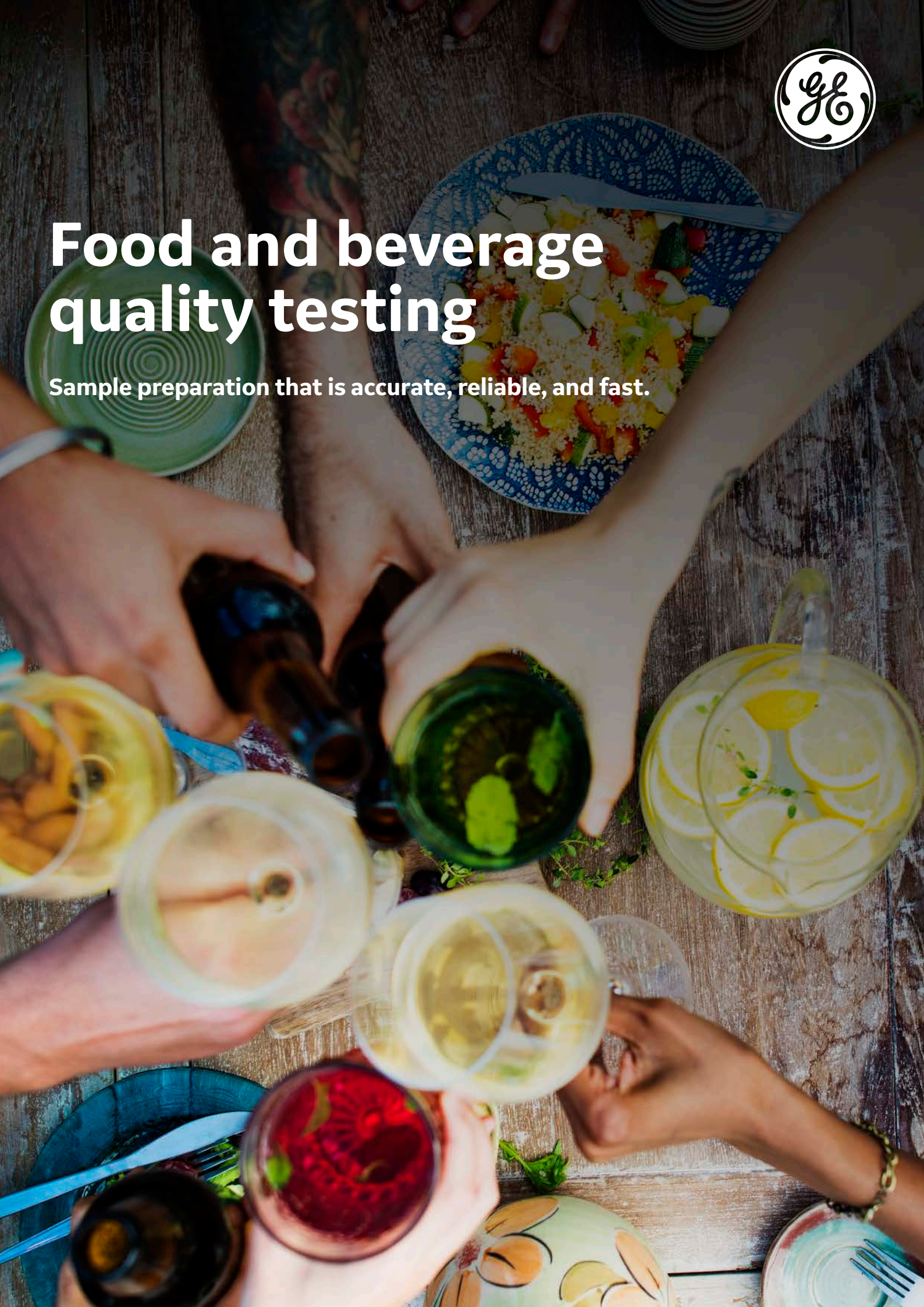


# Food and beverage quality testing

**Sample preparation that is accurate, reliable, and fast.**

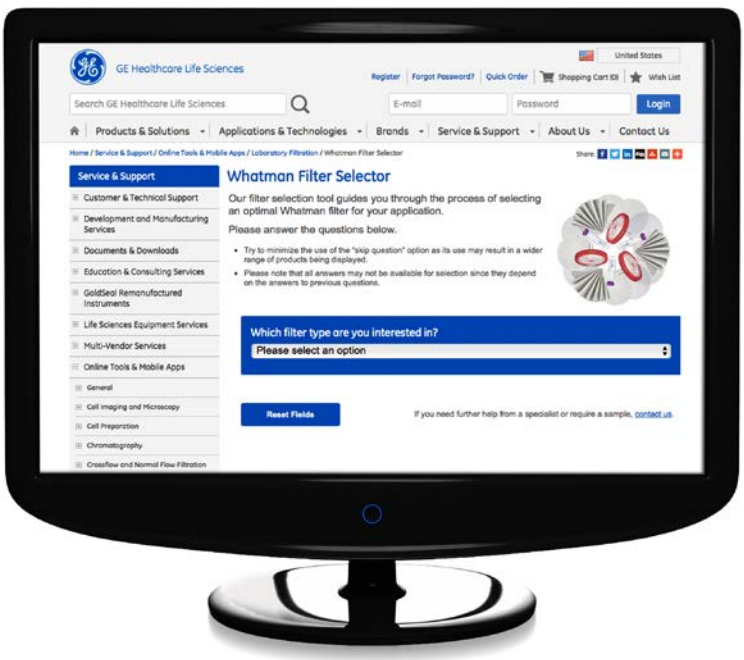
# Quality matters

GE Healthcare is committed to quality. Our Whatman™ brand products are manufactured from high-purity raw materials, and our factories all operate to ISO 9001:2008 standards. Our filter selection recommendations are built on the combination of expertise in modern methods and almost 300 years of history in the paper and membrane filtration business.

This brochure highlights the Life Sciences filtration solutions offered for the applications shown on page 3. We also offer interactive filter selection tools so you can quickly and easily find a filtration product that will work well for you.

Select your filter online at
**gelifesciences.com/LabFilterSelector**

iPad™ and Android™ versions can be found in the Apple™ and Google™ app stores. Please search for “Whatman Filters.”



