

# Filtration

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## Discover

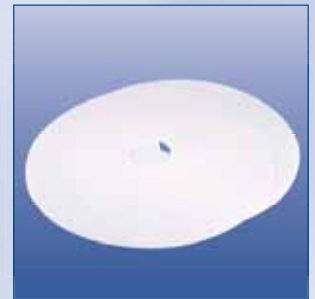
Quality filters „Made in Germany“ since 1911



Filter Circles



Folded Filters



Technical Cuts



Bulk



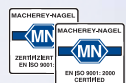
Extraction Thimbles



Membranes

**MACHEREY-NAGEL**

[www.mn-net.com](http://www.mn-net.com)





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## Welcome to MACHEREY-NAGEL!

We are pleased that you are interested in our range of high quality filtration products. In a new design, we present our filter papers, filter membranes and extraction thimbles for a broad range of applications as well as special products made from filter paper.

Our catalogue "Filtration" also includes pH indicator papers, as well as test papers for qualitative and semi-quantitative analysis. This will give you an overview of the extensive range of applications for these products. Perhaps you may find a convenient solution to one of your analytical tasks. For more than 9 decades, since 1911, MACHEREY-NAGEL produces high quality filter papers, which represent the roots of the company. Even today, only the best raw materials are used in production, following long-proven recipes. This guarantees our continuous high quality. Since 1996, MN has established a quality management system in accordance with ISO 9001.

We hope that you enjoy our catalogue and that our products will help to make your lab-life easier.



## MACHEREY-NAGEL meets your needs

If you have any questions concerning the products in this catalogue, or if you are looking for any further support, please feel free to contact us:

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## Filter papers

### Raw materials and manufacture

For production of the high quality MN filter papers we use cotton linters, refined pulp with a high level of  $\alpha$ -cellulose as well as glass fibres. Cotton linters are short-fibred seed hairs from cotton seeds, which cannot be used for textile purposes, but which are highly suitable for the manufacture of soft and absorbent filter papers.

In addition to cotton linters we use mainly pulp, which is obtained by chemical treatment of plant materials, e.g. coniferous or deciduous wood.

At MACHEREY-NAGEL only the most experienced paper specialists select the raw materials in order to ensure the continuously high quality of our filter papers.

For the manufacturing of MN glass fibre filters we use staple fibres made from borosilicate glass (exception: paper from quartz fibres). With a diameter of 0.5 – 1.5  $\mu\text{m}$  these glass fibres are considerably thinner than cellulose fibres. One of the most important feature of glass fibre filters is their resistance to almost all chemicals (exception e.g. hydrogen fluoride).



### Important technical parameters of filter papers

Parameter	Description
Ash content/ residue on ignition	The ash content is determined in accordance with DIN 54370: 10 g filter paper are weighed after ignition in a platinum crucible at 800 °C. Results are expressed as % of original paper weight.
Dry bursting strength	For determination of the dry bursting strength the paper is clamped over a rubber diaphragm with an area of 10 cm <sup>2</sup> . The strain on the paper is then increased by applying an increasing air pressure, until the paper bursts. The dry bursting strength in accordance with DIN 53113 is stated in KPa.
Tensile strength	For determination of the tensile strength a paper strip (measuring 180 x 15 mm) is subjected to vertical strain by applying increasing weight. The force expended at the moment of tearing represents the tensile strength. Results are expressed in N/15 mm.
Thickness	The thickness of a paper is measured with a touch pressure device. Especially for soft and creped papers it is important that the touch pressure is not too high. Otherwise the papers are compressed and a falsely low thickness is obtained.
Filtration speed	For determination of the filtration speed in accordance with DIN 53137 the duration of flow of 10 ml distilled water through a quadrant-folded, freely suspended filter circle of 12.5 cm diameter is measured. Results are expressed in seconds.
Basis weight	The basis weight is determined for a sample of 10 x 10 cm. It is measured in g/m <sup>2</sup> .
Gurley test	The Gurley test measures the time required for filtration of 100 ml air at a water column pressure of 31 mm. The sample has an area of ¼ sq. inch.
Wet strength	The wet strength of a paper is a measure for the mechanical stability of a paper in a wet or moist condition. For example, it can be determined as the tensile strength or the bursting strength (see above).
Pore size	The retention efficiency of a filter paper is influenced by several factors. Since filter papers are deep-bed filters, one usually refers to a mean particle retention.
Capillary rise according to Klemm	The capillary rise according to Klemm indicates how far a strip of filter paper is moistened in 10 min when vertically dipped with one end into distilled water (20 °C).
Particle retention	Particle retention refers to the efficiency of filter papers in retaining certain precipitates. It is characterised by the permeability of the paper for precipitates of iron(III) oxyhydrate, lead sulphate, calcium oxalate and barium sulphate.

## Selection of filter papers

Important filtration properties for certain applications

Application	Recommended filter
filter cake ignition and quantitative determination of the residue (gravimetric analysis)	ashless filter papers
analysis of the filtrate; it is important that no interfering substances are extracted from the filter paper	ashless filter papers or glass fibre filters
mechanical removal of the filter cake from the filter, e.g. with a jet from a wash bottle or with a spatula.	wet-strengthened filters, (hardened filter papers)
separation of an organic solvent from water	hydrophobic filters (MN 616 WA, MN 617 WA)
visualisation of small amounts of light precipitates	black filter paper (MN 220)
technical filtration or need for large cuts	technical filter papers or thick filter papers
retention of very fine precipitates	slow filter papers
retention of coarse precipitates and fast filtration	fast filter papers
filtration of strongly acidic or strongly basic liquids	glass fibre filters
filtration of aggressive liquids (e.g. strong oxidants)	glass fibre filters
need for very low metal ion blanks of the filter (e.g. for investigation of air-borne particles)	quartz fibre filters
accelerated filtration with constant retention efficiency	creped paper
filtration at increased pressure or strong mechanical load (e.g. heavy filter cake).	thick technical filter papers
strongly absorbent paper, no special wet strength required	chromatography papers

Please also note the list of applications on page 42.

## FilterFinder

The FilterFinder allows the easy transfer to high quality filters from MACHEREY-NAGEL.

### The easy 1-2-3 procedure:

- 1.) Select the current manufacturer
- 2.) Enter the current reference
- 3.) Start the search

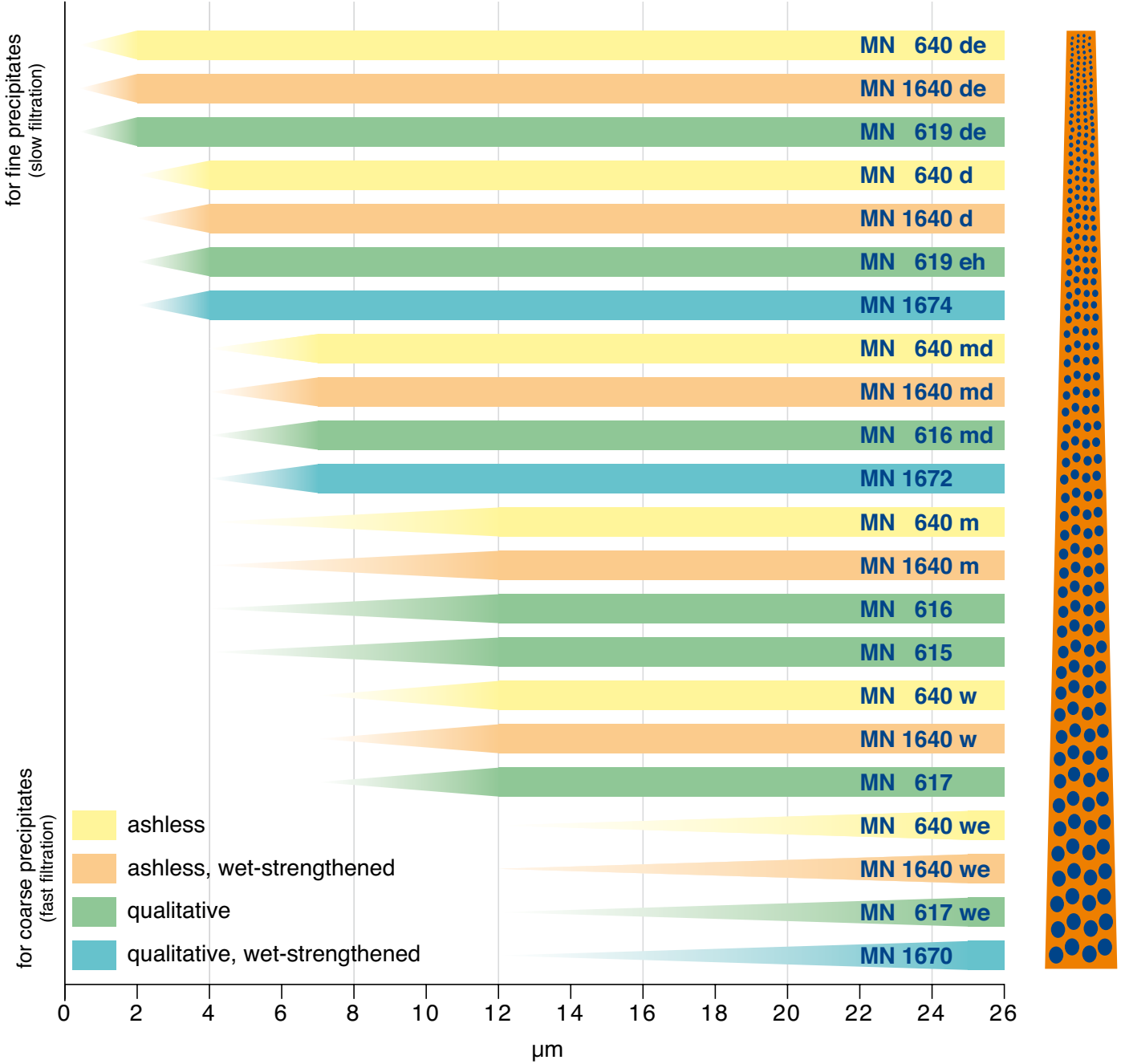
The FilterFinder immediately traces the optimal filter paper from MACHEREY-NAGEL. A link appears that leads to the respective data sheet. This allows a quick and easy cross-check to find out whether the paper meets the requirements. You can be sure to get the optimal paper.

[www.mn-net.com/filterfinder](http://www.mn-net.com/filterfinder)

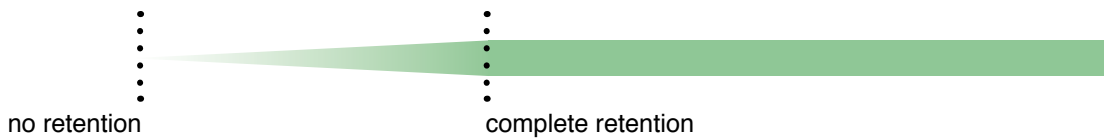


### Particle retention of MN filter papers

The particle retention capacity is an important parameter for characterising a filter paper. The following diagram shows typical values of our analytical filter papers.



### How to read the graph



## Filter papers for quantitative analysis

### Ashless filter papers

Ashless filter papers are particularly suited for quantitative routine analysis and are manufactured from refined pulp and linters. They are acid-washed and have an extremely low ash content of < 0.01%. The amount of  $\alpha$ -cellulose is about 95%.



#### Technical data

Grade	Colour code	Properties	Thickness	Filtration speed	Basis weight
MN 640 we		very fast filtration, smooth	0.22 mm	5 s	85 g/m <sup>2</sup>
MN 640 w	≡ No. 41 grey label ≡ black ribbon	fast filtration, smooth	0.2 mm	9 s	85 g/m <sup>2</sup>
MN 640 m	≡ No. 43 white label ≡ white ribbon	medium fast filtration, smooth	0.2 mm	27 s	85 g/m <sup>2</sup>
MN 640 md	≡ No. 40 yellow label ≡ red ribbon	medium to slow filtration, smooth	0.2 mm	55 s	85 g/m <sup>2</sup>
MN 640 dd	≡ No. 44 blue label ≡ green ribbon	slow filtration, smooth	0.16 mm	100 s	70 g/m <sup>2</sup>
MN 640 d	≡ No. 42 green label ≡ blue ribbon	slow filtration, smooth	0.17 mm	140 s	85 g/m <sup>2</sup>
MN 640 de		very slow filtration, smooth	0.2 mm	195 s	100 g/m <sup>2</sup>

#### Ordering information

References for packs of 100 filters

Ø	MN 640 we	MN 640 w	MN 640 m	MN 640 md	MN 640 dd	MN 640 d	MN 640 de
55 mm	20 10 05	20 20 05	20 30 05	20 40 05	20 60 05	20 50 05	20 70 05
70 mm	20 10 07	20 20 07	20 30 07	20 40 07	20 60 07	20 50 07	20 70 07
90 mm	20 10 09	20 20 09	20 30 09	20 40 09	20 60 09	20 50 09	20 70 09
110 mm	20 10 11	20 20 11	20 30 11	20 40 11	20 60 11	20 50 11	20 70 11
125 mm	20 10 12	20 20 12	20 30 12	20 40 12	20 60 12	20 50 12	20 70 12
150 mm	20 10 15	20 20 15	20 30 15	20 40 15	20 60 15	20 50 15	20 70 15
185 mm	20 10 18	20 20 18	20 30 18	20 40 18	20 60 18	20 50 18	20 70 18
240 mm	20 10 24	20 20 24	20 30 24	20 40 24	20 60 24	20 50 24	20 70 24
320 mm	20 10 32	20 20 32	20 30 32	20 40 32	20 60 32	20 50 32	20 70 32

other sizes and cuts on request





## Hardened filter papers for quantitative analysis

These wet-strengthened hard filter papers are manufactured from refined pulp and linters and have a low ash content of < 0.01%. They are often used for quantitative routine procedures and for analytical gravimetric applications. Due to their high mechanical strength in wet condition they are particularly suited for applications, where the residue is removed from the filter e.g. with a spatula or a jet of water.









### Technical data

Grade	Properties	Thickness	Filtration speed	Basis weight
MN 1640 we	wet-strengthened, very fast filtration, smooth	0.22 mm	5 s	85 g/m <sup>2</sup>
MN 1640 w	wet-strengthened, fast filtration, smooth	0.2 mm	9 s	85 g/m <sup>2</sup>
MN 1640 m	wet-strengthened, medium fast filtration, smooth	0.2 mm	27 s	85 g/m <sup>2</sup>
MN 1640 md	wet-strengthened, medium to slow filtration, smooth	0.2 mm	55 s	85 g/m <sup>2</sup>
MN 1640 d	wet-strengthened, slow filtration, smooth	0.17 mm	140 s	85 g/m <sup>2</sup>
MN 1640 de	wet-strengthened, very slow filtration, smooth	0.2 mm	195 s	100 g/m <sup>2</sup>

### Ordering information

References for packs of 100 filters

Ø	MN 1640 we	MN 1640 w	MN 1640 m	MN 1640 md	MN 1640 d	MN 1640 de
						
55 mm	22 10 05	22 20 05	22 30 05	22 40 05	22 50 05	22 70 05
70 mm	22 10 07	22 20 07	22 30 07	22 40 07	22 50 07	22 70 07
90 mm	22 10 09	22 20 09	22 30 09	22 40 09	22 50 09	22 70 09
110 mm	22 10 11	22 20 11	22 30 11	22 40 11	22 50 11	22 70 11
125 mm	22 10 12	22 20 12	22 30 12	22 40 12	22 50 12	22 70 12
150 mm	22 10 15	22 20 15	22 30 15	22 40 15	22 50 15	22 70 15
185 mm	22 10 18	22 20 18	22 30 18	22 40 18	22 50 18	22 70 18
240 mm	22 10 24	22 20 24	22 30 24	22 40 24	22 50 24	22 70 24
320 mm	22 10 32	22 20 32	22 30 32	22 40 32	22 50 32	22 70 32

other sizes and cuts on request

## Filter papers for qualitative analysis

### Standard filter papers for qualitative analysis

Qualitative filter papers are manufactured from the same raw materials as the ashless grades and are particularly suited for general laboratory filtrations. The average ash content is about 0.1%, the amount of  $\alpha$ -cellulose is about 95%.



