of pure manila vegetable fiber, non-abrasive.

ORDER INFORMATION			
ORDER NUMBER	DESCRIPTION	SIZE/DIAMETER (mm) (*)	QUANTITY/BOX
E1400-100150Q	Lens cleaning tissue	100x150	500

(\*) Other sizes are available under request.



## 4.8 SMELLING TEST PAPER

E4100 grade is an absorbent paper made with high-quality linters and cellulose. It is mainly used in perfume and cosmetic laboratories; they are protected from any type of contamination, which makes them ideal to use in laboratories where smelling test is carried out. Weight 280 g/m<sup>2</sup>.

ORDER INFORMATION			
ORDER NUMBER	DESCRIPTION	SIZE (mm)	QUANTITY/BOX
E4100-12010H	Smelling Test Paper	120x10/5	100
E4100-16020H	Smelling Test Paper	160x20/5	100



## 4.9 GERMINATION TEST PAPER

E3014, E3236 and E3645 grades are quality germination test papers, designed to provide the best and most reliable germination results. Made of pure cellulose and free from bacteria and other toxic substances that could potentially inhibit growth, are ideal for seed germination. The paper is available in white, yellow and grey. These colours choices allow sufficient visibility to observe seed sprouts even in poor light. The pleated strips are specially manufactured for optimum, pure growth. Recommended for the reliable evaluation of seeds. All seed testing papers meet the **ISTA and AOSA requirements**.

TECHNICAL SPECIFICATIONS			
GRADE	COLOR	WEIGHT g/m <sup>2</sup>	FORMAT
E3014	white	120	pleated paper (50 double pleats)
E3236	yellow	120	pleated paper (50 double pleats)
E3645	grey	120	pleated paper (50 double pleats)



ORDER INFORMATION			
	E3014	E3236	E3645
<b>SIZE (mm)</b>	<b>50 DOUBLE PLEATS (1000/box)</b>		
2000x110	E3014-2000110M	E3236-2000110M	E3645-2000110M
<b>DIAMETER (mm)</b>	<b>CIRCLES (100/box)</b>		
55	E3014-055	E3236-055	E3645-055
70	E3014-070	E3236-070	E3645-070
80	E3014-080	E3236-080	E3645-080
90	E3014-090	E3236-090	E3645-090
100	E3014-100	E3236-100	E3645-100
110	E3014-110	E3236-110	E3645-110
125	E3014-125	E3236-125	E3645-125
150	E3014-150	E3236-150	E3645-150



## 4.10 ACTIVATED CARBON PAPER

E1010 grade activated carbon paper is used to eliminate or adsorb small molecules in large amounts as benzene, toluene, ethyl-benzene, xylene and organic compounds. Recommended for water filtration and smell elimination.



TECHNICAL SPECIFICATIONS			
GRADE	CARBON	WEIGHT (g/m <sup>2</sup> )	THICKNESS (μm)
E1010	40%	190	500

ORDER INFORMATION	
	E1010
<b>DIAMETER (mm)</b>	<b>CIRCLES (100/box)</b>
70	E1010-070
90	E1010-090
100	E1010-100
130	E1010-130
150	E1010-150
200	E1010-200
250	E1010-250
300	E1010-300
350	E1010-350
400	E1010-400
450	E1010-450
500	E1010-500









# INDUSTRIAL FILTRATION

INDUSTRIAL FILTER PAPER



# INDUSTRIAL FILTRATION

## 5.1 INDUSTRIAL FILTER PAPER

CHMLAB offers the widest selection of regular and high wet strength grades of filters to meet specific filtration requirements. Using these filter papers, we can create solutions to optimize clarity, flow rate and overall performance. CHMLAB offers plain and embossed grades filter paper as well as non-woven and standard grades for applications where product clarity is a major concern.

Our converting capabilities allow us to offer Taylor-made filter papers following customers' requests in features and formats. They are the best choice for filtration of oils, beverages and galvanic baths.

### Paper types

- Plain and embossed filter papers.

These papers are designed to meet specific filtration requirements. The embossed surfaces generally provide a larger filtration area and offer high filtration speeds.

- Creped filter papers

They have larger filtration surfaces resulting in higher filtration velocities. In addition, the larger filtration surfaces offer greater particulate holding capacity compared to plain surface papers.

- Filter boards

These filters are manufactured according specific applications and they can be produced in disc or sheet formats, with one or more holes to use in filter press systems.

- Filter discs from filter paper and filter board

- Non-woven filters

These filters made of rayon and polyester are offered in a wide range of filtration efficiencies and weights. Non-woven media offers a multitude paths for the impingement of target particles offering depth filtration as well as high particle retention capacity in both gas and liquid environments.

### Applications:

- Food & beverage
- Pharmaceutical
- Cosmetics
- Chemical
- Microelectronics

Due to the wide variety of paper grades, formats and dimensions, the order number list is very extensive. The following guideline will help you to find the right order number.

