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FILTRATION

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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		
FILTER PAPER	GLASS AND QUARZ MICROFIBER	EXTRACTION THIMBLES (CELLULOSE, GLASS & QUARTZ MICROFIBER)
· Quantitative and qualitative analysis · General laboratory procedures (clarifying filtration) · Technical applications · Special applications	· Very small particles · Aggressive substances · Temperatures up to 1000 °C · Water analysis · Biochemical determinations · Air monitoring · As a membrane pre-filter	· Extraction solid/liquid with Soxhlet · Powder and aerosol particles collection in gases

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**	**WEIGTH** g/m²	**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**
CIRCLES (1000/box)						
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
CIRCLES (*) (100/box)						
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
SIZE (mm)	**SHEETS (100/pack)**					
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 alkalinized 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**	**WEIGTH** g/m²	**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**
CIRCLES (1000/box)			
25	F2140-025	F2141-025	F2142-025
CIRCLES(*) (100/box)			
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**	**WEIGTH** g/m²	**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**	**WEIGTH** g/m²	**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**
CIRCLES (1000/box)						
25	F1001-025	F1002-025	F1003-025	F1004-025	F1005-025	F1006-025
CIRCLES (*) (100/box)						
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
SIZE (mm)	**SHEETS (100/pack)**					
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.

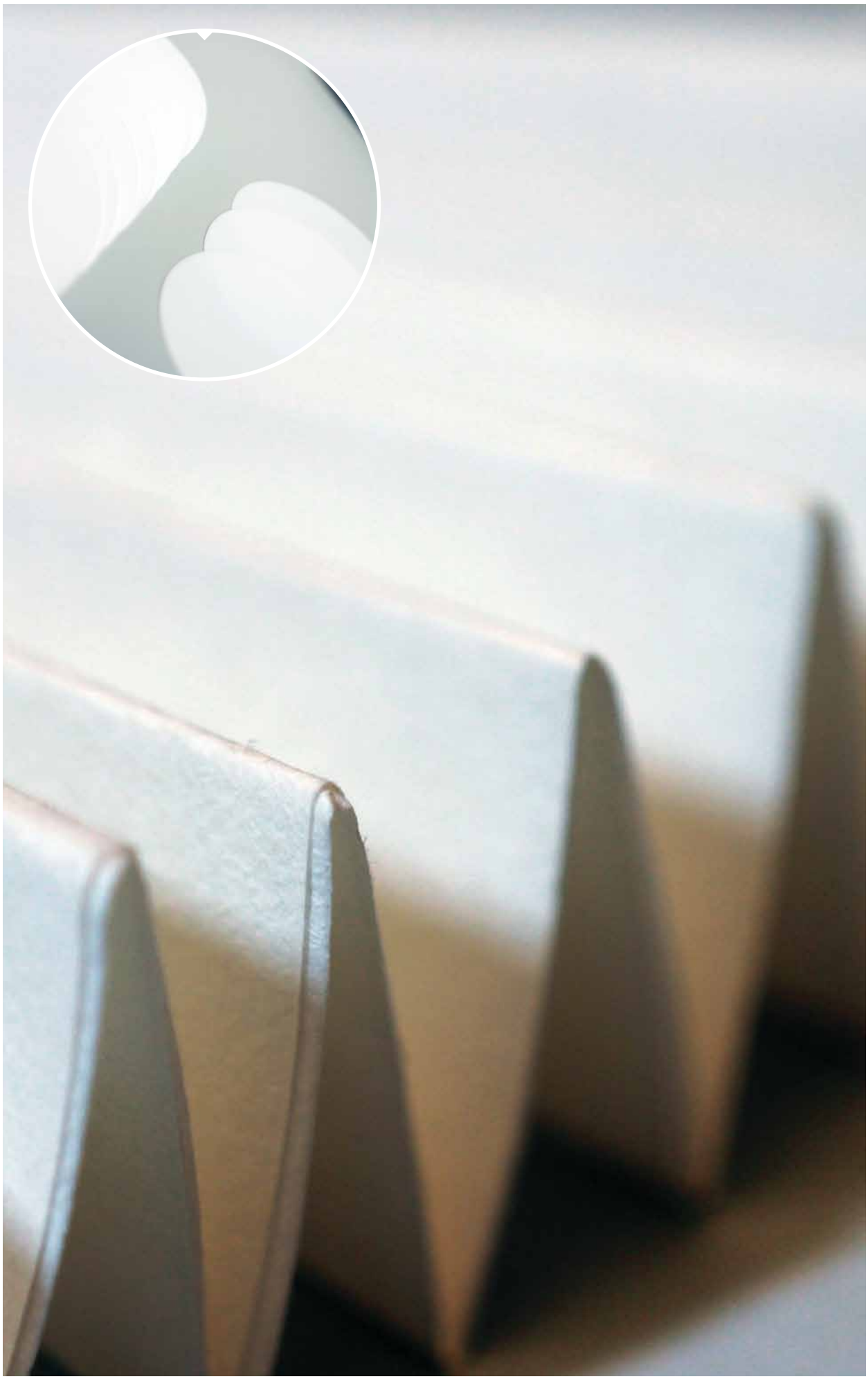
F1093 GRADE - Fast filtration
Smooth Grade F1093 is a general purpose filter paper for qualitative analysis.
This wet strengthened paper is used for general filtration and sample preparation for food, sugar processing plants, hospitals, educational and research centres, colleges, universities and labs (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**	**WEIGTH** g/m²	**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**
CIRCLES (*) (100/box)			
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
SIZE (mm)	**SHEETS (100/box)**		
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 µm from liquids and < 1 µm 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 µm)