#### Technical data

Grade	Properties	Thickness	Filtration speed	Basis weight
MN 617 we	extra soft, fast filtration, smooth	0.22 mm	5 s	85 g/m <sup>2</sup>
MN 617 = No. 4	soft, fast filtration, smooth	0.2 mm	9 s	85 g/m <sup>2</sup>
MN 615 = No. 1	medium fast filtration, smooth	0.16 mm	22 s	70 g/m <sup>2</sup>
MN 616	medium fast filtration, smooth	0.2 mm	27 s	85 g/m <sup>2</sup>
MN 618 = No. 3	medium fast filtration, smooth	0.32 mm	22 s	140 g/m <sup>2</sup>
MN 616 md = No. 2	medium to slow filtration, smooth	0.2 mm	55 s	85 g/m <sup>2</sup>
MN 619	dense, slow filtration, smooth	0.17 mm	100 s	75 g/m <sup>2</sup>
MN 619 eh = No. 6	dense, slow filtration, smooth	0.17 mm	140 s	85 g/m <sup>2</sup>
MN 619 de = No. 5	extra dense, very slow filtration, smooth	0.2 mm	195 s	100 g/m <sup>2</sup>

#### Ordering information

References for packs of 100 filters

Ø	MN 617 we		MN 617		MN 615		MN 616		MN 618	
55 mm	43 50 05	53 50 05	43 40 05	53 40 05	43 10 05	53 10 05	43 20 05	53 20 05	43 60 05	53 60 05
70 mm	43 50 07	53 50 07	43 40 07	53 40 07	43 10 07	53 10 07	43 20 07	53 20 07	43 60 07	53 60 07
90 mm	43 50 09	53 50 09	43 40 09	53 40 09	43 10 09	53 10 09	43 20 09	53 20 09	43 60 09	53 60 09
110 mm	43 50 11	53 50 11	43 40 11	53 40 11	43 10 11	53 10 11	43 20 11	53 20 11	43 60 11	53 60 11
125 mm	43 50 12	53 50 12	43 40 12	53 40 12	43 10 12	53 10 12	43 20 12	53 20 12	43 60 12	53 60 12
150 mm	43 50 15	53 50 15	43 40 15	53 40 15	43 10 15	53 10 15	43 20 15	53 20 15	43 60 15	53 60 15
185 mm	43 50 18	53 50 18	43 40 18	53 40 18	43 10 18	53 10 18	43 20 18	53 20 18	43 60 18	53 60 18
240 mm	43 50 24	53 50 24	43 40 24	53 40 24	43 10 24	53 10 24	43 20 24	53 20 24	43 60 24	53 60 24
320 mm	43 50 32	53 50 32	43 40 32	53 40 32	43 10 32	53 10 32	43 20 32	53 20 32	43 60 32	53 60 32

Ø	MN 616 md		MN 619		MN 619 eh		MN 619 de	
55 mm	43 30 05	53 30 05	43 70 05	53 70 05	43 80 05	53 80 05	43 90 05	53 90 05
70 mm	43 30 07	53 30 07	43 70 07	53 70 07	43 80 07	53 80 07	43 90 07	53 90 07
90 mm	43 30 09	53 30 09	43 70 09	53 70 09	43 80 09	53 80 09	43 90 09	53 90 09
110 mm	43 30 11	53 30 11	43 70 11	53 70 11	43 80 11	53 80 11	43 90 11	53 90 11
125 mm	43 30 12	53 30 12	43 70 12	53 70 12	43 80 12	53 80 12	43 90 12	53 90 12
150 mm	43 30 15	53 30 15	43 70 15	53 70 15	43 80 15	53 80 15	43 90 15	53 90 15
185 mm	43 30 18	53 30 18	43 70 18	53 70 18	43 80 18	53 80 18	43 90 18	53 90 18
240 mm	43 30 24	53 30 24	43 70 24	53 70 24	43 80 24	53 80 24	43 90 24	53 90 24
320 mm	43 30 32	53 30 32	43 70 32	53 70 32	43 80 32	53 80 32	43 90 32	53 90 32

other sizes and cuts on request

## Wet-strengthened filter papers for qualitative applications

Hardened analytical filter papers are manufactured from refined pulp and linters and feature a content of  $\alpha$ -cellulose of more than 95%. The smooth surface of these papers allows fibre-free filtration. They feature a high wet strength and can also be used in the filtration of strongly alkaline or strongly acidic solutions. Due to their high mechanical strength in wet condition they are particularly suited for applications, where the residue is removed from the filter e.g. with a spatula or a jet of water.









### Technical data

Grade	Properties	Thickness	Filtration speed	Basis weight
MN 1670	wet-strengthened, fast filtration, smooth	0.13 mm	9 s	85 g/m <sup>2</sup>
MN 1672	wet-strengthened, medium fast filtration, smooth	0.13 mm	35 s	85 g/m <sup>2</sup>
MN 1674	wet-strengthened, slow filtration, smooth	0.13 mm	110 s	85 g/m <sup>2</sup>

### Ordering information

References for packs of 100 filters

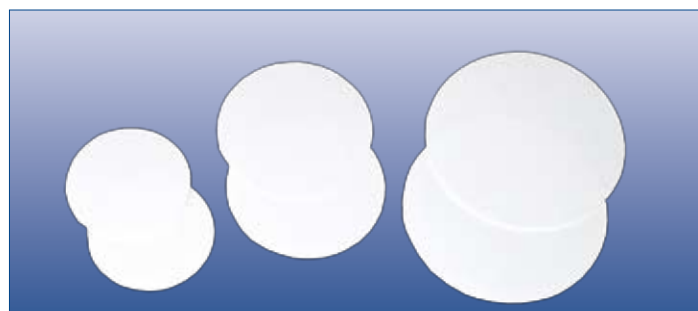
Ø	MN 1670		MN 1672		MN 1674	
						
55 mm	47 00 05	57 00 05	47 20 05	57 20 05	47 40 05	57 40 05
70 mm	47 00 07	57 00 07	47 20 07	57 20 07	47 40 07	57 40 07
90 mm	47 00 09	57 00 09	47 20 09	57 20 09	47 40 09	57 40 09
110 mm	47 00 11	57 00 11	47 20 11	57 20 11	47 40 11	57 40 11
125 mm	47 00 12	57 00 12	47 20 12	57 20 12	47 40 12	57 40 12
150 mm	47 00 15	57 00 15	47 20 15	57 20 15	47 40 15	57 40 15
185 mm	47 00 18	57 00 18	47 20 18	57 20 18	47 40 18	57 40 18
240 mm	47 00 24	57 00 24	47 20 24	57 20 24	47 40 24	57 40 24
320 mm	47 00 32	57 00 32	47 20 32	57 20 32	47 40 32	57 40 32

other sizes and cuts on request



## Glass fibre filters / quartz fibre filters

Glass fibre filters allow a fast filtration and simultaneously a very high particle retention. They are manufactured from borosilicate glass fibres and are chemically resistant towards most organic and inorganic solvents (except HF). For the analysis of air-borne particles we recommend the quartz fibre filters MN QF-10 which feature an extremely low content of metal traces.



### Technical data

Grade	Thickness	Basis weight	Filtration speed air	Particle retention	Max. temperature	Binder
MN GF-1 = GF/A	0.3 mm	55 g/m <sup>2</sup>	12 s	0.7 µm	500 °C	without
MN GF-2 = GF/B	0.65 mm	140 g/m <sup>2</sup>	30 s	0.5 µm	500 °C	without
MN GF-3 = GF/C	0.28 mm	50 g/m <sup>2</sup>	25 s	0.6 µm	500 °C	without
MN GF-4 = GF/D	0.60 mm	120 g/m <sup>2</sup>	5 s	1.4 µm	500 °C	without
MN GF-5 = GF/F	0.40 mm	85 g/m <sup>2</sup>	80 s	0.4 µm	500 °C	without
MN GF-6	0.35 mm	70 g/m <sup>2</sup>	12 s	0.6 µm	500 °C	without
MN 85/70	0.35 mm	70 g/m <sup>2</sup>	15 s	0.6 µm	200 °C	organic
MN 85/70 BF	0.35 mm	70 g/m <sup>2</sup>	15 s	0.6 µm	500 °C	without
MN 85/90	0.40 mm	90 g/m <sup>2</sup>	15 s	0.5 µm	200 °C	organic
MN 85/90 BF	0.40 mm	90 g/m <sup>2</sup>	15 s	0.5 µm	500 °C	without
MN 85/220	1.0 mm	220 g/m <sup>2</sup>	15 s	0.4 µm	200 °C	organic
MN 85/220 BF	1.0 mm	220 g/m <sup>2</sup>	15 s	0.4 µm	500 °C	without
MN QF-10 = QM/A		85 g/m <sup>2</sup>	< 5 s	-	950 °C	without




### Ordering information




References for packs of 100 filters

Ø	MN GF-1	MN GF-2	MN GF-3	MN GF-4	MN GF-5	MN GF-6	MN 85/70
25 mm	41 10 025	41 20 025	41 30 025	41 40 025	41 50 025	41 60 025	40 30 025
37 mm	41 10 037	41 20 037	41 30 037	41 40 037	41 50 037	41 60 037	40 30 037
45 mm	41 10 045	41 20 045	41 30 045	41 40 045	41 50 045	41 60 045	40 30 045
55 mm	41 10 05	41 20 05	41 30 05	41 40 05	41 50 05	41 60 05	40 30 05
70 mm	41 10 07	41 20 07	41 30 07	41 40 07	41 50 07	41 60 07	40 30 07
90 mm	41 10 09	41 20 09	41 30 09	41 40 09	41 50 09	41 60 09	40 30 09
110 mm	41 10 11	41 20 11	41 30 11	41 40 11	41 50 11	41 60 11	40 30 11
125 mm	41 10 12	41 20 12	41 30 12	41 40 12	41 50 12	41 60 12	40 30 12
150 mm	41 10 15	41 20 15	41 30 15	41 40 15	41 50 15	41 60 15	40 30 15
185 mm	41 10 18	41 20 18	41 30 18	41 40 18	41 50 18	41 60 18	40 30 18
240 mm	41 10 24	41 20 24	41 30 24	41 40 24	41 50 24	41 60 24	40 30 24
270 mm	41 10 27	41 20 27	41 30 27	41 40 27	41 50 27	41 60 27	40 30 27

**Ordering information (cont.)**

References for packs of 100 filters

Ø	MN 85/70 BF	MN 85/90	MN 85/90 BF
			
25 mm	40 40 025	40 50 025	40 60 025
37 mm	40 40 037	40 50 037	40 60 037
45 mm	40 40 045	40 50 045	40 60 045
55 mm	40 40 05	40 50 05	40 60 05
70 mm	40 40 07	40 50 07	40 60 07
90 mm	40 40 09	40 50 09	40 60 09
110 mm	40 40 11	40 50 11	40 60 11
125 mm	40 40 12	40 50 12	40 60 12
150 mm	40 40 15	40 50 15	40 60 15
185 mm	40 40 18	40 50 18	40 60 18
240 mm	40 40 24	40 50 24	40 60 24
270 mm	40 40 27	40 50 27	40 60 27

Ø	MN 85/220	MN 85/220 BF	MN QF-10
			
25 mm	40 70 025	40 80 025	–
37 mm	40 70 037	40 80 037	41 70 037
45 mm	40 70 045	40 80 045	41 70 045
55 mm	40 70 05	40 80 05	41 70 05
70 mm	40 70 07	40 80 07	41 70 07
90 mm	40 70 09	40 80 09	41 70 09
110 mm	40 70 11	40 80 11	–
125 mm	40 70 12	40 80 12	41 70 12
150 mm	40 70 15	40 80 15	–
185 mm	40 70 18	–	–
240 mm	40 70 24	–	–
270 mm	40 70 27	–	–

other sizes and cuts on request



## Filter papers for technical applications

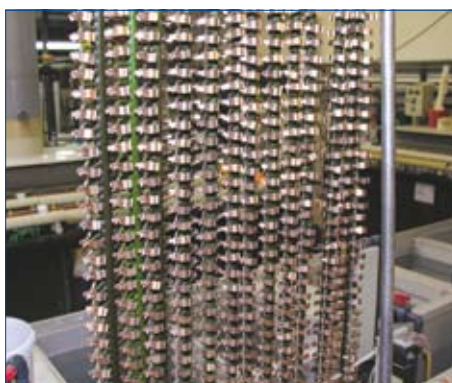
The filter papers listed below are mainly recommended for technical applications such as industrial filtrations. They are available as sheets, filter circles, folded filters (in part), cuts of almost any shape and as rolls. On request, we will be glad to produce other filter papers or filter papers with special properties as to customers demand.

### Smooth and thick filter papers

#### Technical data

Grade	Application and properties	Thickness	Filtration speed	Basis weight
MN 713	medium speed, for general laboratory use	0.15 mm	20 s	70 g/m <sup>2</sup>
MN 615 A	medium speed, for general applications, slightly stronger than MN 615	0.20 mm	20 s	80 g/m <sup>2</sup>
MN 672	medium speed, very high wet strength, e.g. for sugar industry	0.20 mm	37 s	85 g/m <sup>2</sup>
MN 674	slow, very high wet-strength	0.19 mm	90 s	85 g/m <sup>2</sup>
MN 52 K	polyester paper with very high mechanical strength, also when wet (moist)	–	–	100 g/m <sup>2</sup>
MN 875	medium speed, e.g. for beverage industry	0.26 mm	25 s	120 g/m <sup>2</sup>
MN 918	fast, for filtration of large volumes of liquid	0.34 mm	9 s	120 g/m <sup>2</sup>
MN 625	medium speed, for general applications	0.26 mm	30 s	130 g/m <sup>2</sup>
MN 804	very fast, soft, e.g. beverage industry	0.40 mm	5 s	140 g/m <sup>2</sup>
MN 621	medium speed, wet-strengthened, e.g. for soil analysis	0.27 mm	40 s	130 g/m <sup>2</sup>
MN 728	slow, with about 30% activated charcoal for decolouring coloured liquids, e.g. for electroplating baths	0.40 mm	55 s	170 g/m <sup>2</sup>
MN 818	fast, strongly absorbent, e.g. for collection of blood drops (Guthrie test)	0.45 mm	8 s	180 g/m <sup>2</sup>
MN 960	fast, e.g. for beverage industry	0.45 mm	14 s	180 g/m <sup>2</sup>
MN 180	medium wet strength, hard, for technical filtrations	0.35 mm	45 s	180 g/m <sup>2</sup>
MN 675	slow, firm, for filtration of large volumes of liquid	0.35 mm	60 s	180 g/m <sup>2</sup>
MN 604	fast, thick, e.g. for beverage industry	0.40 mm	9 s	200 g/m <sup>2</sup>
MN 827	strongly absorbent, soft	0.70 mm	12 s	270 g/m <sup>2</sup>
MN 835	similar to MN 827, but wet-strengthened, e.g. for electroplating baths	0.70 mm	12 s	270 g/m <sup>2</sup>
MN 270	very high wet-strength, hard, for technical filtrations	0.54 mm	50 s	270 g/m <sup>2</sup>
MN 440	soft thick filter paper, e.g. for electroplating baths	1.0 mm	–	400 g/m <sup>2</sup>
MN 520	soft thick filter paper, e.g. for electroplating baths	1.5 mm	–	500 g/m <sup>2</sup>
MN 866	soft thick filter paper, e.g. for electroplating baths	1.7 mm	–	650 g/m <sup>2</sup>