I Industrial	▼	XXX
	E Embossed	Basis weight
	P Plain	g/m <sup>2</sup>
	C Creped	
	B Filter Boards	
	N Nonwovens	



### ORDER INFORMATION

GRADE	BASIS WEIGHT (g/m <sup>2</sup> )	THICKNESS (mm)	TYPICAL RETENTION (µm)	FILTRATION SPEED (s/10 ml)	PROPERTIES
Filter papers, plain and embossed					
IE078	78	0.17	10-15	18	Fast. Embossed
IE090	90	0.25	7-10	30	Medium fast. Embossed
IP095	95	0.20	7	17	Medium fast. Plain
IP100	100	0.22	7	25	Medium fast. Plain
IP115	115	0.24	6-7	17	Medium fast. Plain
IP135	135	0.31	7-10	30	Medium fast. Plain
IP150	150	0.32	3-4		Medium fast. Plain
IP160	160	0.30	5	40	Medium fast. Plain
IP190	190	0.40	7	31	Medium fast. Plain

TYPICAL APPLICATIONS	
IE078	Embossed filter paper, excellently suited for salted solutions and sugar juice
IE090	Absorption, protection
IP095	Essential oil, emulsions, essences, tinctures
IP100	Juices, essences, hair tonics, musts, wine, vegetal extracts
IP115	Technical filtration, galvanic baths
IP135	Absorption, protection
IP150	Absorption, substrate
IP160	Filtration of large amounts of liquids with fine-flaked precipitates, hair tonic, spirits
IP190	Filtration of large amounts of liquids, especially for mild acids and hot alkaline solutions

ORDER INFORMATION				
GRADE	BASIS WEIGHT (g/m <sup>2</sup> )	THICKNESS (mm)	FILTRATION SPEED (s/10ml)	DIFFERENTIAL PRESSURE (mbar)
<b>Creped filter papers</b>				
IC06A	60	0.18	4	1.5
IC06B	60	0.23	15	6.0
IC07A	70	0.29	15	7.5
IC07B	70	0.22	5	2.5
IC075	75	0.28	14	6.5
IC08A	80	0.28	10	5.5
IC08B	80	0.33	14	8.0
IC085	85	0.28	3	1.0
IC09A	90	0.35	4	1.5
IC09B	90	0.38	13	6.5
IC09C	90	0.35	10	5.5
IC095	95	0.28	7	3.0
IC135	135	0.50	5	1.9
IC140	140	0.58	15	8.0
IC145	145	0.55	12	7.0
IC160	160	0.65	13	5.5
IC180	180	0.69	5	2.0
IC240	240	0.83	5	2.0
IC300	300	0.95	5	2.0
<b>TYPICAL APPLICATIONS</b>				
IC06A	For strong contamination, protective paper for filter presses			
IC06, IC07A, IC08B, IC09B, IC160	Juices, edible oils, colloidal liquids, wine, hair tonics			
IC07B	Universal paper for quick clarification			
IC075	Edible oils, protective paper for filter presses, sugar industry			
IC08A	Galvanic baths			
IC09A	Technical oils, emulsions like agar-agar			
IC09C	Clarification of galvanic baths			

ORDER INFORMATION				
GRADE	BASIS WEIGHT (g/m <sup>2</sup> )	THICKNESS (mm)	CAPILLARY RISE (mm/10 min)	DIFFERENTIAL PRESSURE (mbar)
<b>Filter boards</b>				
IB220	220	0.45	85	25
IB25A	250	0.48	100	25
IB25B	250	0.55	180	3.5
IB275	275	0.58	105	9.3
IB280	280	0.60	100	9.5
IB300	300	0.55	100	25.0
IB315	315	0.60	60	42.0
IB340	340	1.00	150	2.0

GRADE	BASIS WEIGHT (g/m <sup>2</sup> )	THICKNESS (mm)	CAPILLARY RISE (mm/10 min)	DIFFERENTIAL PRESSURE (mbar)
<b>Filter boards</b>				
IB350	350	0.63	110	25.0
IB360	360	0.90	175	5.5
IB380	380	1.00	200	2.5
IB400	400	0.95	170	8.0
IB420	420	1.30	210	1.3
IB430	430	1.00	150	8.0
IB450	450	0.95	110	25.0
IB490	490	1.25	165	7.5
IB475	475	1.10	120	25.0
IB520	520	1.60	200	2.5
IB600	600	1.60	165	3.5
IB700	700	1.80	150	8.0
<b>TYPICAL APPLICATIONS</b>				
IB220	Galvanic baths			
IB25A	Galvanic baths, transformer oils			
IB25B	Technical oils, paraffin, edible oils			
IB275	Filter press applications			
IB280	Filter press applications			
IB300	Galvanic baths, transformer oils			
IB315	Raw paper for Bowie-Dick-test indicator sheets, sterilization control			
IB340	Galvanic baths, hydrocarbons			
IB350	Technical oils, transformer oils, galvanic baths			
IB360	Filter press applications			
IB380	Oils, lacquers, transformer oils			
IB400	Turbine oils, transformer oils, engine oils			
IB420	Basis paper for pads			
IB430	Oils, paraffin, transformer oils, resinous solutions			
IB450	Galvanic baths, transformer oils			
IB490	Galvanic baths, process water filtration, activated carbon retention			
IB475	Essential oils, galvanic, use in filter presses			
IB520	Galvanic baths			
IB600	Filter press applications, galvanic baths, edible oils and essential oils			
IB700	Edible oils, essential oils, fine turbidities			
<b>TYPICAL DIAMETERS</b>				
CIRCLES WITH CENTRAL HOLE				
SIZE (mm) (disc Ø / central hole Ø)	SIZE (mm) (disc Ø / central hole Ø)	SIZE (mm) (disc Ø / central hole Ø)	SIZE (mm) (disc Ø / central hole Ø)	SIZE (mm) (disc Ø / central hole Ø)
75/5	248/5	450/5		
136/32	250/183	455/41		
148/45	260/40	456/100		
145/43	270/50	460/100		
160/40	270/60	465/40		
165/50	280/50	467/41		
180/33	295/40	470/60		
200/65	295/60	485/60		
202/60	300/40	485/70		
205/33	302/102	505/55		
210/32	305/102	510/95		
210/33	312/128	600/68		
210/60	350/41	603/68		
213/60	350/135	845/76		
215/32	360/100	850/76		
240/32	412/175	910/75		





## CAPSULE AND CARTRIDGE FILTERS

CAPSULE FILTERS

STRING BOUND FILTER CARTRIDGE

MELT BLOWN FILTER CARTRIDGE

PLEATED POLYPROPYLENE FILTER CARTRIDGE

PLEATED MEMBRANE FILTER CARTRIDGE





# CAPSULE AND CARTRIDGE FILTERS

## 6.1 CAPSULE FILTERS

### CHM® CapFIL capsule filters

CHM® CapFIL capsule filters have been specially designed for simple, quick, and efficient particles or bacteria filtration of aqueous or solvent solutions and gases used in laboratory, pilot-plant and small-scale applications. They are ready to use filters, eliminating the need to disassemble, clean and reassemble filter housings.