# Contents

## Food









## Beverages









## General sample preparation



## Laboratory essentials



## Chemical compatibility

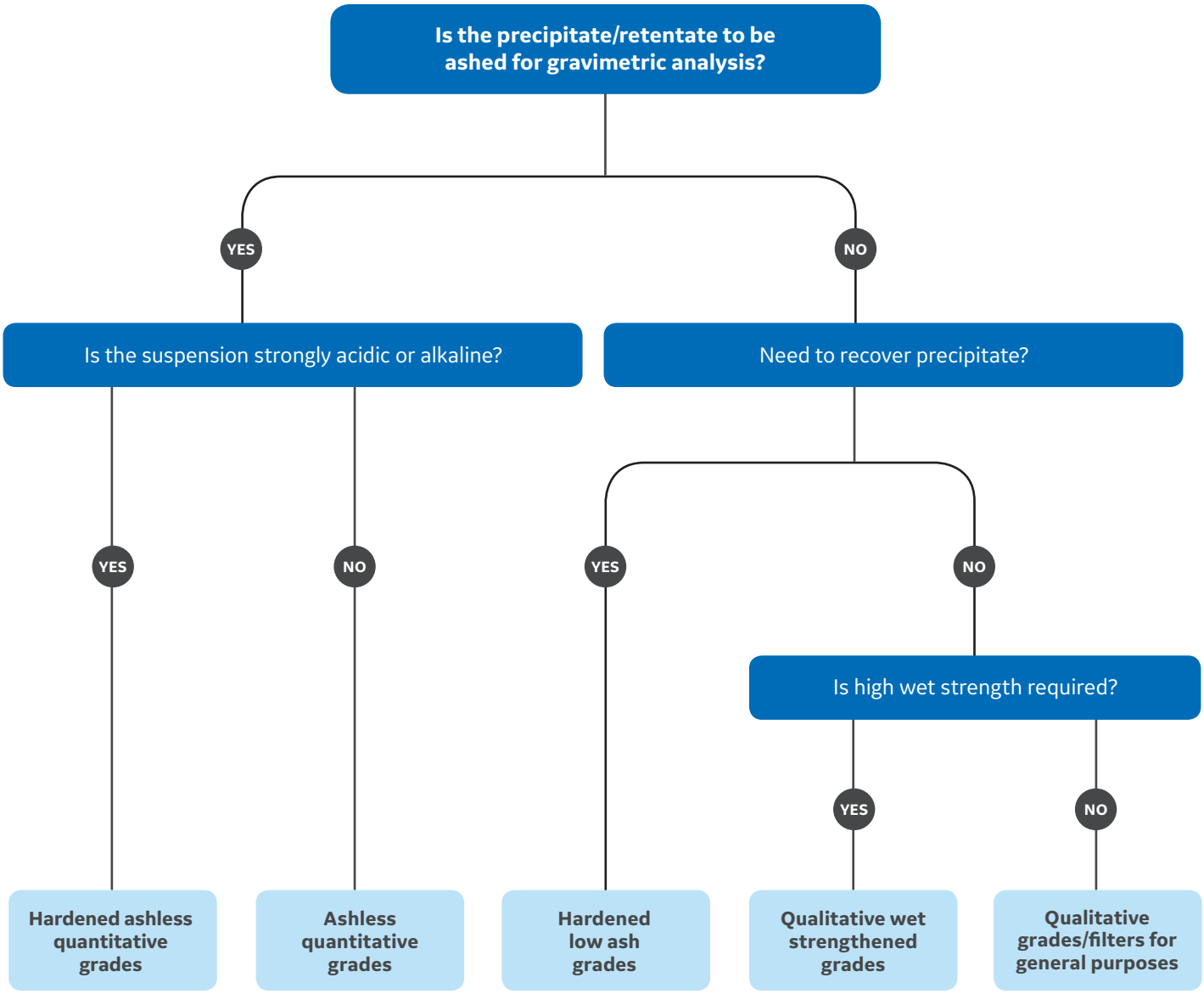


## Reference

# Cellulose filter papers and products

## Key application: clarification and solids retention

Various test methods require that liquid components of a solution be separated from suspended solids prior to analysis. GE offers a wide choice of cellulose filter papers with different flow rates, loading capacities, and chemical resistances to support these applications.




## Key application: clarifying sugar solution

Whatman Grade 5 qualitative filter papers have been shown to support ICUMSA methods for measuring sucrose content. Visit gelifescience.com/foodandbeverage for more information.

## Key application: degassing carbonated beverages


Qualitative wet strengthened filters.

## Technical characteristics of qualitative filter papers and filters for general purposes

| Grade | Nominal particle retention in liquid (µm) | Filtration speed (approx) Herzberg (s) | Typical thickness (µm) | Basis weight (g/m²) | Grade for pre-pleated version | Flow – aspect |
|---|---|---|---|---|---|---|
| **Qualitative filters** | | | | | | |
| 1 | 11 | 150 | 180 | 88 | Medium | |
| 2 | 8 | 240 | 190 | 103 | 2V | Medium |
| 3 | 6 | 325 | 390 | 187 | Medium – thick | |
| 4 | 20–25 | 37 | 205 | 96 | Very fast | |
| 5 | 2.5 | 1420 | 200 | 98 | Slow | |
| 595‡ | 4–7 | 80 | 150 | 68 | 595 ½ | Medium to fast – thin |
| 597‡§ | 4–7 | 70 | 180 | 85 | 597 ½ | Medium to fast |
| **Filters for general purposes** | | | | | | |
| 0858‡ | 7–12 | 55 | 170 | 75 | 0858 ½ | Medium to fast – grained |
| 0860‡ | 7–12 | 60 | 180 | 75 | 0860 ½ | Medium to fast – smooth |
| 2555§ | 7–12 | 55 | 170 | 75 | 2555 ½ | Medium to fast |
| **Qualitative wet strengthened filters** | | | | | | |
| 113 | 30 | 28 | 420 | 125 | 113V | Fast – creped |
| 114 | 25 | 38 | 190 | 77 | 114V | Fast – smooth |