Available sizes and ordering information on request



## Creped filter papers

### Technical data

Grade	Application and properties	Thickness	Filtration speed	Basis weight
MN 850	very fast, thin, for fast filtration of small volumes of liquid	0.22 mm	3 s	53 g/m <sup>2</sup>
MN 692	fast, for general applications	0.24 mm	20 s	70 g/m <sup>2</sup>
MN 126/70	medium speed, wet-strengthened, for technical applications	0.20 mm	25 s	70 g/m <sup>2</sup>
MN 751	medium speed for general applications	0.27 mm	12 s	75 g/m <sup>2</sup>
MN 750 N	very fast, very high wet strength, e.g. for electroplating baths	0.20 mm	5 s	60 g/m <sup>2</sup>
MN 553	medium speed, unbleached (brown paper) for applications requiring high mechanical strength	0.20 mm	30 s	70 g/m <sup>2</sup>
MN 753	medium speed, unbleached (brown paper) for applications requiring high mechanical strength	0.34 mm	15 s	80 g/m <sup>2</sup>
MN 651	fast, for general applications	0.30 mm	9 s	90 g/m <sup>2</sup>
MN 605	very fast, soft, e.g. for filtration of paints and oils	0.35 mm	5 s	100 g/m <sup>2</sup>
MN 651/120	fast, wet-strengthened	0.44 mm	9 s	120 g/m <sup>2</sup>
MN 601	very fast, e.g. for clarification of essential oils	0.60 mm	2 s	140 g/m <sup>2</sup>
MN 652	fast, wet-strengthened	0.45 mm	15 s	140 g/m <sup>2</sup>
MN 606	very fast, e.g. for filtration of transformer oils	0.50 mm	8 s	150 g/m <sup>2</sup>

Available sizes and ordering information on request

## Embossed filter papers

### Technical data

Grade	Application and properties	Thickness	Filtration speed	Basis weight
MN 612	for general applications	0.20 mm	10 s	75 g/m <sup>2</sup>
MN 614	for filtration of essential oils, emulsions, essences etc.	0.25 mm	20 s	75 g/m <sup>2</sup>
MN 620	medium speed, unbleached (brown) e.g. for breweries	0.26 mm	20 s	75 g/m <sup>2</sup>
MN 631	medium speed, unbleached (brown) e.g. for applications in sugar industry	0.20 mm	30 s	80 g/m <sup>2</sup>

Available sizes and ordering information on request



## Filter papers for special applications

Product/application	MN Grade	Page
Activated charcoal paper	MN 728	16
Antibiotic resistance tests	MN 827 ATD, MN 827 ATR, MN 827 ATS/8	21
Black filter paper for detection of light precipitates	MN 220	19
Blotting procedures	MN 218 B, MN 827 B, MN 440 B	23
Breweries	MN 614, MN 312, MN 620	18
Chromatography	MN 214, MN 214 ff, MN 218, MN 260, MN 261, MN 827, MN 866	23
Fat analysis	MN 615 ff, MN 715	18
Filter aids: filter flocs	MN 101, MN 2101	22
Hydrophobic phase separation papers	MN 617 WA, MN 616 WA	19
Ion exchange papers	MN 616 LSA-50, MN 616 LSB-50	21
Kieselguhr paper	MN 660	19
Lens paper (José tissue paper)	MN 13	21
Microscopy, absorbent paper	MN 224	20
Phosphate-free filters	MN 619 G, MN 616 G, MN 617 G	17
Polyester paper	MN 52 K	17
Soil analysis	MN 280 1/4, MN 619 G, MN 616 G, MN 617 G	17
Surface protection paper Lab-Top, paper coated with PE	MN 210 PE	22
Weighing aids	MN 808, MN 226, MN 40/25, MN 40	20
Guthrie test cards	MN 818 GT	on request
Flue gas testing	MN 1817	on request
Smelling strips for the perfume industry	MN 270 S	on request
Cellulose tablets for X-ray fluorescence analysis	MN 2104 (pack of 500 tablets)	REF 481040
Sample supports, touch papers for Schöniger method	MN 640 mS	REF 486003
Sterilizing paper	MN 68	on request
Electrocardiographs, contact paper		on request
Nitrogen-free paper	MN 321	on request

### Activated charcoal filter paper



The activated charcoal filter paper MN 728 is particularly suited for the clarification and decolouring of solutions. The activated charcoal is incorporated in the paper and cannot be washed out into the filtrate.

#### Technical data

Grade	Thickness	Filtration speed	Basis weight
MN 728	0.4 mm	55 s	170 g/m <sup>2</sup>

#### Ordering information

References for packs of 100 filters

Ø	MN 728	Ø	MN 728
			
55 mm	48 10 05	150 mm	48 10 15
70 mm	48 10 07	185 mm	48 10 18
90 mm	48 10 09	240 mm	48 10 24
110 mm	48 10 11	320 mm	48 10 32
125 mm	48 10 12		

other sizes and cuts on request





## Soil analysis, phosphate-free filters

**MN 280 1/4:** folded filters made from acid-washed paper with a high clarification efficiency for determination of micro-nutrients available to vegetation

**MN 619 G, phosphate-free:** slow filtration, phosphate-free filter paper for soil analysis

**MN 616 G, phosphate-free:** medium fast filtration, phosphate-free filter paper

**MN 617 G, phosphate-free:** fast filtration, phosphate-free filter paper





### Technical data

Grade	Properties	Thickness	Filtration speed	Basis weight
MN 280 1/4	smooth	0.18 mm	95 s	75 g/m <sup>2</sup>
MN 619 G	smooth	0.17 mm	100 s	75 g/m <sup>2</sup>
MN 616 G	smooth	0.20 mm	22 s	85 g/m <sup>2</sup>
MN 617 G	smooth	0.20 mm	9 s	85 g/m <sup>2</sup>



### Ordering information

References for packs of 100 filters

Ø	MN 280 1/4	MN 619 G	MN 616 G	MN 617 G
				
55 mm	–	44 00 05	54 00 05	48 30 05
70 mm	–	44 00 07	54 00 07	48 30 07
90 mm	–	44 00 09	54 00 09	48 30 09
110 mm	52 10 11	44 00 11	54 00 11	48 30 11
125 mm	52 10 12	44 00 12	54 00 12	48 30 12
150 mm	52 10 15	44 00 15	54 00 15	48 30 15
185 mm	52 10 18	44 00 18	54 00 18	48 30 18
240 mm	52 10 24	44 00 24	54 00 24	48 30 24
320 mm	–	44 00 32	54 00 32	48 30 32

other sizes and cuts on request

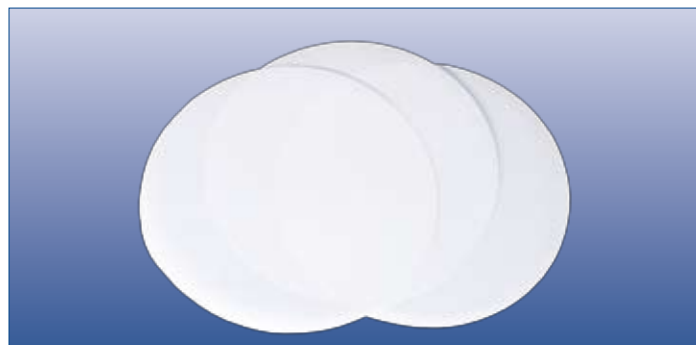
## Polyester paper

This filters made from 100% polyester fibres features a very high mechanical strength in dry as well as in wet condition.

### Technical data

Grade	Properties	Thickness	Basis weight
MN 52 K	hydrophobic polyester paper	0.17 s	100 g/m <sup>2</sup>

Available sizes and ordering information on request



## Filter papers for breweries






The filter paper grade MN 620 can be used to efficiently decarbonate beer. MN 614 and the nitrogen-free MN 321 are used for malt analysis.

### Technical data

Grade	Properties	Thick-ness	Filtration speed	Basis weight
MN 614	medium speed, embossed filter paper	0.25 mm	25 s	75 g/m <sup>2</sup>
MN 321	fast filtration, nitrogen free	0.23 mm	5 s	85 g/m <sup>2</sup>
MN 620	medium speed, embossed filter paper made from unbleached pulp.	0.26 mm	25 s	75 g/m <sup>2</sup>

### Ordering information

References for packs of 100 filters

Ø	MN 614		MN 321	MN 620	
					
55 mm	42 70 05	52 70 05	41 00 05	–	–
70 mm	42 70 07	52 70 07	41 00 07	–	–
90 mm	42 70 09	52 70 09	41 00 09	44 10 09	54 10 09
110 mm	42 70 11	52 70 11	41 00 11	44 10 11	54 10 11
125 mm	42 70 12	52 70 12	41 00 12	44 10 12	54 10 12
150 mm	42 70 15	52 70 15	41 00 15	44 10 15	54 10 15
185 mm	42 70 18	52 70 18	41 00 18	44 10 18	54 10 18
240 mm	42 70 24	52 70 24	41 00 24	44 10 24	54 10 24
320 mm	42 70 32	52 70 32	–	44 10 32	54 10 32

other sizes and cuts on request



## Fat analysis

**MN 615 ff:** This paper is particularly suited for the analysis of fats. A special treatment with organic solvents guarantees that these filters are practically free of fats and resins (ether-soluble residue < 0.1 mg for a 27 cm filter circle).



**MN 715:** This paper is also suited for the analysis of fats. Careful selection of the raw materials ensures a low ether-soluble residue for these filters.

### Technical data

Grade	Properties	Thick-ness	Filtration speed	Basis weight
MN 615 ff	smooth, washed with organic solvents	0.16 mm	22 s	70 g/m <sup>2</sup>
MN 715	smooth	0.16 mm	22 s	70 g/m <sup>2</sup>

### Ordering information

References for packs of 100 filters

Ø	MN 615 ff	MN 715
		
55 mm	59 10 05	52 80 05
70 mm	59 10 07	52 80 07
90 mm	59 10 09	52 80 09
110 mm	59 10 11	52 80 11
125 mm	59 10 12	52 80 12
150 mm	59 10 15	52 80 15
185 mm	59 10 18	52 80 18
240 mm	59 10 24	52 80 24
270 mm	59 10 27	52 80 27
320 mm	–	56 10 32

other sizes and cuts on request

## Kieselguhr paper MN 660



This filter paper retains very fine turbidities and is e.g. recommended for the clarification of urines or sugar solutions.

### Technical data

Grade	Thickness	Basis weight
MN 660	0.32 mm	140 g/m <sup>2</sup>

### Ordering information

References for packs of 100 filters

Ø	MN 660	
		
90 mm	44 70 09	–
110 mm	44 70 11	54 70 11
125 mm	44 70 12	54 70 12
150 mm	44 70 15	54 70 15
185 mm	44 70 18	54 70 18
240 mm	44 70 24	54 70 24
320 mm	44 70 32	54 70 32

other sizes and cuts on request

## Black filter paper for the detection of light precipitates


This filter paper, which is dyed black with a sulphur dye, is used to identify small quantities of light precipitates. For example, it is used for the detection of fluorine or silicon.

### Technical data

Grade	Thickness	Filtration speed	Basis weight
MN 220	0.17 mm	45 s	85 g/m <sup>2</sup>

### Ordering information

References for packs of 100 filters

Ø	MN 220
	
55 mm	40 90 05
70 mm	40 90 07
90 mm	40 90 09
110 mm	40 90 11
125 mm	40 90 12
150 mm	40 90 15
185 mm	40 90 18

other sizes and cuts on request

## Hydrophobic phase separation papers




These papers are made hydrophobic (impermeable to water) by impregnation with a silicone. With the aid of these filters, water can be separated from water-immiscible organic solvents in an elegant manner, by means of a simple filtration.

### Technical data

Grade	Properties	Thickness	Filtration speed	Basis weight
MN 617 WA	smooth	0.2 mm	fast	85 g/m <sup>2</sup>
MN 616 WA	smooth	0.2 mm	medium fast	85 g/m <sup>2</sup>

### Ordering information

References for packs of 100 filters

Ø	MN 617 WA		MN 616 WA
			
55 mm	–	48 40 05	–
70 mm	–	48 40 07	–
90 mm	43 00 09	48 40 09	58 40 09
110 mm	43 00 11	48 40 11	58 40 11
125 mm	43 00 12	48 40 12	58 40 12
150 mm	43 00 15	48 40 15	58 40 15
185 mm	43 00 18	48 40 18	58 40 18
240 mm	43 00 24	48 40 24	52 80 24
320 mm	–	48 40 32	52 80 32

other sizes and cuts on request



## Microscopy

Paper with good absorbent properties for absorbing liquids from microscopic preparations

### Technical data

Grade	Properties	Thick-ness	Migration distance	Basis weight
MN 224	for absorbing liquids	0.2 mm	125 mm / 30 min	90 g/m <sup>2</sup>

### Ordering information

MN 224		
Presentation	Pack of	REF
blocks of 50 sheets 3.7 x 10 cm	100 blocks	18 50 00

## Weighing aids

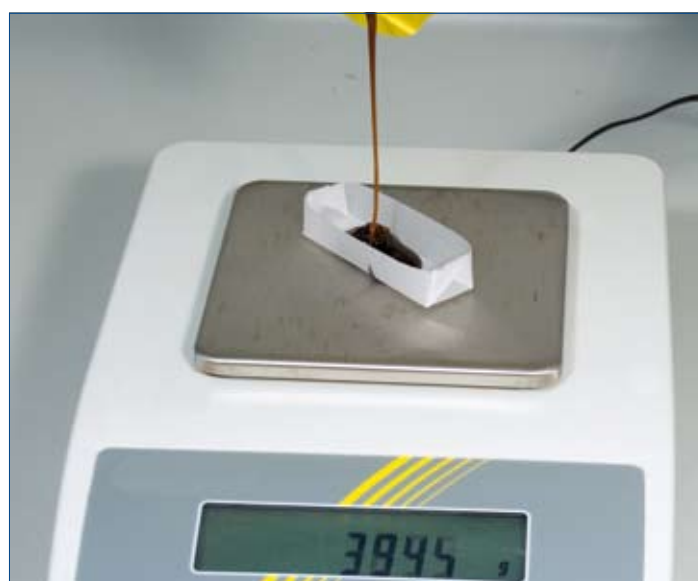
**Weighing boats MN 808:** Weighing boats MN 808 are made from a special, nitrogen-free parchment. They are used to weigh viscous or syrupy substances.

**Weighing paper MN 226:** This is a transparent paper, smooth on both sides, which can be used as substitute for weighing boats. The smooth surface of the paper guarantees that the weighed goods can be transferred without loss.

**Parchment sheets MN 40/25:** These easily crushable (not wet-strengthened) parchment papers are mainly used in the sugar industry for weighing syrupy and semi-crystalline substances.

### Technical data

Grade	Properties	Basis weight
MN 808	weighing boats	n.a.
MN 226	transparent, smooth	40 g/m <sup>2</sup>
MN 40/25	crushable parchment paper	25 g/m <sup>2</sup>



### Ordering information

MN 808		
Size	Pack of	REF
58 x 10 x 10 mm	100 boats	48 60 00
70 x 23 x 15 mm	100 boats	48 60 01

MN 226		
Size	Pack of	REF
block with 100 sheets 9 x 11.5 cm	1 block	18 60 02

MN 40/25		
Size	Pack of	REF
10 x 10 cm	100 sheets	19 40 00

## Antibiotic resistance testing

These products are used in testing the resistance of pathogens to antibiotics. For this test the filter paper sections can be impregnated with the antibiotic to be tested and placed on the inoculated nutrient medium. Depending on the effectiveness, a smaller or larger zone of inhibition is formed. MACHEREY-NAGEL only supplies non-impregnated filter paper sections!

### Technical data

Grade	Thickness	Filtration speed	Basis weight
MN 827	0.7 mm	12 s	270 g/m <sup>2</sup>

### Ordering information

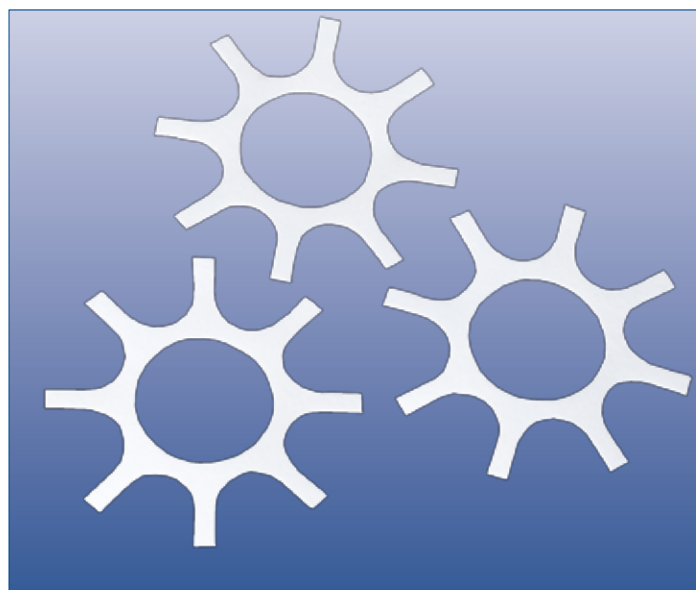
MN 827			
Antibiotic test section	Pack of	REF	
Test disks MN 827 ATD, Ø 6 mm	1000	48 40 00	
Test disks MN 827 ATD, Ø 9 mm	1000	48 40 01	
Test stars MN 827 ATS/8	1000	48 40 03	

## Ion exchange papers

**MN 616 LSA-50:** Filter paper with strongly acidic cation exchange resin; matrix polystyrene crosslinked with 8.5% DVB; active groups SO<sub>3</sub>H, strongly acidic, supplied in H<sup>+</sup> form; capacity 2.0 mval/g, applicable up to 100 °C.