CHM® CapFIL Filter Capsules contain no adhesives, binders, or surfactants. Thanks to its serial layer filter design the CapFIL increase their throughput and extend their working life.

All capsules containing membrane media are pre-flushed with purified water to reduce extractables. The all-polypropylene construction provides excellent chemical compatibility and superior flow per unit area as compared to other membrane cartridges.

#### Features:

- Combine a full range of filter media: Polypropylene, Polyethersulfone (PES) Polytetrafluoroethylene (PTFE) and Nylon membranes and pore size ratings to cover the numerous applications.
- Offer high reliability, security and convenience for small to medium batch processing applications
- All the materials used in the CapFIL manufacturing process meets the USP Class VI Plastics biological reactivity tests.
- Manufactured in a Clean Room Environment

### CHM® Capfil PES (polyethersulfone)

CapFil PES hydrophilic membrane is specially designed to provide efficient filtration for critical aqueous solutions. The CapFIL PES provides absolute bacteria retention, low extractables, low protein binding and an excellent high flow, with low pressure drop in a wide range of biological fluids.

#### Applications:

- Food and beverage
- Tissue culture media
- Enzymes
- Aqueous solutions
- Chemical and reagent purification
- Immunological
- Cosmetic products

#### TECHNICAL SPECIFICATIONS

Filter media	Polyethersulfone (PES)
Housing	Polypropylene
Pore size (µm)	0.1, 0.2, 0.45, 0.8, 1.0, 3.0, 5.0
Max. Pressure (bar)	4.1
Biosecurity	According to UPS class VI
Wetting Characteristics	Hydrophilic
Sterilization	By autoclaving (max 134 °C) or gamma-radiation

## CHM® Capfil PTFE (polytetrafluoroethylene)

CapFil PTFE is made with hydrophobic PTFE (polytetrafluoroethylene) membranes designed for filtrations of aggressive chemical solutions and organic solvents. It offers minimal extractable in a wide range of fluids and applications.

### Applications:

- Venting
- Gas filtration
- Aggressive solvents, corrosive chemicals and gases.
- Solvent resistant capsule
- Water, chemical and reagent purification

TECHNICAL SPECIFICATIONS	
Filter media	PTFE
Housing	Polypropylene
Pore size (µm)	0.1, 0.2, 0.45, 0.8, 1.0, 3.0, 5.0
Max. Pressure (bar)	4.1
Biosecurity	According to UPS class VI
Wetting Characteristics	Hydrophobic
Sterilization	By autoclaving (max 134 °C) or gamma-radiation

## CHM® Capfil PP (polypropylene)

CapFil PP is all-polypropylene construction capsule filter (with polypropylene membrane and polypropylene housing). This combination allows to be used with a wide range of solutions at various pH and temperatures.

### Applications:

- Cosmetics and personal care
- Sample preparation
- Solvents
- Food and beverages
- Water, chemical and reagent purification
- Inks and pigments

TECHNICAL SPECIFICATIONS	
Filter media	Polypropylene (PP)
Housing	Polypropylene
Pore size (µm)	0.1, 0.2, 0.45, 1.0, 3.0, 5.0, 10.0, 20.0, 50.0
Max. Pressure (bar)	4.1
Biosecurity	According to UPS class VI
Wetting Characteristics	Hydrophobic
Sterilization	By autoclaving (max 134 °C) or gamma-radiation

## CHM® Capfil NYLON

CapFil NY is made with nylon membrane combined with a glass microfiber prefilter in a polypropylene housing. This combination allows to be used with heavily loaded and aqueous solutions, including virus suspensions, enzymes, buffers and biological suspensions.

### Applications:

- Cosmetics and personal care
- Food and beverages
- Water, chemical and reagent purification
- Virus suspensions
- Enzymes and buffers

### TECHNICAL SPECIFICATIONS

Filter media	Nylon with glass microfiber prefilter
Housing	Polypropylene
Pore size (µm)	0.1, 0.2, 0.45, 0.8, 1.0, 3.0, 5.0
Max. Pressure (bar)	4.1
Biosecurity	According to UPS class VI
Wetting Characteristics	Hydrophobic
Sterilization	By autoclaving (max 134 °C) or gamma-radiation



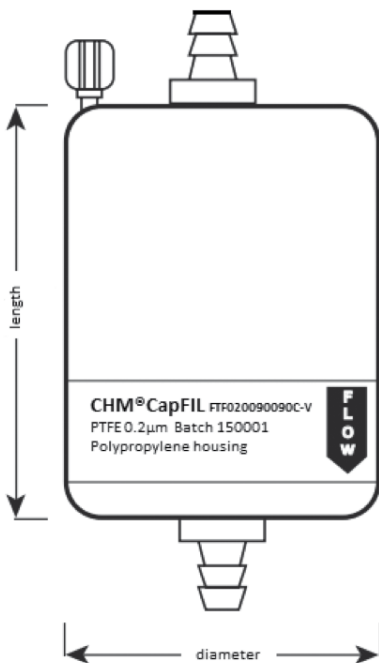
## CHM® Capfil order information

The variety of available sizes, mix of connectors, media and housing allow the final user to create the optimum configuration that suits with the required application.