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 µm)

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 µm)

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 µm)

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 µm)

This is the filter with the highest retention performance of the range.It is particularly suited to filte 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 µm)

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	**WEIGTH** g/m²	**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**
CIRCLES (100/box)						
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
SIZE (mm)	**SHEETS (100/pack)**					
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 suite 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_2, SO_3, H_2, SO_4, NO and NO_3).

TECHNICAL SPECIFICATIONS					
GRADE	**WEIGTH** g/m²	**THICKNESS** mm	**RETENTION DOP** %	**MAXIMUM TEMPERATURE** (°C)	**BINDER**
QF1	85.0	0.44	99.998	900	NO

ORDER INFORMATION	
DIAMETER (mm)	**QF1**
CIRCLES (25/box)	
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
SHEETS (25/pack)	
203x254	QF1-203254

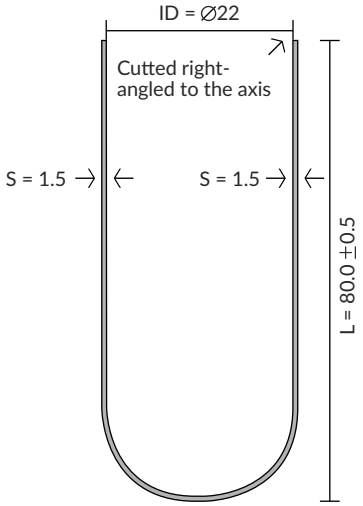
1.6 EXTRACTION THIMBLES

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



DIMENSIONS OF AN EXTRACTION THIMBLE:

ID = Inner diameter in mm
L = Length in mm
S = Wall thickness in mm

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 ±1mm
- Wall thickness 2 ±0.5mm

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.

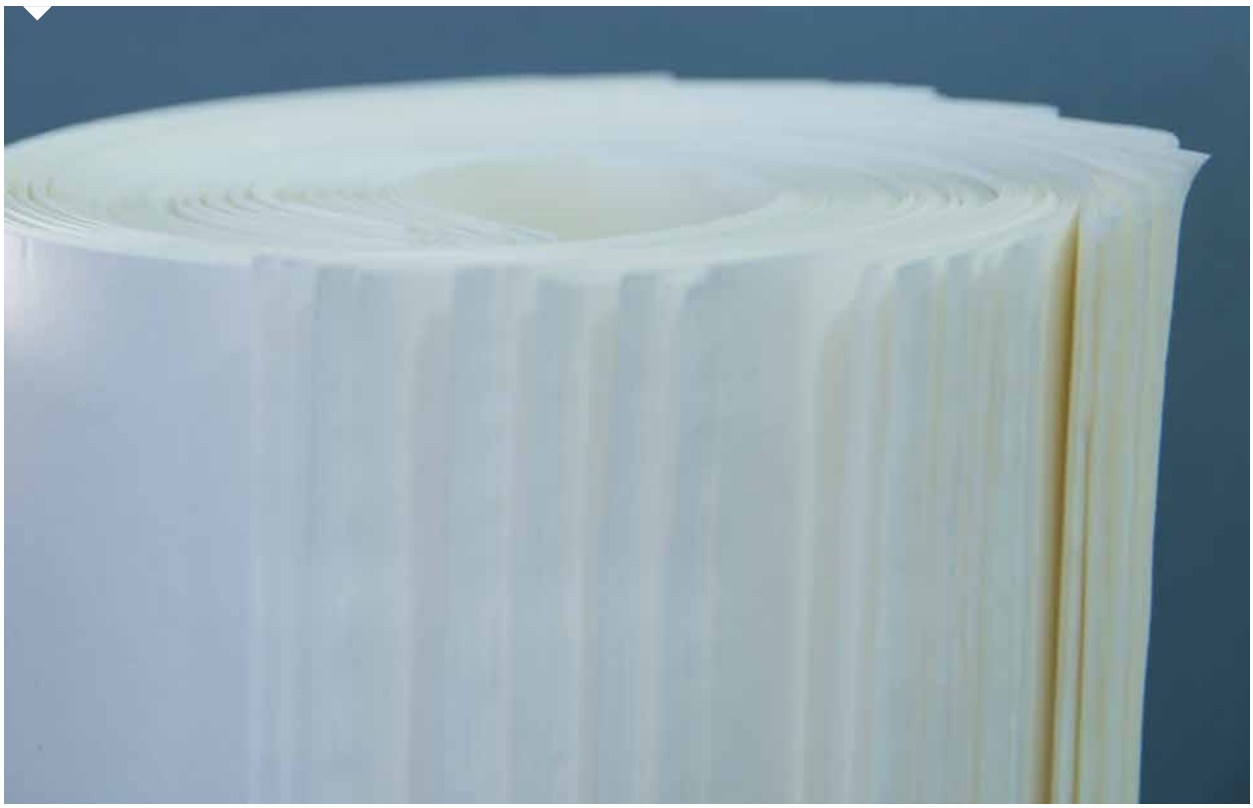
F4573 GRADE - Thick paper
This is the thickest quality in the range. Particularly suitable for general laboratory work requiring high absorption power.