A folded filter of 15 cm diameter is sufficient to demineralize 100 ml of water with a hardness of 10° d.

**MN 616 LSB-50:** Filter paper with strongly basic anion exchange resin; matrix polystyrene crosslinked with 6% DBV; active groups quaternary ammonium compounds, strongly basic; supplied in OH<sup>-</sup> form; capacity 1.3 mval/g, applicable up to 70 °C.



### Technical data

Grade	Properties	Basis weight
MN 616 LSA-50	contains cationic exchange resin	100 g/m <sup>2</sup>
MN 616 LSB-50	contains anionic exchange resin	100 g/m <sup>2</sup>

### Ordering information

Ø	MN 616 LSA-50	MN 616 LSB-50
48 mm	43 21 10	43 21 20

other sizes and cuts on request

## Lens tissue paper (José paper)

Thin, soft, non-fluffing tissue paper for cleaning optical glasses, cuvettes, also suitable as protective paper for metallographic sections

### Technical data

Grade	Properties	Basis weight
MN 13	very thin, smooth	13 g/m <sup>2</sup>

### Ordering information

MN 13			
Presentation	Pack of	REF	
Sheets, 12 x 12 cm	500 sheets	41 81 01	
Sheets, 36 x 48 cm	500 sheets	41 81 02	
Blocks with 50 sheets 8 x 10 cm	1 block	11 80 00	

other sizes and cuts on request



## Surface protection paper LAB-TOP

Filter paper coated on one side with polyethylene, e.g. for covering laboratory workbenches. The filter paper absorbs spilt liquids. It is especially suited for isotope and bacteriological laboratories as well as for chemical storerooms and cupboards.

### Technical data

Grade	Properties	Thickness	Basis weight
MN 210 PE	one side PE-coated	0.22 mm	140 g/m <sup>2</sup>

### Ordering information

MN 210 PE			
Presentation		Pack of	REF
Sheets, 48 x 60 cm		100 sheets	11 20 00
Sheets, 48 x 60 cm		50 sheets	11 20 00.1
Roll, 100 x 0.48 m		1 roll	11 20 10
Roll, 50 x 0.48 m		1 roll	11 20 50
Roll, 100 x 0.60 m		1 roll	11 20 20
Roll, 50 x 0.60 m		1 roll	11 20 30

other sizes and cuts on request



## Filter aids

### Filter flocs

Filter aids transform difficult precipitates and colloidal particles into a form which can be filtered more easily. When slimy and strongly lyophilic, swelling precipitates are involved, the fibres of the filter flocs prevent formation of a continuous, impermeable layer on the filter. The resulting filter cake remains porous and permeable, and clogging of the filter is prevented.

### Technical data

Grade	Properties
MN 101	qualitative filter flocs
MN 2101	ashless, quantitative filter flocs

### Ordering information

MN 101		MN 2101	
500 g	1000 g	500 g	1000 g
48 11 00	48 11 10	28 11 20	28 11 30



## Blotting procedures and chromatography

### Blotting papers

The smooth surface of these papers ensures a uniform, high absorptivity. They are particularly recommended for blotting procedures.

### Chromatography papers

Paper chromatography requires high quality papers, since they have a considerable impact on the results of a separation.

The chromatography papers listed below are almost exclusively produced from pure linters without addition of other substances. For this reason they show a low wet strength.



### Technical data

Grade	Migration distance	Thickness	Basis weight	Application
MN 218 B	55 – 65 mm/10 min	0.36 mm	180 g/m <sup>2</sup>	blotting
MN 827 B	130 – 140 mm/10 min	0.7 mm	270 g/m <sup>2</sup>	blotting
MN 440 B	130 – 145 mm/10 min	1.0 mm	400 g/m <sup>2</sup>	blotting
MN 214	90 – 100 mm/30 min	0.28 mm	140 g/m <sup>2</sup>	chromatography
MN 214 ff <sup>1)</sup>	90 – 100 mm/30 min	0.28 mm	140 g/m <sup>2</sup>	chromatography
MN 218	90 – 100 mm/30 min	0.36 mm	180 g/m <sup>2</sup>	chromatography
MN 260	120 – 130 mm/30 min	0.20 mm	90 g/m <sup>2</sup>	chromatography
MN 261	90 – 100 mm/30 min	0.18 mm	90 g/m <sup>2</sup>	chromatography
MN 827	130 – 140 mm/10 min	0.70 mm	270 g/m <sup>2</sup>	chromatography
MN 866	100 – 120 mm/10 min	1.7 mm	650 g/m <sup>2</sup>	chromatography

<sup>1)</sup> MN 214 defatted

### Ordering information

References for packs of 100 sheets

MN 218 B		MN 827 B		MN 214		MN 214 ff	
Size		Size		Size		Size	
58 x 60 cm	74 21 11	58 x 60 cm	74 21 18	58 x 60 cm	81 70 01	58 x 60 cm	81 70 08
30 x 60 cm	74 21 12	20 x 20 cm	74 21 20				
57 x 46 cm	74 21 13	16 x 16 cm	74 21 28				
20 x 20 cm	74 21 15						
15 x 20 cm	74 21 38						
21 x 9 cm	74 21 31						
13 x 10 cm	74 21 16						
10 x 7 cm	74 21 39						
9.3 x 8 cm	74 21 37						
		MN 440 B				MN 260	
		58 x 60 cm	74 21 25	58 x 60 cm	81 70 03	58 x 60 cm	81 70 04
				MN 827		MN 261	
				58 x 60 cm	81 70 05	58 x 60 cm	81 70 04
				MN 866		80 x 80 cm	81 70 07
						38 x 38 cm	81 70 06

other sizes and cuts on request

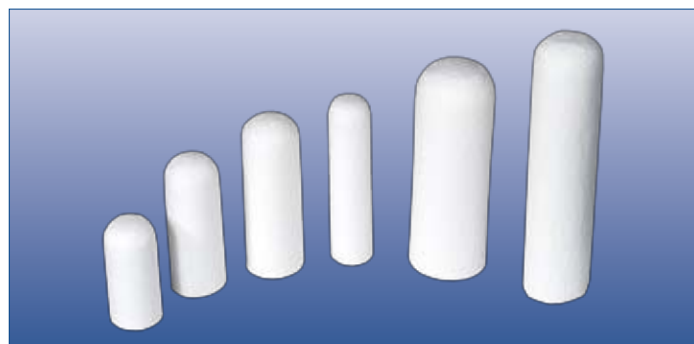
## Extraction thimbles

Extraction thimbles are often used for holding solid materials, from which certain substances are to be eluted (extracted) with a suitable solvent. Additionally, extraction thimbles are used in the fields of air and waste gas analysis for collecting solid particles (dust).

### Extraction thimbles made from cellulose

#### Technical data

Grade	Properties
MN 645	standard grade, extraction thimbles made from pure cellulose
MN 645 D	extraction thimbles MN 645 with lid to prevent loss of contents
MN 645 F	extraction thimbles made from cellulose, denser than MN 645
MN 645 W	extraction thimbles made from cellulose, more permeable than MN 645
MN 645 R	extraction thimbles MN 645 with sealing collar and two finger recesses on opposite sides of the collar, for dust analysis in industrial gases, exhaust gases and room air



#### Ordering information

References for packs of 25 thimbles

MN 645		
ID x height	wall thickness	REF
8 x 40 mm	1.0 mm	64 50 01
9 x 50 mm	1.0 mm	64 50 02
15 x 50 mm	1.0 mm	64 50 03
15 x 100 mm	1.0 mm	64 50 04
20 x 80 mm	1.5 mm	64 50 05
22 x 80 mm*	1.5 mm	64 50 06
23 x 90 mm	1.5 mm	64 50 07
23 x 100 mm	1.5 mm	64 50 08
27 x 60 mm	1.5 mm	64 50 11
27 x 80 mm	1.5 mm	64 50 09
27 x 100 mm	1.5 mm	64 50 10
28 x 80 mm	1.5 mm	64 50 15
28 x 90 mm	1.5 mm	64 50 16
28 x 100 mm	1.5 mm	64 50 13
28 x 120 mm	1.5 mm	64 50 14
29 x 100 mm	1.5 mm	64 50 17
30 x 60 mm	1.5 mm	64 50 19
30 x 80 mm	1.5 mm	64 50 20
30 x 90 mm	1.5 mm	64 50 21
30 x 100 mm	1.5 mm	64 50 23
30 x 150 mm	1.5 mm	64 50 18

MN 645		
ID x height	wall thickness	REF
31 x 118 mm	1.5 mm	64 50 24
31 x 130 mm	1.5 mm	64 50 25
33 x 80 mm	1.5 mm	64 59 51
33 x 94 mm*	1.5 mm	64 50 22
33 x 205 mm*	1.5 mm	64 50 26
34 x 120 mm	1.5 mm	64 50 27
34 x 150 mm	1.5 mm	64 50 28
38 x 200 mm	1.5 mm	64 50 29
40 x 123 mm	2.0 mm	64 50 31
40 x 150 mm	2.0 mm	64 50 30
43 x 130 mm	2.0 mm	64 50 32
48 x 145 mm	2.0 mm	64 50 33
48 x 200 mm	2.0 mm	64 50 34
48 x 230 mm*	2.0 mm	64 50 35
51 x 145 mm	2.0 mm	64 50 36
51 x 180 mm	2.0 mm	64 50 37
55 x 275 mm	2.0 mm	64 50 40
57 x 315 mm*	2.0 mm	64 50 38
60 x 180 mm	2.0 mm	64 50 39
68 x 250 mm	2.0 mm	64 50 42
70 x 330 mm	2.0 mm	64 50 43

MN 645 D		
ID x height	wall thickness	REF
30 x 80 mm	1.5 mm	64 52 20
30 x 100 mm	1.5 mm	64 52 23
31 x 130 mm	1.5 mm	64 52 25

MN 645 F		
ID x height	wall thickness	REF
22 x 80 mm	1.5 mm	64 54 06
30 x 100 mm	1.5 mm	64 54 23

MN 645 W		
ID x height	wall thickness	REF
20 x 80 mm	1.5 mm	64 51 05
28 x 90 mm	1.5 mm	64 51 16
31 x 205 mm	1.5 mm	64 51 26

MN 645 R		
ID x height	wall thickness	REF
79 x 155 mm	102 mm	64 55 00

\* Extraction thimbles in accordance with DIN 12449 for extractors with defined nominal volumes according to DIN 12602 and 12604



## Extraction thimbles made from borosilicate glass

### Technical data

#### Grade Properties

**MN 649** extraction thimbles made from glass microfibres without binder, short-term temperature resistance up to 500 °C, very high particle retention, for dust analysis in hot exhaust gases

**MN 649 R** extraction thimbles MN 649 with sealing collar and two finger recesses on opposite sides of the collar, for dust analysis in industrial gases, exhaust gases and room air

### Ordering information

References for packs of 25 thimbles

MN 649		
ID x height	wall thickness	REF
15 x 50 mm	1.0 mm	64 91 03
16 x 100 mm	1.0 mm	64 91 04
22 x 80 mm*	1.5 mm	64 91 06
23 x 90 mm	1.5 mm	64 91 07
23 x 100 mm	1.5 mm	64 91 08
28 x 60 mm	1.5 mm	64 91 11
27 x 80 mm	1.5 mm	64 91 09
28 x 120 mm	1.5 mm	64 91 14
30 x 150 mm	1.5 mm	64 91 18
33 x 80 mm	1.5 mm	64 91 20
33 x 90 mm	1.5 mm	64 91 21
33 x 94 mm*	1.5 mm	64 91 22
33 x 100 mm	1.5 mm	64 91 23
33 x 118 mm	1.5 mm	64 91 24
33 x 205 mm*	1.5 mm	64 91 26
35 x 150 mm	1.5 mm	64 91 28
43 x 123 mm	2.0 mm	64 91 31
48 x 230 mm*	2.0 mm	64 91 35
57 x 315 mm*	2.0 mm	64 91 38
75 x 330 mm	2.0 mm	64 91 43

MN 649 R		
ID x height	collar Ø	REF
79 x 155 mm	102 mm	64 95 00
27 x 55 mm	50 mm	64 95 01

\* Extraction thimbles in accordance with DIN 12449 for extractors with defined nominal volumes according to DIN 12602 and 12604



## Membranes

Membranes enable a very convenient, fast and economical separation. Often they are also used as a neutral sample support for further analysis.

### Overview of available membrane filters

Material and properties	Type	Pore sizes [µm]	Page
<b>Cellulose mixed esters</b> <ul style="list-style-type: none"> <li>• suitable for aqueous solutions</li> <li>• also available sterile and/or with grid</li> <li>• recommended for gravimetric analysis</li> <li>• autoclaving possible at 121 °C</li> <li>• economical</li> </ul>	PORA FIL® CM	0.2 · 0.45 · 0.65 · 0.8 · 1.2	28
	CHROMAFIL® MV	0.2 · 0.45	33
<b>Cellulose mixed esters, fabric-reinforced</b> <ul style="list-style-type: none"> <li>• suitable for aqueous solutions</li> <li>• higher mechanical stability than PORA FIL® CM</li> </ul>	PORA FIL® MV	0.2 · 0.45 · 0.8 · 3.0	29
<b>Cellulose nitrate</b> <ul style="list-style-type: none"> <li>• thermally stable up to 125 °C</li> <li>• autoclaving possible at 121 °C</li> </ul>	PORA FIL® NC	0.2 · 0.45	29
<b>Polycarbonate</b> <ul style="list-style-type: none"> <li>• very low halogen blank values</li> <li>• suitable for quantitative AOX determination</li> <li>• thermally stable up to 140°C</li> </ul>	PORA FIL® PC	0.4	30
<b>Cellulose acetate</b> <ul style="list-style-type: none"> <li>• suitable for aqueous and many alcoholic media</li> <li>• low protein binding capacity</li> <li>• thermally stable up to 180°C</li> </ul>	PORA FIL® CA	0.2 · 0.45 · 0.8 · 1.2	29
	CHROMAFIL® CA	0.2 · 0.45	34
<b>Polytetrafluoroethylene (PTFE)</b> <ul style="list-style-type: none"> <li>• hydrophobic membrane</li> <li>• suitable for almost all solvents, chemical resistance towards acids and bases</li> <li>• for filtration of aggressive media</li> <li>• thermally stable up to 145°C</li> </ul>	PORA FIL® TE	0.2 · 0.45 · 1.0 · 3.0	30
	CHROMAFIL® PTFE	0.2 · 0.45	33
<b>Polyester</b> <ul style="list-style-type: none"> <li>• chemically very resistant membrane (not as stable as PTFE)</li> <li>• suitable for TOC/DOC determination</li> <li>• thermally stable up to 150 °C</li> </ul>	PORA FIL® PE	0.05 · 0.2 · 0.4 · 1.0 · 5.0	30
	CHROMAFIL® PET	0.2 · 0.45 · 1.20	32
<b>Regenerated cellulose</b> <ul style="list-style-type: none"> <li>• suitable for all media except strong acids and bases</li> <li>• thermally stable up to 180°C</li> </ul>	PORA FIL® RC	0.2 · 0.45	30
	CHROMAFIL® RC	0.2 · 0.45	32
<b>Polyamide</b> <ul style="list-style-type: none"> <li>• for aqueous and organic solvents</li> <li>• thermally stable up to 135 °C</li> </ul>	CHROMAFIL® PA	0.2 · 0.45	35
<b>Polyethersulfon</b> <ul style="list-style-type: none"> <li>• for aqueous and slightly organic solvents</li> <li>• suitable for organic acids</li> </ul>	CHROMAFIL® PES	0.2 · 0.45 · 5.00	34
<b>Polyvinylidene difluoride</b> <ul style="list-style-type: none"> <li>• hydrophobic membrane</li> <li>• suitable for filtration of polar and nonpolar solutions</li> <li>• chemically inert towards many solvents, similar stability to PTFE</li> </ul>	CHROMAFIL® PVDF	0.2 · 0.45	35
<b>Glass fibre</b> <ul style="list-style-type: none"> <li>• inert filter</li> <li>• for highly contaminated samples</li> <li>• optional pre filter</li> </ul>	CHROMAFIL® GF	1.0	35