Select the available media between:

- High flow PES to use with both liquids and dry gases
- Hydrophobic PTFE membrane is an excellent choice for aggressive chemical and air/gas stream filtration
- Hydrophilic nylon for aqueous solutions
- Polypropylene depth media for heavy duty fine filtration

ORDER INFORMATION									
CF	XX	XXX	-	XXX	XXX	XX	-	X	X
Capsule	Membrane	Pore size		Diameter	Length	Connectors		Units/box	Sterile
Filter	PE-Polyethersufone	001-0.1 µm		067-67 mm	046-46 mm	A-1/4"NPT male		V-25	-- non sterile
CapFil	TF-PTFE	002-0.2 µm		090-90 mm	090-90 mm	B-1/2"NPT male		K-50	S Sterile
	NY-Nylon	004-0.45 µm			112-122 mm	C-3/8"hose barb		H-100	
	PP-Polypropylene	008-0.8 µm			165-165 mm				
		012-1.2 µm							
		030-3 µm							
		050-5 µm							
		100-10 µm							
		200-20 µm							
		500-50 µm							



e.g. CFPE004067090C-VS is Capfil of polyethersulfone, pore size of 0.45 µm, diameter 67mm, length 90mm, with 3/8" hose barb connector. Pack of 25 units Sterile.



## 6.2 STRING WOUND FILTER CARTRIDGES

String wound filter cartridges are used in pre-filter applications. They are manufactured with high quality materials (FDA listed), providing high flow rate and low pressure drop. Its enhanced design provides improved dirt-holding capacity over standard fiber wound cartridges.

### Features:

- Wide application range and excellent chemical compatibility
- Different media: Polypropylene, Bleached cotton, Glass fiber
- Without odor, foam or adhesives
- Long lifecycle
- Large surface area enhance wound cartridges filtering effect

### Applications:

- Food and beverages
- PCB industry
- Chemicals and solvents
- RO water pre-filtration
- Drinking water filter
- Petrochemical
- Electronics and semiconductor

### TECHNICAL SPECIFICATIONS

Filter media	Polypropylene microfiber 100%	Bleached cotton	Glass fiber
Core	Polypropylene	SUS	SUS
Length (mm) (*)	250, 500, 750 and 1000		
Micron rating (µm)	1, 5, 10, 20, 30, 50, 75 and 100		
Max. differential pressure (bar)	3.0 at 25°C		
Max. operating temperature (°C)	60	150	150
Inside diameter (mm)	28 and 30		
Outside diameter (mm)	62 and 65		

(\*) Other sizes available under request

### ORDER INFORMATION

CW	XX	XXX	-	XX	XX	XXX	X	X	-	X
Cartridge	Membrane	Pore size		Internal diameter	Outside diameter	Length	End cap type	Seal material		Units/box
Filter	PP-Polypropylene	001-1 µm		28-28 mm	62-62 mm	250-250 mm	A-222/Flat end	V-Viton		K-50
Wounded	BC-Bleached Cotton	005-5 µm		30-30 mm	65-65 mm	500-500 mm	B-222/Fin	S-Silicon		H-100
		010-10 µm				750-750 mm	C-226/Flat end	E-EPDM		
		020-20 µm				-1M-1000 mm	D-226/Fin	N-NBR		
		030-30 µm								
		050-50 µm								
		075-75 µm								
		100-100 µm								

## 6.3 MELT BLOWN FILTER CARTRIDGES

Melt blown depth filter cartridges are constructed of pure polypropylene fibers. CHMLAB offers a comprehensive range of melt blown filter elements for almost every fluid application and flow capacity to support manufacturing industries. The term 'Melt blown' means the filter has been manufactured under melt blown technology using a computer controlled process where fibers are collected in a graded pore structure about a molded core.

### Features:

- Economical & longer life cycle
- Depth filter cartridges are constructed of 100% pure polypropylene fibers
- Made of FDA grade PP material without binders, additives or lubricants
- Non-fiber releasing, suitable in relative high temperatures
- Available in a wide selection of micron ratings from 1 to 100 µm

### Applications:

- Food and beverages
- PCB industry
- Chemicals and solvents
- RO water pre-filtration
- Waste water treatment
- Petrochemical
- Electronics

### TECHNICAL SPECIFICATIONS

Filter media	Polypropylene microfiber 100%
Core	Polypropylene
Length (mm)(*)	250, 500, 750 and 1000
Micron rating (µm)	1, 3, 5, 10, 20,30, 50, 75, and 100
Max. differential pressure (bar)	3.0 at 25°C
Max. operating temperature (°C)	70
Inside diameter (mm)	28, 30
Outside diameter (mm)	60, 63

(\*) Other sizes available under request

### ORDER INFORMATION

CM	XX	XXX	-	XX	XX	XXX	X	X	-	X
Cartridge	Membrane	Pore size		Internal diameter	Outside diameter	Length	End cap type	Seal material		Units/box
Filter	PP-Polypropylene	001-1 µm		28-28 mm	60-60 mm	250-250 mm	A-222/Flat end	V-Viton		K-50
Melt Blown		003-3 µm		30-30 mm	63-63 mm	500-500 mm	B-222/Fin	S-Silicon		H-100
		05-5 µm				750-750 mm	C-226/Flat end	E-EPDM		
		010-10 µm				-1M-1000 mm	D-226/Fin	N-NBR		
		020-20 µm								
		030-30 µm								
		050-50 µm								
		075-75 µm								
		100-100 µm								

## 6.4 PP PLEATED FILTER CARTRIDGES

Pleated filter cartridges offer superior dirty holding capacity and high removal due to their multiple layered construction. All polypropylene components and thermal bonded manufacturing enable the smallest contaminant extraction and higher durability. CHM® pleated filter cartridges provides a long life cycle to use in critical filtration applications within food, pharma, biotech, etc.