‡ *Commonly used for degassing and clarification of beer*
§ *Commonly used for malt analysis (beer)*

Gas bubbles can interfere with accurate colorimetric analysis. Whatman Grade 2V cellulose paper has been shown to remove over 77% of $C0_2$ from a filtered sample. This filter also comes pre-pleated to save setup time. Visit gelifescience.com/foodandbeverage for more information.

# Ordering information†

| Diam./Grade | 1 | 2 | 3 | 4 | 5 | 595 | 597 | 113 | 114 |
|---|---|---|---|---|---|---|---|---|---|
| **Qualitative filters – flat, 100 per pack** | | | | | | | | | |
| 90 mm | 1001-090 | 1002-090 | 1003-090 | 1004-090 | 1005-090 | – | 10311809 | 1113-090 | 1114-090 |
| 110 mm | 1001-110 | 1002-110 | 1003-110 | 1004-110 | 1005-110 | 10311610 | 10311810 | 1113-110 | – |
| 125 mm | 1001-125 | 1002-125 | 1003-125 | 1004-125 | 1005-125 | 10311611 | 10311811 | 1113-125 | 1114-125 |
| 150 mm | 1001-150 | 1002-150 | 1003-150 | 1004-150 | 1005-150 | 10311612 | 10311812 | 1113-150 | 1114-150 |
| 185 mm | 1001-185 | 1002-185 | 1003-185 | 1004-185 | 1005-185 | – | 10311814 | 1113-185 | 1114-185 |
| 240 mm | 1001-240 | 1002-240 | 1003-240 | 1004-240 | 1005-240 | – | 10311820 | 1113-240 | 1114-240 |
| 270 mm | 1001-270 | 1002-270 | 1003-270 | 1004-270 | – | – | – | – | 1114-270 |
| 320 mm | 1001-320 | 1002-320 | 1003-320 | 1004-320 | 1005-320 | – | 10311822 | 1113-320 | – |
| 385 mm | 1001-385 | 1002-385 | – | – | – | – | – | – | – |

| Diam./Grade | 2V | 595 ½ | 597 ½ | 2555 ½ | 0858 ½ | 0860 ½ | 113V | 114V |
|---|---|---|---|---|---|---|---|---|
| **Qualitative filters and filters for general purposes – pre-pleated, 100 per pack** | | | | | | | | |
| 110 mm | – | 10311643 | 10311843 | – | – | – | – | – |
| 125 mm | 1202-125 | 10311644 | 10311844 | – | – | – | 1213-125 | 1214-125 |
| 150 mm | 1202-150 | 10311645 | 10311845 | | 10334345 | 10334547 | 1213-150 | 1214-150 |
| 185 mm | 1202-185 | 10311647 | 10311847 | 10313947 | 10334347 | – | 1213-185 | 1214-185 |
| 210 mm | – | 10311649 | – | – | – | – | – | – |
| 240 mm | 1202-240 | 10311651 | 10311851 | 10313951 | 10334351 | 10334551 | 1213-240 | 1214-240 |
| 270 mm | 1202-270 | 10311652 | 10311852 | – | 10334352 | – | 1213-270 | 1214-320 |
| 320 mm | 1202-320 | 10311653 | 10311853 | 10313953 | 10334353 | 10334553 | 1213-320 | – |
| 385 mm | 1202-385 | 10311654 | 10311854 | – | – | – | – | – |

† *Contact your local representative for more information on the rest of the Whatman filter paper range*

Qualitative filters.