## Chemical resistance of filter membranes

Substances	CA	CM/MV	NC	PC	PE/PET	TE/PTFE	RC	PA	PES	PVDF	GF
<b>Hydrocarbons</b>											
aliphatic hydrocarbons	+	+	+	+	+	+	+	+	+	+	-
petroleum ether	+	+	+	+	+	+	+	+	+	+	-
cyclohexane	+	+	-	-	+	+	+	+	+	+	-
aromatic hydrocarbons	+	+	○	○	+	+	+	+	+	+	-
benzene	+	+	+	+	+	+	+	+	-	+	+
chloroform	-	+	+	+	+	+	+	-	-	+	-
methylene chloride	-	+	-	-	+	+	+	-	-	○	-
trichloroethylene	+	+	+	+	+	+	+	○	-	+	+
tetrachloromethane	○	+	+	+	+	+	+	+	-	+	+
chlorobenzene, freon	+	+	+	+	+	+	+	-	-	-	-
gasoline	+	+	+	+	+	+	+	+	+	+	-
acetonitrile	-	-	-	-	+	+	+	+	+	○	+
<b>Alcohols</b>											
methanol, 98%	+	-	-	-	○	+	+	+	+	+	-
butanol	+	+	+	+	+	+	+	○	+	○	+
ethanol, 98%	+	-	○	+	+	+	+	+	+	+	+
ethanol, 70%	+	○	○	+	+	+	+	+	+	+	+
isopropanol	+	+	○	+	+	+	+	+	+	+	-
n-propanol	+	+	○	+	+	+	+	+	+	+	+
amyl alcohol	+	+	+	+	+	+	+	-	+	-	-
benzyl alcohol	○	○	+	○	+	+	+	-	+	-	-
ethylene glycol	+	○	○	+	+	+	+	+	+	+	+
glycerine	+	+	+	+	+	+	+	-	+	-	-
cyclohexanol	-	-	+	-	+	+	+	-	+	-	-
polyethylene glycol 400	+	○	+	+	+	+	+	-	+	-	-
<b>Aldehydes, ketones</b>											
acetaldehyde	-	-	-	-	+	+	+	○	-	-	+
acetone	-	-	-	-	○	+	+	+	-	○	+
cyclohexanone	-	-	-	-	○	+	+	-	-	-	-
methyl ethyl ketone	○	-	-	-	○	+	+	-	-	-	-
methyl isobutyl ketone	○	○	-	-	+	+	+	-	-	-	-
<b>Esters</b>											
methyl acetate	-	-	-	-	○	+	+	-	+	-	-
ethyl acetate	-	-	-	-	○	+	+	+	+	○	+
amyl, propyl, butyl acetate	○	-	-	+	+	+	+	-	+	-	-
methyl glycol acetate	○	-	○	+	+	+	+	-	+	-	-
benzyl benzoate	+	+	+	-	○	+	+	-	+	-	-
i-propyl myristate	+	○	○	○	+	+	-	-	-	-	-
tricresyl phosphate	+	○	○	○	+	+	+	-	-	-	-
<b>Ethers and sulfoxides</b>											
diethyl ether	+	○	-	○	+	+	+	+	+	○	+
dioxan	-	-	-	-	+	+	+	+	-	○	+
tetrahydrofuran	-	-	-	-	+	+	+	○	-	+	+
dimethylsulphoxide	-	-	-	-	+	+	○	-	-	-	-

Substances	CA	CM/MV	NC	PC	PE/PET	TE/PTFE	RC	PA	PES	PVDF	GF
<b>Solvents containing nitrogen</b>											
dimethylformamide	-	-	-	-	+	+	○	+	-	○	+
dimethylacetamide	-	-	-	○	+	+	+	-	-	-	-
triethanolamine	+	○	+	○	+	+	+	-	-	-	-
aniline	-	○	○	-	+	+	+	-	-	-	-
pyridine	-	-	-	-	+	+	+	-	-	-	-
<b>Acids</b>											
hydrochloric acid 30%	-	-	-	-	+	+	-	-	-	+	+
hydrochloric acid 25%	-	-	○	-	+	+	+	-	-	-	+
nitric acid 65%	-	-	-	○	-	+	-	-	-	+	+
nitric acid 1 N	+	+	○	-	+	+	+	-	-	-	+
sulphuric acid 96%	-	-	-	-	+	+	-	-	-	-	-
phosphoric acid 80%	-	-	-	-	+	+	○	-	-	+	+
phosphoric acid 25%	+	○	○	○	○	+	+	-	-	-	+
formic acid 100%	-	+	-	○	+	+	○	-	+	+	+
formic acid 25%	○	-	+	○	+	+	+	-	+	-	+
acetic acid 96%	-	-	-	○	+	+	-	-	+	+	+
acetic acid 25%	+	+	-	○	+	+	+	-	+	-	+
oxalic acid 10% aq.	-	+	-	-	+	+	+	-	+	+	-
trichloroacetic acid 10%	+	-	+	○	+	+	-	-	-	-	-
<b>Bases</b>											
ammonia 25%	○	-	○	-	-	+	-	-	+	+	+
ammonia 1 N	+	+	+	-	+	+	+	-	+	-	-
sodium hydroxide 1 N	-	-	-	-	-	+	○	+	-	○	-
potassium hydroxide 1 N	-	-	-	-	○	+	○	+	-	○	-
<b>Miscellaneous</b>											
aqueous phenol solution	-	+	-	-	+	+	+	-	-	-	-
formalin 30%	○	+	+	+	+	+	-	-	-	-	-
turpentine oil	+	+	+	+	+	+	+	-	-	-	-
castor oil	+	+	+	+	+	+	+	-	-	-	-
cremophor 2%	+	○	○	+	+	+	+	-	-	-	-
hydrogen peroxide 30%	+	+	+	+	+	+	+	-	-	-	-
photoresist	-	-	+	+	+	+	+	-	-	-	-
nail varnish remover	-	-	+	+	+	+	+	-	-	-	-

+ : resistant    ○ : partly resistant    - : not resistant  
 - : no information

## PORAFIL® membrane filters

### Cellulose mixed ester membranes · PORAFIL® CM

Membranes of cellulose mixed esters are ideal for gravimetric analysis. They are particularly suited for aqueous solutions. The hydrophilic membrane is thermally stable to 125 °C and can be autoclaved at 121 °C. This membrane is often used for contamination tests.

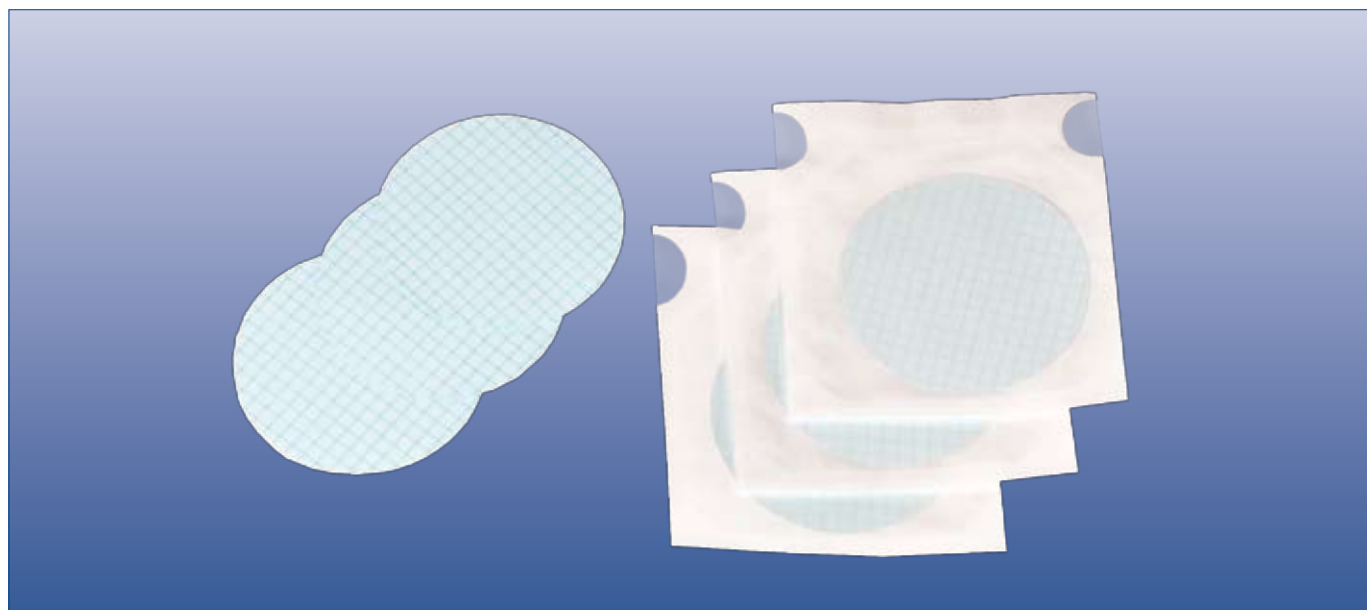
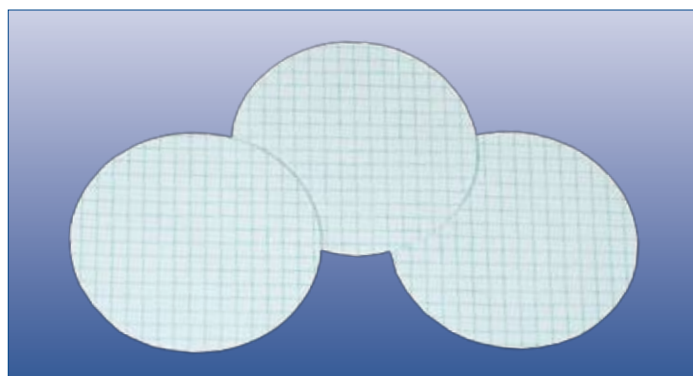
#### Ordering information

##### PORAFIL® CM sterile / not sterile

Ø	Colour	Sterile	Grid	Pack of	REF
<b>Pore size 0.45 µm</b>					
47 mm	white	✓	black	100	653 000 45 047
47 mm	white	✓	–	100	653 020 45 047
47 mm	black	✓	white	100	653 100 45 047
47 mm	green	✓	black	100	653 200 45 047
50 mm	white	✓	black	100	653 000 45 050
50 mm	black	✓	white	100	653 100 45 050
50 mm	green	✓	black	100	653 200 45 050
47 mm	white	–	black	100	656 000 45 047
47 mm	black	–	white	100	656 100 45 047
47 mm	green	–	black	100	656 200 45 047
50 mm	white	–	black	100	656 000 45 050
50 mm	black	–	white	100	656 100 45 050
50 mm	green	–	black	100	656 200 45 050

##### PORAFIL® CM white, not sterile, no grid

Ø	Pack of	REF
<b>Pore size 0.20 µm</b>		
13 mm	100	651 000 20 013
47 mm	100	651 000 20 047
50 mm	100	651 000 20 050
142 mm	25	651 000 20 142
293 mm	25	651 000 20 293
<b>Pore size 0.45 µm</b>		
13 mm	100	651 000 45 013
25 mm	100	651 000 45 025
47 mm	100	651 000 45 047
50 mm	100	651 000 45 050
100 mm	25	651 000 45 100
142 mm	25	651 000 45 142
220 mm	25	651 000 45 220
293 mm	25	651 000 45 293



## Cellulose mixed ester membranes, fabric-reinforced · PORAFIL® MV

These cellulose mixed ester membranes are reinforced with a polyester fabric. Their filtration properties are very similar to membranes PORAFIL® CM, however, they are mechanically much more stable.

### Ordering information

Ø	Pack of	Pore size 0.2 µm	Pore size 0.45 µm	Pore size 0.8 µm
13 mm	50	650 000 20 013	650 000 45 013	650 000 80 013
25 mm	50	650 000 20 025	650 000 45 025	650 000 80 025
47 mm	50	650 000 20 047	650 000 45 047	650 000 80 047
50 mm	50	650 000 20 050	650 000 45 050	650 000 80 050
90 mm	25	650 000 20 090	650 000 45 090	650 000 80 090
100 mm	25	650 000 20 100	650 000 45 100	650 000 80 100
142 mm	25	650 000 20 142	650 000 45 142	650 000 80 142
220 mm	25	650 000 20 220	650 000 45 220	650 000 80 220
293 mm	25	650 000 20 293	650 000 45 293	650 000 80 293

## Cellulose acetate membranes · PORAFIL® CA

These membranes of cellulose acetate have a low protein binding capacity and are suited for aqueous and alcoholic media. The membranes are hydrophilic and can be used for hot gases up to 180 °C. They can be sterilised.

### Ordering information

Ø	Pack of	Pore size 0.2 µm	Pore size 0.45 µm	Pore size 0.8 µm	Pore size 1.2 µm
13 mm	100	680 000 20 013	680 000 45 013	680 000 80 013	680 00 120 013
25 mm	100	680 000 20 025	680 000 45 025	680 000 80 025	680 00 120 025
47 mm	100	680 000 20 047	680 000 45 047	680 000 80 047	680 00 120 047
50 mm	100	680 000 20 050	680 000 45 050	680 000 80 050	680 00 120 050
90 mm	50	680 000 20 090	680 000 45 090	680 000 80 090	680 00 120 090
100 mm	25	680 000 20 100	680 000 45 100	680 000 80 100	680 00 120 100
142 mm	25	680 000 20 142	680 000 45 142	680 000 80 142	680 00 120 142
220 mm	25	680 000 20 220	680 000 45 220	680 000 80 220	680 00 120 220
293 mm	25	680 000 20 293	680 000 45 293	680 000 80 293	680 00 120 293

## Nitrocellulose membranes · PORAFIL® NC

PORAFIL® NC membranes are made from cellulose nitrate. They are easily wettable and suited for filtration of aqueous solutions. In dry atmosphere these membranes are thermally stable to 125 °C and can be autoclaved at 121 °C.

### Ordering information

Ø	Pack of	Pore size 0.2 µm	Pore size 0.45 µm
13 mm	50	657 002 00 13	657 004 50 13
25 mm	50	657 002 00 25	657 004 50 25
47 mm	50	657 002 00 47	657 004 50 47
50 mm	50	657 002 00 50	657 004 50 50
90 mm	50	657 002 00 90	657 004 50 90
100 mm	25	657 002 01 00	657 004 51 00
142 mm	25	657 002 01 42	657 004 51 42
220 mm	25	657 002 02 20	657 004 52 20
293 mm	10	657 002 02 93	657 004 52 93



## Polytetrafluoroethylene membranes · PORAFIL® TE

Membranes of polytetrafluoroethylene (PTFE) are particularly suited for aggressive media, since they are chemically inert towards aqueous and organic solutions as well as towards concentrated acids and bases. These membranes are hydrophobic, thus the pressure for filtration of aqueous solutions has to be higher than the breakthrough pressure. PORAFIL® TE membranes can be used at temperatures up to 145 °C.