### Features:

- Superior holding capacity
- High removal efficiency
- Long life cycle
- 100% polypropylene fibers
- No adhesives and resins minimizes contamination from media extraction

### Applications:

- Food and beverages
- Paint and coatings
- Chemicals and solvents
- RO water pre-filtration
- Waste water treatment
- Petrochemical
- Electronics

### TECHNICAL SPECIFICATIONS

PLEATED PP Filter Cartridge	
Filter media	Polypropylene microfiber 100%
Core	Polypropylene
Micron rating (µm)	1, 3, 5, 10, 20,30, 50, 75 and 100
Max. Differential pressure (bar)	3.0 at 25°C
Max. Operating Temperature (°C)	70
Inside diameter (mm)	33
Outside diameter (mm)	70
Lenght (mm)(*)	250, 500, 750 and 1000

(\*) Other sizes available under request

### ORDER INFORMATION

CP	XX	XXX	-	XX	XX	XXX	X	X	-	X
Cartridge	Membrane	Pore size		Internal diameter	Outside diameter	Length	End cap type	Seal material		Units/box
Filter	PP-Polypropylene	001-1 µm		33-33 mm	70-70 mm	250-250 mm	A-222/Flat end	V-Viton		K-50
Pleated PP		002-2 µm				500-500 mm	B-222/Fin	S-Silicon		H-100
		06-6 µm				750-750 mm	C-226/Flat end	E-EPDM		
		08-8 µm				-1M-1000 mm	D-226/Fin	N-NBR		
		001-1 µm					E-Flat gasket			
		002-2 µm					double open			
		003-3 µm								
		005-5 µm								
		010-10 µm								
		020-20 µm								
		030-30 µm								
		050-50 µm								
		060-60 µm								



## 6.5 PLEATED MEMBRANE FILTER CARTRIDGES

Pleated membrane cartridge filters from CHM® offer the ultimate in product safety and purity for absolute filtration with pore sizes from 0.05 to 5 micron (depending on the media).

Available in the main membranes PTFE, Polyethersulfone (PES), Nylon 66 and PVDF for maximal chemical compatibility. CHM® pleated membrane filters are ideal for a wide range of high purity and final filtration applications.

### CHM® Nylon filter cartridge

CHM® hydrophilic nylon pleated cartridge filter are uniquely constructed for superior performance with Nylon media. The pleat technology maximizes the useful surface area of the filter while maintaining proper flow paths between media pleats. The membrane offers broad chemical compatibilities & contains no surfactants. This CHM® cartridge filters are manufactured with nylon and polypropylene support media, both materials are chemically inert non-shedding and biologically safe according to FDA, USP and EEC requirements for pharmaceutical and food contact use. Thermoplastic sealing technologies are used in the cartridge construction eliminating the need for potentially contaminating adhesives.

#### Features:

- Better performance for high temperature-resistance, acid and base resistance
- Hydrophilic membrane with high flow
- Non-fiber releasing according to pharmaceuticals and food industry requirements
- 100% integrity tested
- Flushed with ultrapure water

#### Applications:

- Pharmaceutical
- Food and Beverage
- Semiconductor
- Pre-filtration

#### TECHNICAL SPECIFICATIONS

Filter media	Nylon 66 membrane
Core	Polypropylene
Support	Polypropylene fiber
Micron rating (µm)	0.22 and 0.45
Length (mm)	250, 500, 750 and 1000
Inside diameter (mm)	28
Outside diameter (mm)	69
Max. Differential pressure (bar)	2.1 at 25°C
Max. Operating Temperature (°C)	70

(\*) Other micron rates available under request

## CHM® PTFE filter cartridge

CHM® hydrophobic PTFE pleated cartridge filters are uniquely constructed with polytetrafluoroethylene media. PTFE membranes offer broad chemical compatibility with minimal extractables in a wide range of fluids and applications and contains no surfactants. The inherently hydrophobic PTFE membrane is ideally suited for the filtration of compressed air and other process gases. The pleat technology maximizes the useful surface area of the filter while maintaining proper flow paths between media pleats. These CHM® cartridge filters are manufactured with PTFE and polypropylene support media, both materials are chemically inert non-shedding and biologically safe according to FDA, USP and EEC requirements for pharmaceutical and food contact use. Thermoplastic sealing technologies are used in the cartridge construction eliminating the need for potentially contaminating adhesives.

### Features:

- Better performance for high temperature-resistance, acid and base resistance
- Hydrophobic membrane with high flow
- Low pressure drop, long service life, high flow rate
- 100% integrity tested
- Non fiber-releasing

### Applications:

- Fermentation tank
- Vent filter of hold tank
- Semiconductor
- Gas purification
- Acid, solvent and base filtration

### TECHNICAL SPECIFICATIONS

Filter media	PTFE membrane
Core	Polypropylene
Support	Polypropylene fiber
Micron rating (µm)(*)	0.22 and 0.45
Length (mm)	250, 500, 750 and 1000
Inside diameter (mm)	28
Outside diameter (mm)	70
Max. Differential pressure (bar)	2.1 at 25°C
Max. Operating Temperature (°C)	90

(\*) Other micron rates available under request

## CHM® PVDF filter cartridge

CHM® hydrophobic PVDF pleated cartridge filters are uniquely constructed with polyvinylidene fluoride media. PVDF membranes offer broad chemical compatibility with low extractable levels, high protein binding and high chemical inertness. The pleat technology maximizes the useful surface area of the filter while maintaining proper flow paths between media pleats. These CHM® cartridge filters are manufactured with PVDF and polypropylene support media, both materials are chemically inert non-shedding and biologically safe according to FDA, USP and EEC requirements for pharmaceutical and food contact use. Thermoplastic sealing technologies are used in the cartridge construction eliminating the need for potentially contaminating adhesives.