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	**WEIGTH** g/m²	**THICKNESS** mm	**ABSORTION 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	**WEIGTH** g/m²	**WATER ABSORTION**	**FEATURES**
S1505	135	150%	Highly abosrvent
S1506	185	300%	Ultra absorvent

ORDER INFORMATION		
SIZE (mm)	**S1505**	**S1506**
100 sheets/box		
46x57	S1505-460570H	
48x60	S1505-480600H	S1506-480600H
1 reel/pack		
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

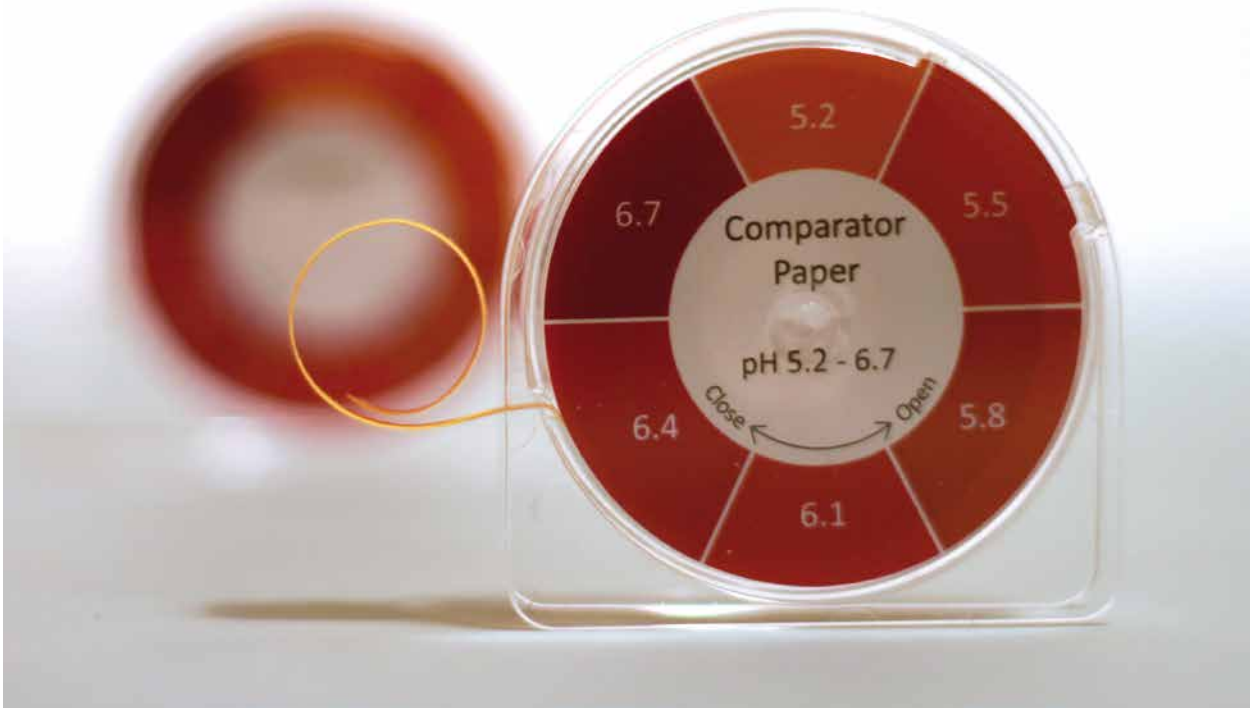
CHM® E2000 & E2001 pH Test Strips combine ease-of-use with accuracy, reliability and consistency.
The convenience of using indicator papers for the simple and rapid determination of pH values has led to many applications in laboratories and in industry.

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.			