### Ordering information

Ø	Pack of	Pore size 0.2 µm	Pore size 0.45 µm	Pore size 1.0 µm	Pore size 3.0 µm
13 mm	50	670 020 013	670 045 013	670 100 013	670 300 013
25 mm	50	670 020 025	670 045 025	670 100 025	670 300 025
47 mm	50	670 020 047	670 045 047	670 100 047	670 300 047
50 mm	50	670 020 050	670 045 050	670 100 050	670 300 050
90 mm	25	670 020 090	670 045 090	670 100 090	670 300 090
100 mm	25	670 020 100	670 045 100	670 100 100	670 300 100
142 mm	10	670 020 142	670 045 142	670 100 142	670 300 142
220 mm	10	670 020 220	670 045 220	670 100 220	670 300 220
293 mm	5	670 020 293	670 045 293	670 100 293	670 300 293

## Polyester membranes · PORAFIL® PE

Polyester membranes are hydrophilic and particularly suited for fine filtration, dust analysis, aerosol analysis and ultra-purification of solvents.

### Ordering information

Ø	Pack of	Pore size 0.05 µm	Pore size 0.2 µm	Pore size 0.4 µm	Pore size 1.0 µm	Pore size 5.0 µm
13 mm	100	671 005 013	671 020 013	671 040 013	671 100 013	671 500 013
25 mm	100	671 005 025	671 020 025	671 040 025	671 100 025	671 500 025
37 mm	100	671 005 037	671 020 037	671 040 037	671 100 037	671 500 037
47 mm	100	671 005 047	671 020 047	671 040 047	671 100 047	671 500 047
50 mm	100	671 005 050	671 020 050	671 040 050	671 100 050	671 500 050

## Regenerated cellulose membranes · PORAFIL® RC

Membranes of regenerated cellulose are resistant towards most organic solvents. They are e.g. used for filtration of solvent mixtures and ultrapurification and degassing of HPLC eluents.

### Ordering information

Ø	Pack of	Pore size 0.2 µm	Pore size 0.45 µm
13 mm	100	659 020 013	659 045 013
25 mm	100	659 020 025	659 045 025
47 mm	100	659 020 047	659 045 047
50 mm	100	659 020 050	659 045 050
100 mm	25	659 020 100	659 045 100
142 mm	25	659 020 142	659 045 142
293 mm	25	659 020 293	659 045 293

## Polycarbonate membranes · PORAFIL® PC

Polycarbonate membranes are mainly used for the determination of AOX.

### Ordering information

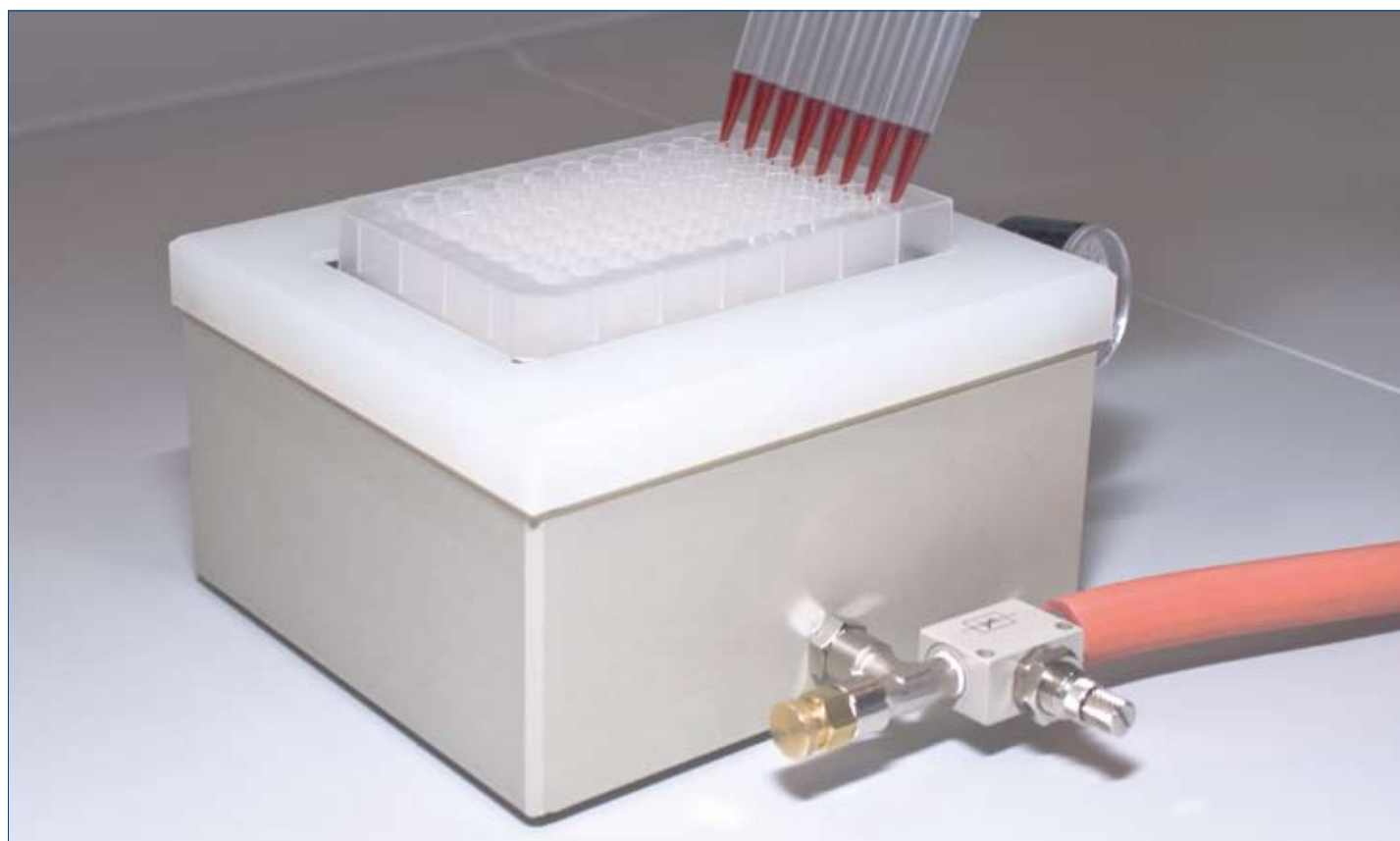
Ø	Pack of	Pore size 0.40 µm
25 mm	100	676 040 025
47 mm	100	676 040 047
50 mm	100	676 040 050

## CHROMABOND® MULTI 96 filters

CHROMABOND® MULTI 96 filter plates are very well suited for efficient filtration in 96-well microtiter plate format.

### Ordering information

Material of the filter elements	Pore size	Plates per pack	REF
MV (cellulose mixed esters)	0.20 µm	1	738770.M
MV (cellulose mixed esters)	0.45 µm	1	738771.M
MV (cellulose mixed esters)	3.00 µm	1	738772.M
RC (regenerated cellulose)	0.20 µm	1	738656.M
RC (regenerated cellulose)	0.45 µm	1	738657.M
PTFE (polytetrafluoroethylene)	0.20 µm	1	738660.M
PTFE (polytetrafluoroethylene)	0.45 µm	1	738661.M
PTFE (polytetrafluoroethylene)	1.00 µm	1	738662.M
PTFE (polytetrafluoroethylene)	3.00 µm	1	738663.M
PE (polyethylene)	20 µm	1	738655.M
PE (polyethylene)	50 µm	1	738659.M
Glass fibre nominal	1 µm	1	738655.2M
Glass fibre nominal	3 µm	1	738658.M
CHROMABOND® MULTI 96 vacuum manifold for monoblocks, with reservoir tank, vacuum gauge and control valve, required for filtration with 96-well filter plates		1	738630.M



## CHROMAFIL® syringe filters

Disposable syringe filters CHROMAFIL® are ready-to-use filtration units, which are filter elements incorporated in a polypropylene housing. Because every filter is only used once, contaminations are avoided.

### CHROMAFIL® PET

- hydrophilic multipurpose membrane
- for polar as well as nonpolar solvents  
the HPLC filter, especially suited for mixtures of water and organic solvents  
for TOC/DOC determination, not cytotoxic, does not inhibit the growth of microorganisms and higher cells
- polyester filter with integrated glass fibre prefilter (GF/PET):  
recommended for solutions with a high load of particulate matter or for highly viscous solutions

#### Ordering information

Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
PET-20/25	0.20 µm	25 mm	labelled	–	100	729 221	400	729 221.400
PET-45/25	0.45 µm	25 mm	labelled	–	100	729 220	400	729 220.400
PET-120/25	1.2 µm	25 mm	labelled	–	100	729 229	400	729 229.400
<b>CHROMAFIL®</b>								
PET-20/15 MS	0.20 µm	15 mm	yellow	orange	100	729 022	800	729 022.800
PET-45/15 MS	0.45 µm	15 mm	colourless	orange	100	729 023	800	729 023.800
PET-20/25	0.20 µm	25 mm	yellow	orange	100	729 021	400	729 021.400
PET-45/25	0.45 µm	25 mm	colourless	orange	100	729 020	400	729 020.400
PET-120/25	1.2 µm	25 mm	colourless	black	100	729 029	400	729 029.400
GF/PET-20/25	1.0/0.20 µm	25 mm	blue	orange	100	729 032	400	729 032.400
GF/PET-45/25	1.0/0.45 µm	25 mm	black	orange	100	729 033	400	729 033.400

MS = minispikes on filter exit

### CHROMAFIL® RC

- hydrophilic membrane with very low adsorption
- for aqueous and organic/aqueous liquids, i. e. polar and medium polar sample solutions
- binding capacity for proteins 84 µg/filter

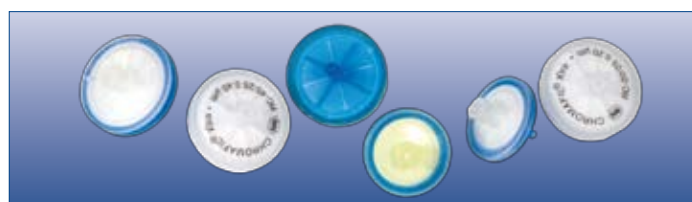
#### Ordering information

Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
RC-20/25	0.20 µm	25 mm	labelled	–	100	729 230	400	729 230.400
RC-45/25	0.45 µm	25 mm	labelled	–	100	729 231	400	729 231.400
<b>CHROMAFIL®</b>								
RC-20/15 MS	0.20 µm	15 mm	yellow	blue	100	729 036	800	729 036.800
RC-45/15 MS	0.45 µm	15 mm	colourless	blue	100	729 037	800	729 037.800
RC-20/25	0.20 µm	25 mm	yellow	blue	100	729 030	400	729 030.400
RC-45/25	0.45 µm	25 mm	colourless	blue	100	729 031	400	729 031.400

MS = minispikes on filter exit

#### Recommended filter sizes for different volumes

sample volume	recommended filter Ø
≤ 1 ml	3 mm
1 – 10 ml	15 mm
10 – 100 ml	25 mm





## CHROMAFIL® PTFE

- hydrophobic membrane
- for nonpolar liquids and gases
- very resistant towards all kinds of solvents as well as acids and bases flushing with alcohol, followed by water, makes the originally hydrophobic membrane more hydrophilic



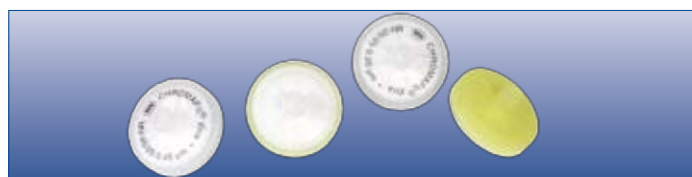
### Ordering information

Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
PTFE-20/25	0.20 µm	25 mm	labelled	–	100	729 207	400	729 207.400
PTFE-45/25	0.45 µm	25 mm	labelled	–	100	729 205	400	729 205.400
<b>CHROMAFIL®</b>								
O-20/3	0.20 µm	3 mm	colourless	colourless	100	729 014		
O-45/3	0.45 µm	3 mm	colourless	colourless	100	729 015		
O-20/15 MS	0.20 µm	15 mm	yellow	colourless	100	729 008	800	729 008.800
O-45/15 MS	0.45 µm	15 mm	colourless	colourless	100	729 009	800	729 009.800
O-20/25	0.20 µm	25 mm	yellow	colourless	100	729 007	400	729 007.400

MS = minispikes on filter exit

## CHROMAFIL® MV

- hydrophilic membrane with very low adsorption
- for aqueous or polar solutions



### Ordering information

Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
MV-20/25	0.20 µm	25 mm	labelled	–	100	729 206	400	729 206.400
MV-45/25	0.45 µm	25 mm	labelled	–	100	729 204	400	729 204.400
<b>CHROMAFIL®</b>								
A-20/25	0.20 µm	25 mm	yellow	yellow	100	729 006	400	729 006.400
A-45/25	0.45 µm	25 mm	colourless	yellow	100	729 004	400	729 004.400

## CHROMAFIL® CA

- hydrophilic membrane
- for filtration of water-soluble oligomers and polymers, especially suited for biological macromolecules
- very high shape stability in aqueous solutions
- extremely low binding capacity for proteins (21 µg/filter)
- also available in a sterile package (S) for filtration under sterile conditions (each filter individually sealed)



### Ordering information

Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
CA-20/25	0.20 µm	25 mm	labelled	–	100	729 226	400	729 226.400
CA-45/25	0.45 µm	25 mm	labelled	–	100	729 227	400	729 227.400
<b>CHROMAFIL®</b>								
CA-20/25	0.20 µm	25 mm	yellow	red	100	729 026	400	729 026.400
CA-45/25	0.45 µm	25 mm	colourless	red	100	729 027	400	729 027.400
<b>CHROMAFIL® Sterile filters</b>								
CA-20/25 S	0.20 µm	25 mm	yellow	red	50	729 024		
CA-45/25 S	0.45 µm	25 mm	colourless	red	50	729 025		

## CHROMAFIL® PES

- hydrophilic membrane
- for aqueous and slightly organic liquids with higher flow rates
- very low adsorption for pharmaceuticals and proteins
- good stability against acids and bases
- for sterile filtration of non-sterile solutions we recommend the CHROMAFIL® Sterilizer PES (each filter individually sealed)
- binding capacity for proteins 29 µg/filter



### Ordering information

Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
PES-20/25	0.20 µm	25 mm	labelled	–	100	729 240	400	729 240.400
PES-45/25	0.45 µm	25 mm	labelled	–	100	729 241	400	729 241.400
PES-500/25	5.0 µm	25 mm	labelled	–	100	729 242	400	729 242.400
<b>CHROMAFIL®</b>								
PES-20/25	0.20 µm	25 mm	yellow	amber	100	729 040	400	729 040.400
PES-45/25	0.45 µm	25 mm	colourless	amber	100	729 041	400	729 041.400
PES-500/25	5.0 µm	25 mm	red	amber	100	729 042	400	729 042.400
<b>CHROMAFIL® Sterile filters</b>								
Sterilizer PES	0.20 µm	25 mm		blue rim	50	729 401		

## CHROMAFIL® PA

- rather hydrophilic membrane
- for aqueous and organic/aqueous medium polar liquids

### Ordering information



Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
PA-20/25	0.20 µm	25 mm	labelled	–	100	729 212	400	729 212.400
PA-45/25	0.45 µm	25 mm	labelled	–	100	729 213	400	729 213.400
<b>CHROMAFIL®</b>								
AO-20/3	0.20 µm	3 mm	colourless	colourless	100	729 010		
AO-45/3	0.45 µm	3 mm	colourless	colourless	100	729 011		
AO-20/25	0.20 µm	25 mm	yellow	green	100	729 012	400	729 012.400
AO-45/25	0.45 µm	25 mm	colourless	green	100	729 013	400	729 013.400

## CHROMAFIL® PVDF

- hydrophilic membrane
- for polar and nonpolar solutions, water-soluble oligomers and polymers like proteins
- binding capacity for proteins 82 µg/filter
- the PVDF filter with integrated glass fibre prefilter is recommended for filtration of biological samples with high particle loads. This filter features a high binding capacity for proteins.
- also suited for filtration of polar and nonpolar solutions

### Ordering information

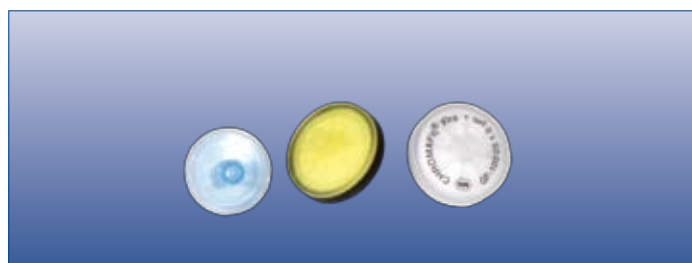


Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
PVDF-20/25	0.20 µm	25 mm	labelled	–	100	729 218	400	729 218.400
PVDF-45/25	0.45 µm	25 mm	labelled	–	100	729 219	400	729 219.400
<b>CHROMAFIL®</b>								
P-20/25	0.20 µm	25 mm	yellow	white	100	729 018	400	729 018.400
GF/P-45/25	1.0/0.45 µm	25 mm	black	white	100	729 039	400	729 039.400

## CHROMAFIL® GF

- inert filter, nominal pore size 1 µm, allows higher flow rates than small pore filters
- for solutions with high loads of particulate matter or for highly viscous solutions (e.g. soil samples, fermentation broths)
- as prefilters for other CHROMAFIL® filters, they prevent plugging of the membrane

### Ordering information



Type	Pore size	Membrane Ø	Colour code		Standard pack		BIG-BOX	
			top	bottom	pack of	REF	pack of	REF
<b>CHROMAFIL® Xtra</b>								
GF-100/25	nom. 1.0 µm	25 mm	labelled	–	100	729 228	400	729 228.400
<b>CHROMAFIL®</b>								
GF-100/15 MS	nom. 1.0 µm	15 mm	blue	colourless	100	729 034		
GF-100/25	nom. 1.0 µm	25 mm	yellow	black	100	729 028	400	729 028.400

## pH indicator papers

### pH-Fix

pH-Fix test strips are the highly appreciate standard in many laboratories. The easy dip&read procedure provides reliable results in seconds. Due to the patented pH-Fix technology the indicator is chemically bound to the test pad. The dye does not wash out so clothes stay clean and samples remain pure.