### Features:

- Hydrophobic membrane with small adsorption
- Reinforced PVDF filter membrane and deflector layer
- 100% integrity tested
- Flushed with ultrapure water

### Applications:

- Pharmaceutical
- Food and Beverage
- Petrochemical
- Pre-filtration
- Oxidizing gas and liquid

### TECHNICAL SPECIFICATIONS

Filter media	PVDF
Core	Polypropylene
Support	Polypropylene fiber
Micron rating (µm)(*)	0.22 and 0.45
Length (mm)	250, 500, 750 and 1000
Inside diameter (mm)	28
Outside diameter (mm)	70
Max. Differential pressure (bar)	2.1 at 25°C
Max. Operating Temperature (°C)	90

(\*) Other micron rates available under request

## CHM® PES filter cartridge

CHM® hydrophilic PES pleated cartridge filters are uniquely constructed with polyethersulphone media. PES membranes offer broad chemical and contains no surfactants, it allows easy integrity testing for all applications where daily control is required. The pleat technology maximizes the useful surface area of the filter while maintaining proper flow paths between media pleats. These CHM® cartridge filters are manufactured with PES and polypropylene support media, both materials are chemically inert non-shedding and biologically safe according to FDA, USP and EEC requirements for pharmaceutical and food contact use. Thermoplastic sealing technologies are used in the cartridge construction eliminating the need for potentially contaminating adhesives.

### Features:

- Hydrophilic membrane with high flow
- No-fiber releasing according to pharmaceuticals and food industry requirements
- 100% integrity tested
- Flushed with ultrapure water
- Excellent performance of chemical compatibility

### Applications:

- Pharmaceutical
- Food and Beverage
- Petrochemical
- Biological industry
- Chemical

### TECHNICAL SPECIFICATIONS

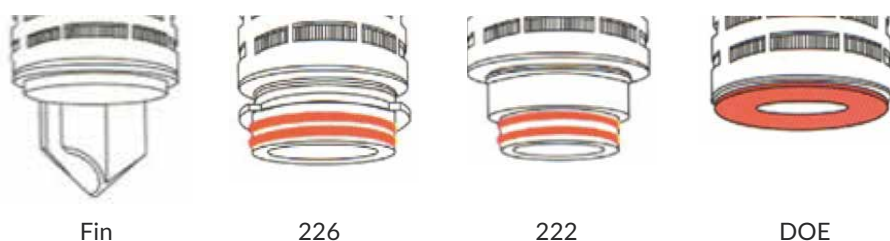
Filter media	PES
Core	Polypropylene
Support	Polypropylene fiber
Micron rating (µm)(*)	0.22 and 0.45
Length (mm)	250, 500, 750 and 1000
Inside diameter (mm)	28
Outside diameter (mm)	70
Max. Differential pressure (bar)	2.1 at 25°C
Max. Operating Temperature (°C)	90

(\*) Other micron rates available under request

## CHM® membrane cartridge filter order information

ORDER INFORMATION										
CM	XX	XXX	-	XX	XX	XXX	X	X	-	X
Cartridge	Membrane	Pore size		Internal diameter	Outside diameter	Length	End cap type	Seal material		Units/box
Filter	NY-nylon	.01-0.01 µm		28-28 mm	69-69 mm	250-250 mm	A-222/Flat end	V-Viton		U-1
Pleated	TF-PTFE	0.1-0.1 µm			70-70 mm	500-500 mm	B-222/Fin	S-Silicon		V-5
membrane	PV-PVDF	0.2-0.22 µm				750-750 mm	C-226/Flat end	E-EPDM		
	PE-PES	0.45-0.45 µm				-1M-1000 mm	D-226/Fin	N-NBR		
		0.6-0.65 µm					F-SOE	T-Teflon		
		001-1 µm					G-DOE			

### End cap configuration



SOE: Single Open End  
DOE: Doble Open End

## CHM® Stainless Steel Filter Housing

Sanitary stainless steel filter housings are specifically designed for liquid and air/gas filtration applications of the bio-pharmaceutical industry, food and beverage. Manufactured in AISI 316 L. Typical application areas for stainless steel housings include bioreactors, autoclaves, freeze dryers and process tanks.