# Technical characteristics of ashless quantitative filter papers

| Grade | Nominal particle Grade retention in liquid (µm) | Filtration speed (approx) Herzberg (s) | Typical thickness (µm) | Basis weight (g/m²) | Grade for pre-pleated version | Flow – aspect |
|---|---|---|---|---|---|---|
| 40‡ | 8 | 340 | 210 | 95 | – | Medium |
| 41‡ | 20 | 54 | 220 | 85 | – | Fast |
| 42‡ | 2.5 | 1870 | 200 | 100 | – | Slow |
| 43‡ | 16 | 155 | 220 | 95 | – | Medium to fast |
| 44‡ | 3 | 995 | 180 | 80 | – | Slow to medium |
| 589/1§ | 12–25 | 25 | 190 | 80 | 589/1 ½ | Fast |
| 589/2§ | 4–12 | 70 | 190 | 85 | 589/2 ½ | Medium to fast |
| 589/3§ | <2 | 750 | 150 | 84 | – | Slow |

‡ *Typical ash content is 0.007%*
§ *Typical ash content is 0.01%*

# Ordering information†

| Diam./Grade | 40 | 41 | 42 | 43 | 44 | 589/1 | 589/2 | 589/3 |
|---|---|---|---|---|---|---|---|---|
| **Ashless quantitative filters – flat, 100 per pack** | | | | | | | | |
| 90 mm | 1440-090 | 1441-090 | 1442-090 | 1443-090 | 1444-090 | 10300009 | 10300109 | – |
| 110 mm | 1440-110 | 1441-110 | 1442-110 | 1443-110 | 1444-110 | 10300010 | 10300110 | 10300210 |
| 125 mm | 1440-125 | 1441-125 | 1442-125 | 1443-125 | 1444-125 | 10300011 | 10300111 | 10300211 |
| 150 mm | 1440-150 | 1441-150 | 1442-150 | 1443-150 | 1444-150 | 10300012 | 10300112 | 10300212 |
| 185 mm | 1440-185 | 1441-185 | 1442-185 | 1443-185 | 1444-185 | 10300014 | 10300114 | 10300214 |
| 240 mm | 1440-240 | 1441-240 | 1442-240 | – | 1444-240 | – | 10300120 | – |
| 320 mm | 1440-320 | 1441-320 | 1442-320 | – | – | – | – | – |

† *Contact your local representative for more information on the rest of the Whatman filter paper range*

| Diam./Grade | 589/1 ½ | 589/2 ½ |
|---|---|---|
| **Ashless quantitative filters – pre-pleated, 100 per pack** | | |
| 110 mm | | 10300143 |
| 150 mm | 10300045 | 10300145 |


Whatman Grade 40 and 41 ashless filter paper.

# Nitrogen, phosphorous, and lipid analysis

| What are you testing for? | Method | Product |
|---|---|---|
| Nitrogen | Kjeldahl analysis | **Weighing boats** |
| Trace elements | Various | **Glass or cellulose filter paper** |
| Phosphorus | Colorimetry | **Grade 512 1/2 prefolded low phosphate filter paper** |
| Lipids | Soxhlet extraction | **Cellulose thimbles** |

## Key application: nitrogen analysis

Nitrogen content analysis is typically done with Kjeldahl techniques, which involve the sampling of an exact amount of sample before transfer to a digestion tube. Low nitrogen content weighing paper makes the sample transfer easy and quick without loss of material and with minimal interference with the end result. The sample might need to be filtered through a Whatman brand qualitative filter paper prior to analysis.

Low nitrogen content weighing boats.