#### Ordering information

Range	Gradation	REF
<b>Classic flat box</b>		
pH 0 – 14	0 · 1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11 · 12 · 13 · 14	921 10
pH 0.0 – 6.0	0 · 0.5 · 1.0 · 1.5 · 2.0 · 2.5 · 3.0 · 3.5 · 4.0 · 4.5 · 5.0 · 5.5 · 6.0	921 15
pH 2.0 – 9.0	2.0 · 2.5 · 3.0 · 3.5 · 4.0 · 4.5 · 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	921 18
pH 4.5 – 10.0 <b>CE</b> <sup>1)</sup>	4.5 · 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0 · 9.5 · 10.0	921 20
pH 6.0 – 10.0	6.0 · 6.4 · 6.7 · 7.0 · 7.3 · 7.6 · 7.9 · 8.2 · 8.4 · 8.6 · 8.8 · 9.1 · 9.5 · 10.0	921 22
pH 7.0 – 14.0	7.0 · 7.5 · 8.0 · 8.5 · 9.0 · 9.5 · 10.0 · 10.5 · 11.0 · 11.5 · 12.0 · 12.5 · 13.0 · 13.5 · 14.0	921 25
pH 0.3 – 2.3	0.3 · 0.7 · 1.0 · 1.3 · 1.6 · 1.9 · 2.3	921 80
pH 1.7 – 3.8	1.7 · 2.0 · 2.3 · 2.6 · 2.9 · 3.2 · 3.5 · 3.8	921 90
pH 3.6 – 6.1 <b>CE</b> <sup>1)2)</sup>	3.6 · 4.1 · 4.4 · 4.7 · 5.0 · 5.3 · 5.6 · 6.1	921 30
pH 5.1 – 7.2	5.1 · 5.4 · 5.7 · 6.0 · 6.3 · 6.6 · 6.9 · 7.2	921 40
pH 6.0 – 7.7	6.0 · 6.4 · 6.7 · 7.0 · 7.3 · 7.7	921 50
pH 7.5 – 9.5	7.5 · 7.9 · 8.2 · 8.4 · 8.6 · 8.8 · 9.1 · 9.5	921 60
pH 7.9 – 9.8	7.9 · 8.3 · 8.6 · 8.9 · 9.1 · 9.4 · 9.8	921 70
<b>PlopTop tube</b>		
pH 0 – 14	0 · 1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11 · 12 · 13 · 14	921 11
pH 3.6 – 6.1 <b>CE</b> <sup>1)2)</sup>	3.6 · 4.1 · 4.4 · 4.7 · 5.0 · 5.3 · 5.6 · 6.1	921 31

Presentation: packs of 100 strips 6 x 85 mm

**CE**: CE mark in accordance with the European directive for <sup>1)</sup> in vitro diagnostics 98/79/EC <sup>2)</sup> medical devices 93/42/EWG



### PEHANON®

PEHANON® is a special pH test strip that unifies the pH-indicator and the reference colours on one strip. It provides accurate results also for coloured solutions.

#### Ordering information

Range	Gradation	REF
pH 1 – 12	1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11 · 12	904 01
pH 0 – 1.8	0 · 0.3 · 0.6 · 0.8 · 1.0 · 1.2 · 1.5 · 1.8	904 11
pH 1.0 – 2.8	1.0 · 1.3 · 1.6 · 1.8 · 2.0 · 2.2 · 2.5 · 2.8	904 12
pH 1.8 – 3.8	1.8 · 2.1 · 2.4 · 2.7 · 3.0 · 3.2 · 3.5 · 3.8	904 13
pH 2.8 – 4.6	2.8 · 3.1 · 3.4 · 3.6 · 3.8 · 4.0 · 4.3 · 4.6	904 14
pH 3.8 – 5.5	3.8 · 4.0 · 4.2 · 4.4 · 4.6 · 4.9 · 5.2 · 5.5	904 15
pH 4.0 – 9.0	4.0 · 4.5 · 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	904 24
pH 5.2 – 6.8	5.2 · 5.5 · 5.7 · 5.9 · 6.1 · 6.3 · 6.5 · 6.8	904 16
pH 6.0 – 8.1	6.0 · 6.3 · 6.6 · 6.9 · 7.2 · 7.5 · 7.8 · 8.1	904 17
pH 7.2 – 8.8	7.2 · 7.4 · 7.6 · 7.8 · 8.0 · 8.2 · 8.5 · 8.8	904 19
pH 8.0 – 9.7	8.0 · 8.2 · 8.4 · 8.6 · 8.8 · 9.1 · 9.4 · 9.7	904 20
pH 9.5 – 12.0	9.5 · 10.0 · 10.5 · 11.0 · 11.5 · 12.0	904 21
pH 10.5 – 13.0	10.5 · 11.0 · 11.5 · 12.0 · 12.5 · 13.0	904 22
pH 12.0 – 14.0	12.0 · 12.5 · 13.0 · 13.5 · 14.0	904 23

Presentation: packs of 200 strips 11 x 100 mm



## Universal and special indicator papers

pH indicator papers have been on the market for decades and are the appreciated standard for many applications. For each pH value these papers show a single colour which can be matched with the colour scale at intervals of 0.2 – 1 pH unit.

### Ordering information

Range	Gradation	REF
<b>Universal indicator paper</b>		
pH 1 – 11	1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11	902 01
pH 1 – 14	1 · 2 · 3 · 5 · 6 · 7 · 8 · 9 · 10 · 12 · 14	902 04
<b>Special indicator papers</b>		
pH 0.5 – 5.5	0.5 · 1.0 · 1.5 · 2.0 · 2.5 · 3.0 · 3.5 · 4.0 · 4.5 · 5.0 · 5.5	902 05
pH 3.8 – 5.8	<3.8 · 3.8 · 4.1 · 4.3 · 4.5 · 4.7 · 4.9 · 5.2 · 5.5 · 5.8 · >5.8	902 06
pH 4.0 – 7.0	4.0 · 4.3 · 4.6 · 4.9 · 5.2 · 5.5 · 5.8 · 6.1 · 6.4 · 6.7 · 7.0	902 07
pH 5.4 – 7.0	<5.4 · 5.4 · 5.7 · 6.0 · 6.2 · 6.4 · 6.7 · 7.0 · >7.0	902 08
pH 5.5 – 9.0	5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	902 09
pH 6.4 – 8.0	<6.4 · 6.4 · 6.6 · 6.8 · 7.0 · 7.2 · 7.4 · 7.6 · 7.8 · 8.0 · >8.0	902 10
pH 7.2 – 9.7	<7.2 · 7.2 · 7.5 · 7.8 · 8.1 · 8.4 · 8.7 · 9.0 · 9.3 · 9.7 · >9.7	902 11
pH 8.0 – 10.0	8.0 · 8.2 · 8.4 · 8.7 · 9.0 · 9.2 · 9.6 · 10.0	902 12
pH 9.0 – 13.0	9.0 · 9.5 · 10.0 · 10.5 · 11.0 · 11.5 · 12.0 · 12.5 · 13.0	902 13
pH 12.0 – 14.0	12.0 · 12.5 · 13.0 · 13.5 · 14.0	902 14

Presentation: reels of 5 m x 7 mm  
refill packs and booklets available on request



## DUOTEST and TRITEST

DUOTEST indicator papers feature two indicator zones separated by a hydrophobic barrier. This facilitates clear assignment of the pH and allows estimation of intermediate values. TRITEST indicator papers feature three different indicator zone for a precise assignment of pH values.

### Ordering information

Range	Gradation	REF
<b>DUOTEST</b>		
pH 1 – 12	1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11 · 12	903 01
pH 1.0 – 4.3	1.0 · 1.3 · 1.6 · 1.9 · 2.2 · 2.5 · 2.8 · 3.1 · 3.4 · 3.7 · 4.0 · 4.3	903 02
pH 3.5 – 6.8	3.5 · 3.8 · 4.1 · 4.4 · 4.7 · 5.0 · 5.3 · 5.6 · 5.9 · 6.2 · 6.5 · 6.8	903 03
pH 5.0 – 8.0	5.0 · 5.3 · 5.6 · 5.9 · 6.2 · 6.5 · 6.8 · 7.1 · 7.4 · 7.7 · 8.0	903 04
pH 7.0 – 10.0	7.0 · 7.3 · 7.6 · 7.9 · 8.2 · 8.5 · 8.8 · 9.1 · 9.4 · 9.7 · 10.0	903 05
pH 9.5 – 14.0	9.5 · 10.0 · 10.5 · 11.0 · 11.5 · 12.0 · 12.5 · 13.0 · 13.5 · 14.0	903 06
<b>TRITEST</b>		
pH 1 – 11	1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11	905 01
<b>TRITEST L</b>		
pH 1 – 11	1 · 2 · 3 · 4 · 5 · 6 · 7 · 8 · 9 · 10 · 11	905 10

DUOTEST and TRITEST: reels of 5 m x 10 mm    TRITEST L: reels of 6 m x 14 mm  
refill packs available on request



## Test papers for qualitative analysis

Test papers allow the qualitative determination of ions and chemical compounds. They are used to detect if compounds tested for are present above the specific detection limit. Some of the papers have specific applications.

### Ordering information

Determination of	Test paper / Test strips	Presentation	REF
Alkaline phosphatase in milk	Phosphatesmo MI	50 test strips 10 x 95 mm	906 12
Aluminium ions ( $\text{Al}^{3+}$ )	Aluminium test paper	100 strips 20 x 70 mm	907 21
Ammonia, ammonium ions ( $\text{NH}_3$ , $\text{NH}_4^+$ )	Ammonium test paper	200 strips 20 x 70 mm	907 22
Antimony ions ( $\text{Sb}^{3+}$ )	Antimony test paper	200 strips 20 x 70 mm	907 23
Arsenic, arsine ( $\text{As}$ , $\text{AsH}_3$ )	Arsenic test paper = Mercury bromide paper	200 strips 20 x 70 mm	907 62
Bismuth ions ( $\text{Bi}^{3+}$ )	Bismuth test paper	200 strips 20 x 70 mm	907 33
Blood traces (Peroxidase)	Peroxtesmo KM	25 sheets 15 x 30 mm	906 05
Boric acid, borates ( $\text{H}_3\text{BO}_3$ , $\text{BO}_3^{3-}$ )	Turmeric paper	200 strips 20 x 70 mm	907 47
Chlorine, free halogens	Chlortesmo Potassium iodide starch paper (see "Nitrite ions")	200 strips 20 x 70 mm	906 03
Chromium, chromate ( $\text{Cr(VI)}$ , $\text{CrO}_4^{2-}$ )	Chromium test paper	200 strips 20 x 70 mm	907 24
Cobalt ions ( $\text{Co}^{2+}$ )	Cobalt test paper	100 strips 20 x 70 mm	907 28
Copper, copper ions ( $\text{Cu}$ , $\text{Cu}^+$ , $\text{Cu}^{2+}$ )	Cuprotesmo	40 sheets 40 x 25 mm	906 01
Copper(II) ions ( $\text{Cu}^{2+}$ )	Copper test paper	200 strips 20 x 70 mm	907 29
Cyanides, hydrocyanic acid ( $\text{CN}^-$ , $\text{HCN}$ )	Cyantesmo	reel of 5 m length	906 04
Fluorides, hydrogen fluorides ( $\text{F}^-$ , $\text{H}_2\text{F}_2$ )	Fluoride test paper	200 strips 20 x 70 mm	907 50
Halogens, especially free chlorine	Chlortesmo	200 strips 20 x 70 mm	906 03
Hydrocyanic acid	Cyantesmo	reel of 5 m length	906 04
Hydrogen sulphide ( $\text{H}_2\text{S}$ ), sulphide ions ( $\text{S}^{2-}$ )	Lead acetate paper	reel of 5 m length	907 44
		refill pack of 3 rolls	907 45
		booklet with 100 strips 10 x 75 mm	907 46
	Sulphide test paper	reel of 5 m length	907 61
Iron(II) ions ( $\text{Fe}^{2+}$ )	Dipyridyl paper	200 strips 20 x 70 mm	907 25
Iron ions ( $\text{Fe}^{2+}$ , $\text{Fe}^{3+}$ )	Iron test paper	100 strips 20 x 70 mm	907 26
Lactoperoxidase in milk	Peroxtesmo MI	100 strips 15 x 15 mm	906 27
Lead, lead ions ( $\text{Pb}$ , $\text{Pb}^{2+}$ )	Plumbtesmo	40 sheets 40 x 25 mm	906 02
Mastitis	Udder test paper	PE bag with 20 sheets	907 48
Nickel(II) ions ( $\text{Ni}^{2+}$ )	Nickel test paper	200 strips 20 x 70 mm	907 30
Nitrate and nitrite ( $\text{NO}_3^-$ , $\text{NO}_2^-$ )	Nitratesmo	reel of 5 m length	906 11



Determination of	Test paper / Test strips	Presentation	REF
Nitrite ions (NO <sub>2</sub> <sup>-</sup> ), nitrous acid (HNO <sub>2</sub> ), ozone (O <sub>3</sub> )	Potassium iodide starch paper MN 816 N (normal sensitivity)	reel of 5 m length refill pack of 3 rolls booklet of 100 strips 10 x 75 mm	907 54 907 55 907 56
	Potassium iodide starch paper MN 616 T (for spot tests)	200 strips 20 x 70 mm	907 58
	Oil in water and soil	Oil test paper	100 strips 20 x 70 mm
Peroxidase in foodstuffs	Peroxtesmo KO	100 sheets 15 x 15 mm	906 06
Peroxidase in milk	Peroxtesmo MI	100 sheets 15 x 15 mm	906 27
Potassium ions (K <sup>+</sup> )	Potassium test paper	200 sheets 20 x 70 mm	907 27
Protein residues	INDIPRO	60 test strips 10 x 95 mm and reagents	907 65
Reducing agents, SO <sub>2</sub> , sulphite ions	Potassium iodate starch paper	reel of 5 m length	907 53
Silver ions (Ag <sup>+</sup> )	Silver test paper	200 strips 20 x 70 mm	907 32
Sulphur dioxide (SO <sub>2</sub> ), sulphite ions	Sulphite test paper	100 strips 20 x 70 mm	907 63
Sperm, acid phosphatase	Phosphatesmo KM	25 sheets 15 x 30 mm	906 07
Vat dyes, end point of conversion	Indanthrene yellow paper	200 strips 20 x 70 mm	907 51
Water on the bottom of fuel tanks	AQUATEC test sticks	100 strips 10 x 200 mm	907 42
Water in org. solvents	WATESMO	reel of 5 m length	906 09
Water distribution in butter	WATOR	50 sheets 78 x 40 mm	906 10
Zirconium ions (Zr <sup>4+</sup> )	Zirconium test paper	100 strips 20 x 70 mm	907 21



## QUANTOFIX® test strips for semi-quantitative determinations

QUANTOFIX® test strips can be used for a large variety of different substances. In most cases an easy dip&read procedure provides reliable results in 10 – 120 seconds. As labs in a pocket QUANTOFIX® test strips are easy to use for professional analysts as well as chemical laymen.