## APPENDIX

CHEMICAL COMPATIBILITY

EQUIVALENCE TABLE





# CHEMICAL COMPATIBILITY

		Filter Media											Housing			
Chemical	R: Compatible L: Limited Resistance N: Not Compatible T: Not tested	cellulose acetate	cellulose nitrate	polyethersulfone	nylon	ptfe	pvcdf	regenerated cellulose	polypropylene	glass fiber	polycarbonate	polyester	Acrylic modified	polysulfone	polystyrene	polypropylene
		ACIDS	Acetic Acid 5%	R	R	R	R	R	R	R	R	R	R	R	N	R
	Acetic Acid 10%	N	N	R	L	R	R	R	R	R	R	R	N	R	R	R
	Acetic Acid, Glacial	N	N	R	N	R	R	R	R	R	L	R	N	R	R	L
	Boric Acid	R	R	T	L	R	T	T	R	T	R	R	N	R	R	R
	Hydrochloric, 6N	L	N	R	N	R	L	N	R	R	R	L	N	R	R	T
	Hydrochloric, Conc.	N	N	R	N	R	R	N	R	R	R	N	N	R	R	T
	Hydrofluoric, 35%	N	N	T	N	R	R	L	R	N	R	R	T	T	T	R
	Hydrofluoric, 10%	N	N	T	N	R	R	N	T	N	R	R	T	T	T	T
	Nitric Acid, 6N	L	R	N	N	R	T	N	L	L	R	R	N	N	L	T
	Nitric Acid, Conc.	N	N	N	N	R	R	N	N	L	R	N	N	N	N	T
	Sulfuric Acid, 6N	L	R	T	N	R	R	L	L	R	R	R	N	N	N	T
	Sulfuric Acid, Conc.	N	N	N	N	R	T	N	N	R	N	N	N	N	N	T
ALCOHOL	Amyl Alcohol	R	N	N	R	R	R	R	R	R	R	R	N	R	N	R
	Benzyl Alcohol	L	R	N	L	R	R	R	R	N	L	R	R	R	N	R
	Butyl Alcohol	R	R	R	R	R	R	T	R	R	R	R	R	R	T	R
	Butyl Cellosolve	L	N	T	R	R	T	T	R	R	L	R	T	L	T	T
	Ethyl Alcohol <80%	R	R	R	R	R	R	T	R	R	R	R	L	R	L	T
	Ethyl Alcohol >80%	R	L	R	R	R	R	T	R	R	R	R	L	R	N	T
	Ethylene Glycol	R	L	R	R	R	R	R	R	R	R	R	T	R	T	R
	Glycerine (Glycerol)	R	R	R	R	R	R	R	R	R	R	R	T	R	T	R
	Isobutyl alcohol	R	R	T	R	R	R	T	R	N	R	R	R	R	R	T
	Isopropanol	R	L	R	R	R	R	R	R	R	R	R	T	R	T	T
	Methanol	R	N	R	L	R	R	R	R	R	R	R	R	R	R	T
	Methyl Cellosolve	L	L	T	R	R	R	T	R	R	N	R	T	R	T	T
	Propanol	R	R	T	R	R	R	R	R	R	R	R	T	R	T	R
BASES	Ammonium Hydroxide, 6N	N	N	R	N	R	R	L	R	R	N	L	R	R	R	T
	Potassium Hydroxide, 6N	N	N	T	R	R	R	L	R	T	N	N	T	R	T	T
	Sodium Hydroxide, 6N	N	N	R	N	R	R	L	R	T	N	L	T	T	T	T
	Acetone	N	N	N	R	R	N	R	R	R	L	R	N	N	N	R
SOLVENTS	Acetonitrile	N	N	R	R	R	R	R	R	R	L	R	N	N	N	R
	Amyl Acetate	L	N	L	R	R	R	R	R	R	R	R	N	N	N	L
	Aniline	N	N	R	R	R	T	R	R	T	N	R	T	N	T	L
	Benzene	L	R	R	R	R	R	R	L	R	L	R	N	N	N	L
	Bromoform	N	R	T	R	R	T	T	R	R	N	R	T	N	T	T
	Butyl Acetate	L	N	L	R	R	T	R	R	R	R	R	N	N	N	L
	Carbon Tetrachloride	L	R	R	R	R	R	R	L	N	L	R	N	N	N	N
	Cellosolve	R	N	T	R	R	T	R	R	R	R	R	N	N	T	T
	Chloroform	N	R	N	R	R	R	R	L	R	N	R	N	L	N	L
	Cyclohexane	R	R	T	R	R	T	R	R	R	R	R	N	R	T	R
	Cyclohexanone	N	N	N	R	R	N	R	R	R	L	R	N	N	N	R
	Diethyl Acetamide	N	N	T	R	R	T	R	N	R	L	R	N	N	N	T
	Dimethyl Formamide	N	N	N	R	R	N	L	R	R	N	R	N	N	N	R
	Dimethyl Sulfoxide (DMSO)	N	N	N	R	R	N	R	R	R	N	R	N	N	N	T
	Dioxane	N	N	L	R	R	R	R	R	R	N	R	N	N	N	R
	Ethyl Ether	L	L	R	R	R	R	R	R	R	R	R	N	L	N	N
	Ethylene Dichloride	L	L	T	R	R	T	T	R	R	N	R	T	N	T	T
	Formaldehyde	L	N	R	R	R	R	T	R	R	R	R	N	R	N	R
	Freon TF	R	R	R	R	R	R	T	R	R	R	R	L	R	N	T
	Gasoline	R	R	T	R	R	R	R	R	R	R	R	N	R	N	N