## Ordering information

| For what use? | Product | Quantity | Product code |
|---|---|---|---|
| Kjeldahl analysis | Grade 609 weighing boats | 100/pack | 10313032 |
| Phosphorus analysis | Grade 512 1/2* | 100/pack | 10310643 |

* *For a full list of pack sizes visit gelifesciences.com*

## Key application: trace element extraction

Most trace element tests are based on extracting a sample and measuring the concentration of trace elements in the liquid phase. Extraction methods can vary between laboratories. The sample then generally needs to be filtered through a qualitative filter paper (p. 5) or glass fiber filter (p. 13) to make sure it will not clog nebulizers or interfere with injection into the analysis instrument. If digested with aqua regia, the sample might be filtered through an ashless filter paper. If syringe filters are used as an additional sample preparation step, please see page 15.

## Key application: phosphorus analysis by colorimetry

To determine the phosphorus content, the sample is extracted with a chemical solution and the phosphorus content in the extract is measured by colorimetry. Filtration of the extract through a qualitative filter paper is generally needed before analysis, please see page 8 for ordering information. If an automated method is used for determining phosphorus concentration, acid-resistant filter paper might be needed.

## Key application: acid testing

Determination of acid presence and concentration in beverages such as wine can be performed by applying a sample of the liquid to chromatography paper. Allow the paper to separate acidic content, and then dry the paper. The acids that are present in the sample can then be determined by the spots on the paper.

## Ordering information

| Product | Quantity/pack | Product code |
|---|---|---|
| 1 Chr sheets, 20 x 20 cm | 100 | 3001-861 |

## Key application: Soxhlet extraction for lipid analysis

Food samples can be prepared for lipid analysis using Soxhlet extraction. Extraction thimbles are widely used for Soxhlet techniques. After extraction samples can be refiltered with a 0.45 µm filter to remove small particles in order to protect your analytical instument.

Extraction thimbles in Soxhlet extraction apparatus.

## Ordering information

| | Wall thickness | |
|---|---|---|
| **Dimensions†** | **1 mm** | **1.5 mm** |
| 10 × 50 mm | 2800-105 | – |
| 18 × 55 mm | 2800-185 | – |
| 19 × 90 mm | 2800-199 | – |
| 22 × 65 mm | 2800-226 | – |
| 22 × 80 mm | 2800-228 | 10350211 |
| 25 × 60 mm | 10350416 | 10350215 |
| 25 × 70 mm | – | 10350216 |
| 25 × 80 mm | 2800-258 | 10350217 |
| 25 × 100 mm | 2800-250 | 10350219 |
| 26 × 60 mm | 2800-266 | 10350220 |
| 27 × 80 mm | – | 10350223 |
| 28 × 60 mm | – | 10350225 |
| 28 × 80 mm | 2800-288 | 10350226 |
| 28 × 100 mm | 2800-280 | 10350227 |
| 28 × 120 mm | 2800-282 | – |
| 30 × 80 mm | 2800-308 | 10350234 |
| 30 × 90 mm | – | 10350235 |
| 30 × 100 mm | 2800-300 | 10350236 |
| 31 × 80 mm | 10350437 | 10350303 |
| 33 × 60 mm | – | 10350238 |
| 33 × 80 mm | 2800-338 | 10350240 |
| 33 × 100 mm | 2800-330 | 10350243 |
| 33 × 118 mm | 2800-331 | 10350245 |
| 33 × 130 mm | – | 10350247 |
| 33 × 205 mm | – | 10350250 |
| 33 × 90 mm | – | 10350241 |

| | Wall thickness | | |
|---|---|---|---|
| **Dimensions†** | **1 mm** | **1.5 mm** | **2.0 mm** |
| 33 × 94 mm | 2800-339 | 10350242 | 2810-339 |
| 34 × 130 mm | – | 10350252 | – |
| 35 × 120 mm | – | 10350254 | – |
| 35 × 150 mm | – | 10350255 | – |
| 37 × 130 mm | 2800-373 | – | – |
| 40 × 85 mm | – | 10350261 | – |
| 41 × 123 mm | 2800-412 | 10350265 | – |
| 43 × 123 mm | 2800-432 | 2810-432 | – |
| 44 × 230 mm | – | – | 10350275 |
| 48 × 145 mm | – | 10350273 | – |
| 48 × 200 mm | – | – | 10350274 |
| 60 × 180 mm | 2800-608 | – | – |
| 75 × 250 mm | – | – | 10350287‡ |