### Ordering information

Test	Gradation	REF
QUANTOFIX® Aluminium <sup>1)</sup>	0 · 5 · 20 · 50 · 200 · 500 mg/l Al <sup>3+</sup>	913 07
QUANTOFIX® Ammonium <sup>1)</sup>	0 · 10 · 25 · 50 · 100 · 200 · 400 mg/l NH <sub>4</sub> <sup>+</sup>	913 15
QUANTOFIX® Arsenic 50 <sup>1)</sup>	0 · 0.05 · 0.1 · 0.5 · 1.0 · 1.7 · 3.0 mg/l As <sup>3+/5+</sup>	913 32
QUANTOFIX® Arsenic 10 <sup>1)</sup>	0 · 0.01 · 0.025 · 0.05 · 0.1 · 0.5 mg/l As <sup>3+/5+</sup>	913 34
QUANTOFIX® Ascorbic acid vitamin C	0 · 50 · 100 · 200 · 300 · 500 · 1000 · 2000 mg/l	913 14
QUANTOFIX® Calcium <sup>1)</sup>	0 · 10 · 25 · 50 · 100 mg/l Ca <sup>2+</sup>	913 24 <sup>2)</sup>
QUANTOFIX® Carbonate hardness	0 · 3 · 6 · 10 · 15 · 20 °d	913 23
QUANTOFIX® Chloride	0 · 500 · 1000 · 1500 · 2000 · ≥ 3000 mg/l Cl <sup>-</sup>	913 21
QUANTOFIX® Chlorine sensitive	0 · 0.1 · 0.5 · 1 · 3 · 10 mg/l Cl <sub>2</sub>	913 39
QUANTOFIX® Chlorine <sup>1)</sup>	0 · 1 · 3 · 10 · 30 · 100 mg/l Cl <sub>2</sub>	913 17
QUANTOFIX® Chromate <sup>1)</sup>	0 · 3 · 10 · 30 · 100 mg/l CrO <sub>4</sub> <sup>2-</sup>	913 01
QUANTOFIX® Cobalt	0 · 10 · 25 · 50 · 100 · 250 · 500 · 1000 mg/l Co <sup>2+</sup>	913 03
QUANTOFIX® Copper	0 · 10 · 30 · 100 · 300 mg/l Cu <sup>+/2+</sup>	913 04
QUANTOFIX® Cyanide <sup>1)</sup>	0 · 1 · 3 · 10 · 30 mg/l CN <sup>-</sup>	913 18
QUANTOFIX® EDTA	0 · 100 · 200 · 300 · 400 mg/l EDTA	913 35
QUANTOFIX® Formalde- hyde <sup>1)</sup>	0 · 10 · 20 · 40 · 60 · 100 · 200 mg/l HCHO	913 28
QUANTOFIX® Glutaralde- hyde	0 · 0.5 · 1 · 1.5 · 2 · 2.5 % Glutaraldehyde	913 43
QUANTOFIX® Iron 1000 <sup>1)</sup>	0 · 5 · 20 · 50 · 100 · 250 · 500 · 1000 mg/l Fe <sup>2+/3+</sup>	913 02
QUANTOFIX® Iron 100 <sup>1)</sup>	0 · 2 · 5 · 10 · 25 · 50 · 100 mg/l Fe <sup>2+/3+</sup>	913 08
QUANTOFIX® Lubricheck	0 · 15 · 50 · 75 · 130 · 200 mmol/l KOH	913 36
QUANTOFIX® Molybdenum <sup>1)</sup>	0 · 5 · 20 · 50 · 100 · 250 mg/l Mo <sup>6+</sup>	913 25
QUANTOFIX® Nickel	0 · 10 · 25 · 50 · 100 · 250 · 500 · 1000 mg/l Ni <sup>2+</sup>	913 05
QUANTOFIX® Nitrate/Nitrite	0 · 10 · 25 · 50 · 100 · 250 · 500 mg/l NO <sub>3</sub> <sup>-</sup> 0 · 1 · 5 · 10 · 20 · 40 · 80 mg/l NO <sub>2</sub> <sup>-</sup>	913 13
QUANTOFIX® Nitrite	0 · 1 · 5 · 10 · 20 · 40 · 80 mg/l NO <sub>2</sub> <sup>-</sup>	913 11
QUANTOFIX® Nitrite 3000	0 · 0.1 · 0.3 · 0.6 · 1 · 2 · 3 g/l NO <sub>2</sub> <sup>-</sup>	913 22
QUANTOFIX® Nitrite/pH	0 · 1 · 5 · 10 · 20 · 40 · 80 mg/l NO <sub>2</sub> <sup>-</sup> pH 6.0 · 6.4 · 6.7 · 7.0 · 7.3 · 7.6 · 7.9 · 8.2 · 8.4 · 8.6 · 8.8 · 9.0 · 9.3 · 9.6	913 38
QUANTOFIX® Peracetic acid 50	0 · 5 · 10 · 20 · 30 · 50 mg/l Peracetic acid	913 40
QUANTOFIX® Peracetic acid 500	0 · 50 · 100 · 200 · 300 · 400 · 500 mg/l Peracetic acid	913 41
QUANTOFIX® Peracetic acid 2000	0 · 500 · 1000 · 1500 · 2000 mg/l Peracetic acid	913 42
QUANTOFIX® Peroxide 25	0 · 0.5 · 2 · 5 · 10 · 25 mg/l H <sub>2</sub> O <sub>2</sub>	913 19
QUANTOFIX® Peroxide 100 CE	0 · 1 · 3 · 10 · 30 · 100 mg/l H <sub>2</sub> O <sub>2</sub>	913 12
QUANTOFIX® Peroxide 1000	0 · 50 · 150 · 300 · 500 · 800 · 1000 mg/l H <sub>2</sub> O <sub>2</sub>	913 33
QUANTOFIX® Phosphate <sup>1)</sup>	0 · 3 · 10 · 25 · 50 · 100 mg/l PO <sub>4</sub> <sup>3-</sup>	913 20
QUANTOFIX® Potassium <sup>1)</sup>	0 · 200 · 400 · 700 · 1000 · 1500 mg/l K <sup>+</sup>	913 16
QUANTOFIX® QUAT	0 · 10 · 25 · 50 · 100 · 250 · 500 · 1000 mg/l Benzalkonium-chloride	913 37
QUANTOFIX® Suphate	<200 · >400 · >800 · >1200 · >1600 mg/l SO <sub>4</sub> <sup>2-</sup>	913 29





Test	Gradation	REF
QUANTOFIX® Sulphite	0 · 10 · 25 · 50 · 100 · 250 · 500 · 1000 mg/l SO <sub>3</sub> <sup>2-</sup>	913 06
QUANTOFIX® Tin	0 · 10 · 25 · 50 · 100 · 250 · 500 mg/l Sn <sup>2+</sup>	913 09
QUANTOFIX® Zinc <sup>1)</sup>	0 · 2 · 5 · 10 · 25 · 50 · 100 mg/l Zn <sup>2+</sup>	913 10
QUANTOFIX® for aquarium owners	0 · 5 · 10 · 15 · 20 · 25 °d total hardness	913 26
	0 · 3 · 6 · 10 · 15 · 20 °d carbonate hardness pH 6.4 · 6.8 · 7.2 · 7.6 · 8.0 · 8.4	913 27 <sup>3)</sup>

Container with 100 test strips 6 x 95 mm  
<sup>1)</sup> The tests are supplied complete with all reagents required for the determination  
<sup>2)</sup> Container with 60 test strips  
<sup>3)</sup> Container with 25 test strips  
**CE**: CE-marked according to the European directive for medical devices 93/42/EWG

## Other test strips and papers for semi-quantitative determinations

### Ordering information

Determination of	Test paper / test strips	Gradation	Presentation	REF
Ammonia	Ammonia test	0 · 0.5 · 1 · 3 · 6 mg/l NH <sub>4</sub> <sup>+</sup>	25 test strips 7 x 60 mm	907 14
Chlorine	Chlorine test	0 · 10 · 50 · 100 · 200 mg/l Cl <sub>2</sub>	reel of 5 m x 10 mm	907 09
Fluoride ions	Fluoride test	0 · 2 · 5 · 10 · 20 · 50 · 100 mg/l F <sup>-</sup>	30 test disks + reagent	907 34
Halide ions	Saltesmo	0 · 0.25 · 0.5 · 1 · 2 · 3 · 4 · 5 g/l NaCl	30 test disks	906 08
Humidity in air (relative)	Moisture indicator	20 · 30 · 40 · 50 · 60 · 70 · 80%	12 adhesive labels 50 x 100 mm	908 01
	Moisture indicator	8%	1000 test papers 60 x 35 mm	908 901
	Moisture indicator without cobalt chloride	8%	1000 test papers 60 x 35 mm	908 903
Ozone content in air	Ozone test strips	< 90 · 90 – 150 · 150 – 210 · > 210 µg/m <sup>3</sup> O <sub>3</sub>	12 test strips 10 x 95 mm	907 36
QUATS	INDIQUAT	on request	reel of 5 m x 10 mm	909 00-2
Silver	Ag-Fix (test paper)	0 · 1 · 2 · 3 · 5 · 7 · 10 g/l Ag <sup>+</sup>	reel of 5 m x 7 mm	907 40
	Ag-Fix (test strips)	0 · 0.5 · 1 · 2 · 3 · 5 · 7 · 10 g/l Ag <sup>+</sup> pH 4 · 5 · 6 · 7 · 8	100 test strips 6 x 95 mm	907 41
Swimming pool parameters	Swimming Pool Test 5 in 1	total hardness: 0 · 100 · 250 · 500 · 1000 mg/l CaCO <sub>3</sub>	50 test strips 6 x 95 mm	907 59
		free chlorine: 0 · 0.5 · 1 · 3 · 5 · 10 mg/l Cl <sub>2</sub>		
	total chlorine: 0 · 1 · 3 · 5 · 10 mg/l Cl <sub>2</sub>			
	alkalinity: 0 · 80 · 120 · 180 · 240 mg/l CaCO <sub>3</sub>			
	pH: 6.4 · 6.8 · 7.2 · 7.6 · 8.4			
	Swimming Pool Test 3 in 1	free chlorine: 0 · 0.5 · 1 · 3 · 5 · 10 mg/l Cl <sub>2</sub>	50 test strips 6 x 95 mm	907 52
		alkalinity: 0 · 80 · 120 · 180 · 240 mg/l CaCO <sub>3</sub>		
		pH: 6.4 · 6.8 · 7.2 · 7.6 · 8.4		
	Cyanuric acid test	0 · 50 · 100 · 150 · 300 ppm C <sub>3</sub> H <sub>3</sub> NO <sub>3</sub>	25 test strips 6 x 95 mm	907 10
Water hardness	AQUADUR®	< 3 · > 5 · > 10 · > 15 · > 20 · > 25 °d	100 test strips 6 x 95 mm	912 01
		< 3 · > 4 · > 7 · > 14 · > 21 °d	100 test strips 6 x 95 mm	912 20
		< 3 · > 4 · > 8.4 · > 14 °d	100 test strips 6 x 95 mm	912 39
		< 3 · > 5 · > 10 · > 15 · > 20 · > 25 °d	1000 individual sealed strips	912 23
		< 3 · > 4 · > 7 · > 14 · > 21 °d	1000 individual sealed strips	912 24
		< 3 · > 4 · > 8.4 · > 14 · > 21 °d	1000 individual sealed strips	912 40
		< 3 · > 5 · > 10 · > 15 · > 20 · > 25 °d	5000 strips without colour scale	912 21
		< 3 · > 4 · > 7 · > 14 · > 21 °d	5000 strips without colour scale	912 22
		< 3 · > 5 · > 10 · > 15 · > 20 · > 25 °d	50 sets of 3 individual sealed strips	919 902
			AQUADUR® sensitive	0 · 0.3 · 0.6 · 1.1 °d

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Analytical filtration		
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## List of filter paper grades

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MN 13	lens tissue paper (José paper)	21
MN 40/25	parchment sheets, crushable	20
MN 52 K	polyester paper	17
MN 59	electrocardiograph contact paper	on request
MN 68	sterilizing paper	on request
MN 85/70	glass fibre filters	12
MN 85/70 BF	glass fibre filters without binder	13
MN 85/90	glass fibre filters	13
MN 85/90 BF	glass fibre filters without binder	13
MN 85/220	glass fibre filters	13
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MN 101	cellulose filter flocs	22
MN 112	glass fibre wadding	on request
MN 126/70	technical filter paper, creped	15
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MN 214 ff	chromatography paper	23
MN 218	chromatography paper	23
MN 218 B	blotting paper	23
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MN 224	adsorbent paper for microscopy	20
MN 226	weighing paper	20
MN 260	chromatography paper	23
MN 261	chromatography paper	23
MN 270	thick filter paper	14
MN 270 S	smelling strips	on request
MN 280	filter paper for soil analysis	17
MN 321	nitrogen-free filter paper	18
MN 440	thick filter paper	14
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MN 514	qualitative and technical filter paper, embossed	on request
MN 520	thick filter paper	14
MN 553	technical filter paper, creped	15
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MN 617 WA	water impermeable (hydrophobic) filter paper	19
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MN 618	qualitative filter paper	10
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MN 625	technical filter paper	14
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MN 645 F	cellulose extraction thimbles	24
MN 645 R	cellulose extraction thimbles	24
MN 645 W	cellulose extraction thimbles	24
MN 646	cellulose filter thimbles for Liesgang-Glocke	on request
MN 649	glass fibre extraction thimbles	25
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MN 692	technical filter paper, creped	15
MN 704	technical filter paper	on request
MN 713	technical filter paper	14
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PORAFIL® NC	membrane filters made from nitrocellulose (cellulose nitrate)	29
PORAFIL® PC	membrane filters made from polycarbonate	30
PORAFIL® PE	membrane filters made from polyester	30
PORAFIL® RC	membrane filters made from regenerated cellulose	30
PORAFIL® TE	membrane filters made from polytetrafluoroethylene	29

# MACHEREY-NAGEL

## Your competent partner in analytical chemistry

### Tradition and Modernity – over 90 years experience

- Worldwide operating German company (founded 1911)
- Subsidiaries in France, Switzerland and USA
- Distributors in over 150 countries
- Long-standing tradition in filter papers
- Development, production and sales of special products for water, environmental and food analysis, for biotechnology, chemical and pharmaceutical industry and medical diagnostics



### Quality and Diversity – 5 product ranges with over 25 000 products „Made in Germany“

#### Filtration

- Filter Papers
- Filter Membranes
- Extraction Thimbles

#### Rapid Tests

- Test Papers and Test Strips
- Urine Test Strips

#### Water Analysis

- Colorimetric and Titrimetric Test Kits
- Photometric Water Analysis
- Mikrobiology

#### Chromatography

- High Performance Liquid Chromatography (HPLC)
- Gas Chromatography (GC)
- Thin Layer Chromatography (TLC)
- Sample Preparation (SPE)

#### Bioanalysis

- Nucleic Acid Purification Kits
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### Competence & Service – friendly employees with the know-how you need

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### Contact

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Rapid Tests, Medi-Test:

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