		Filter Media											Housing			
Chemical	R: Compatible L: Limited Resistance N: Not Compatible T: Not tested	cellulose acetate	cellulose nitrate	polyethersulfone	nylon	ptfe	pvcdf	regenerated cellulose	polypropylene	glass fiber	polycarbonate	polyester	Acrylic modified	polysulfone	polystyrene	polypropylene
		Hexane	R	R	T	R	R	R	R	R	R	R	R	R	N	R
Isopropyl Acetate	N	N	T	R	R	N	R	R	R	R	R	R	N	N	N	R
kerosene	R	R	T	R	R	R	R	R	R	R	R	R	N	N	N	T
Methyl Acetate	N	N	T	R	R	R	R	R	R	R	N	R	N	N	N	R
Methyl Ethyl Ketone (MEK)	N	N	N	R	R	N	R	R	R	L	R	N	N	N	N	T
Methyl Isobutyl Ketone	N	N	T	R	R	N	R	R	R	L	T	N	N	N	N	T
Methylene Chloride	N	N	N	L	R	R	R	R	R	N	R	N	N	N	N	N
Nitrobenzene	N	N	N	R	R	R	R	R	N	N	R	N	N	N	N	R
Pentane	R	R	R	R	R	R	R	L	R	R	R	N	R	N	T	
Perchloroethylene	R	R	N	R	R	T	R	R	N	R	T	N	L	N	L	
Pyridine	N	N	N	R	R	N	R	R	R	N	R	N	N	N	L	
Tetrahydrofuran	N	N	N	L	L	N	R	L	L	N	R	N	N	N	L	
Toluene	L	R	N	R	R	R	R	L	R	L	R	N	N	N	L	
Trichloroethane	L	N	R	R	R	T	R	R	T	N	T	N	N	N	T	
Trichloroethylene	R	R	R	R	L	R	R	L	N	N	R	N	N	N	N	
Triethylamine	R	L	T	R	R	T	R	R	R	L	R	T	N	T	T	
Xylene	R	R	L	R	R	R	R	L	R	R	R	N	N	N	R	
MISCELLANEOUS	Cottonseed Oil	R	R	T	R	R	T	T	R	R	R	T	T	R	T	R
	Hydrogen Peroxide	R	R	T	R	R	R	R	R	R	R	T	R	T	R	
	Kodak KMER FTFR	N	N	T	R	R	T	T	R	N	R	N	R	N	T	
	Peanut Oil	R	R	T	R	R	T	T	R	R	R	T	R	T	T	
	Petroleum Oils	T	R	L	T	R	R	T	T	R	R	T	T	T	R	
	Sesame Oil	R	R	T	R	R	T	T	R	R	R	T	R	T	T	
	Shiplay (As-111,340,1350)	N	N	T	R	R	T	T	R	N	R	N	R	N	T	
	Silicone Oils	R	R	R	R	R	R	R	R	R	R	T	R	T	R	
	Tupentine	R	R	T	R	R	T	T	R	R	R	T	R	T	T	
	Waycoat 59	N	N	T	R	R	T	T	R	N	R	N	R	N	T	

# EQUIVALENCE TABLE

Filter Paper						
	Properties	CHM	WHATMAN	S&S	M&N	SARTORIUS
QUANTITATIVE ANALYSIS	VERY FAST	F2045	--	589/1		388
	FAST	F2041	41	589/2	640w	389
	MEDIUM	F2043	43	589/5	640m	392
	MEDIUM-SLOW	F2040	40	589/6	640md	390
	SLOW	F2044	44	589/3		391
	VERY SLOW	F2042	42			640d
QUANTITATIVE HARDENED ASHLESS	FAST	F2141	541	1505	1640w	1388
	MEDIUM FAST	F2140	540	1506	1640m	1392
	SLOW	F2142	542	1507	1640d	1391
QUANTITATIVE HARDENED LOW ASH	FAST	F2054	54	1573	1670	
	MEDIUM FAST	F2052	52	1574	1672	
	SLOW	F2050	50	1575	1674	
QUALITATIVE ANALYSIS	VERY FAST	F1004	4	604	617	288
	FAST	F1007	--	597		289
	MEDIUM	F1001	1	593	615	292
	MEDIUM/THICK	F1003	3	--	618	35/h
	MEDIUM-SLOW	F1002	2	--	616md	292a
	SLOW	F1006	6	602h		290
	VERY SLOW	F1005	5	602eh	619	293
QUALITATIVE GENERAL PURPOSE	FAST	F1113	113	520b	804	
	VERY FAST/CREPPED	F1091	91	856	620	602/N
	VERY FAST	F1093	93	860	612	3m/n
CHROMATOGRAPHY PAPERS		C3001	1 Chr	2043 a	261	FN 3
		C3002	2 Chr	2043 b	214	FN 4
		C3003M	3 MM Chr	598 L/8		FN 100
		C3003	3 Chr	2040 a		FN 7 a
		C3017	17 Chr			
		C3031	31 ET Chr	2668/8	827	FN 8
REAMS	50 gr/m <sup>2</sup>	F4550				
	60 gr/m <sup>2</sup>	F4560				
	73 gr/m <sup>2</sup>	F4573				
ABSORV.POLIET.		F5505	Benchkote	295 PE	210 PE	PEN
CELLULOSE EXTRACTION THIMBLES	Cellulose	F5800	2800	603 g	645	30 or 35
GLASS MICROFIBER EXTRACTION THIMBLES	Glass Microfiber	F5900	2814	603 g	649	40
GLASS FIBER FILTERS	1.6 µm	GF1	GF-A	GF 50	GF-1	GMF1
	1.0 µm	GF2	GF-B	GF 51	GF-2	GMF2
	1.2 µm	GF3	GF-C	GF 52	GF-3	GMF3
	2.7 µm	GF4	GF-D	GF 53	GF-4	GMF4
	0.7 µm	GF5	GF-F	GF 55	GF-5	GMF5
	1.5 µm	GF6	934-AH	GF 30	GF-6	
QUARTZ fiber FILTERS	<900 °C	QF1	QM-A	QF 20		QMF
PHASE SEPARATOR	100 gr/m <sup>2</sup>	P1000	1 P/S	597hy	616 WA	480
AC FILTER PAPER	Activated Carbon	S1010				

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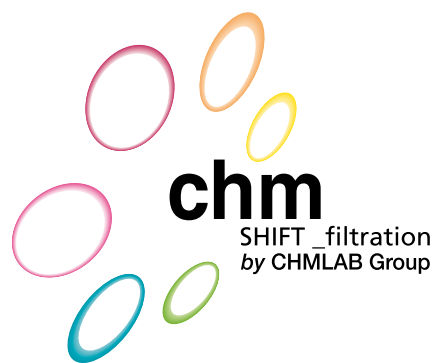
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