† *Internal diameter and external length*
‡ *Wall thickness: 2.5 mm*

# Filtration membranes

## Key application: bacterial detection and measurement

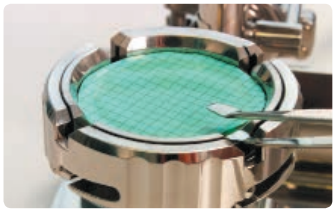
### Filtration considerations

Microorganisms in a sample are collected using a microfiltration membrane filter. The membrane can then be transferred onto a microbiological culture medium for further identification and/or quantification of microorganisms.
Membrane filtration methods are commonly used for the detection of microorganisms such as *E. coli, Clostridia*, fecal coliforms, *Legionella, Staphylococci,* and *Pseudomonas aeruginosa*. These methods involve the use of membrane filters and filtration manifolds.

### Workflow

(A) Tight sealing of funnel and membrane reducing any cross contamination to a minimum by special sealing technique.

(B) Apply liquid and allow to filter through.



(C) Easy removal of the membrane.

| **Membrane material** | Cellulose mixed ester | High-flux cellulose nitrate | Nylon (polyamide) | Polycarbonate |
|---|---|---|---|---|
| **Product name** | ME | MicroPlus | NL | Nuclepore™ |
| **Color** | White, black or green | White or black | White | White or black |
| **Pore size** | 0.2 µm/0.45 µm/ 0.6 µm/0.8 µm | 0.45 µm | 0.2 µm/0.45 µm | 0.2 µm/0.4 µm (and other pore sizes) |
| **Application examples** | *Enterococcus, E. coli, Clostridia*, fecal coliforms, *Staphyloccus, Pseudomonas aeruginosa*, etc | | *Legionella* | *Legionella* |

## Accessories for microbiological control

| Product | Description | Quantity/pack | Product code |
|---|---|---|---|
| AS 200 | 2-place vacuum manifold | 1 | 10 445 890 |
| Funnel dispenser | Automatic dispenser for funnels | 1 | 10 445 870 |
| Funnels 100 mL | PP (autoclavable) | 20 | 10 445 861 |
| Funnels 350 mL | PP (autoclavable) | 20 | 10 445 866 |
| Autoclaving bags | Autoclaving bags for MBS I funnels | 20 | 10 445 868 |
| Membrane-Butler | Manual dispenser for membranes | 1 | 10 477 100 |

Membrane-Butler.

## Key application: filterability testing

Filterability testing can be used to help determine bottling readiness of wine. To determine the filterability index, apply negative pressure to draw a sample of wine through a 0.45 µm membrane.


Microplus membrane filters.

# Ordering information

## Membrane filters

| Diameter | | | | | 25 mm | 47 mm | 50 mm | |
|---|---|---|---|---|---|---|---|---|
| Membrane material/type | Pore size | Color | Sterile | Membrane-Butler compatible | Product code | Product code | Product code | Quantity |
| Cellulose mixed ester/ME type | 0.2 µm | white | yes | no | – | 10406970 | 10406972 | 100/pack |
| | 0.2 µm | white | yes | yes | – | 10408712 | 10408714 | 400/pack |
| | 0.45 µm | white | yes | no | – | 10406870 | 10406872 | 100/pack |
| | 0.45 µm | white | yes | yes | – | 10407312 | 10407314 | 400/pack |
| | 0.45 µm | black/white grid | yes | yes | – | 10409770 | – | 100/pack |
| | 0.45 µm | black/white grid | yes | yes | – | 10407332 | – | 400/pack |
| Cellulose nitrate/ Microplus | 0.45 µm | white | yes | no | – | 10407713 | 10407714 | 100/pack |
| | 0.45 µm | white | yes | yes | – | 10407112 | 10407114 | 400/pack |
| | 0.45 µm | black | yes | no | – | – | 10407734 | 100/pack |
| | 0.45 µm | black | yes | yes | – | 10407132 | – | 400/pack |
| Polycarbonate/ Nuclepore | 0.2 µm | white | no | no | – | 111106 | 111206 | 100/pack |
| | 0.4 µm | white | no | no | – | 111107 | 111207 | 100/pack |
| | 0.8 µm | black | no | no | 110659 | – | – | 100/pack |
| Nylon (Polyamide)/NL | 0.4 µm | white | no | no | – | 10414112 | 10414114 | 100/pack |

# Glass fiber filters

## Key application: moisture and solids analysis

The processes for measuring moisture in food or solids in water are quite similar. In both cases a sample is placed on a filter and weighed. It is then heated to evaporate any water present and weighed again. The difference between the two measurements is the moisture content, and the final weight is the solids content. Such measurements are typically performed using glass fiber filter circles that need additional preparation prior to use. However, GE has developed ready-to-use 934-AH RTU glass fiber filters, which are supplied in a prewashed and preweighed format and enable considerable time savings in the laboratory. 934-AH RTU filters also provide reproducible results and low background contamination.

| What are you testing for? | Product | Characteristics and benefits |
|---|---|---|
| Moisture content of foodstuff. Solids, including:<br>• total suspended<br>• total dissolved<br>• total volatile | **GF/C™**<br>**934-AH™ glass fiber filters** | • Conform to requirements of standard methodologies for solids testing in water: GF/C for EN 872; 934-AH for Standard Method 2540D<br>• High loading capacity enabling filtration of very turbid samples<br>• Retention of very fine particles |
| | **934-AH RTU** | • Share same benefits as traditional 934-AH glass fiber filters<br>• Ready-to-use format<br>• Prewashed, preweighed according to 2540D<br>• Each pretreated filter comes in an aluminium pan, with the filter weight clearly noted<br>• Each pan has its own unique barcode |

GF/C glass fiber filters meet the requirements of EN 872.

## Ordering information

### Glass fiber filters for solids analysis, 100/pack

| Grades | GF/C | 934-AH | 934-AH RTU preweighed, prewashed* |
|---|---|---|---|
| Typical particle retention (µm)† | 1.2 µm | 1.5 µm | 1.5 µm |
| **Diameter (mm)** | **Product code** | **Product code** | **Product code** |
| 42.5 | 1822-042 | 1827-042 | 9907-042 |
| 47 | 1822-047 | 1827-047 | 9907-047 |
| 55 | 1822-055 | 1827-055 | 9907-055 |
| 70 | 1822-070 | 1827-070 | – |
| 90 | 1822-090 | 1827-090 | 9907-090 |

** Each filter is supplied in an individual aluminum pan*

*† Particle retention rating at 98% efficiency*

# Filtration device

## Key application: chemical analysis

Chemical analyses are commonly performed using analytic instrumentation. Filtration of samples prior to analysis is good practice in order to remove unwanted particles from the analysis and to protect delicate instrumentation from potentially damaging compounds. Key to good sample preparation is selection of an appropriate filter membrane and device. General guidelines on membrane compatibility can be found in the following table. Selection of a broadly compatible membrane such as regenerated cellulose is recommended.

## Characteristics of common membranes

| | Solvent compatibility | | Qualities | |
|---|---|---|---|---|
| **Membrane[1]** | **Aqueous** | **Nonaqueous** | **Low protein binding** | **Low extractables** |
| RC | +++ | +++ | +++ | +++ |
| CA | +++ | - | +++ | + |
| ME | +++ | + | + | - |
| CN | +++ | - | - | - |
| PVDF | +++ | +++ | +++ | + |
| PP | +++ | +++ | - | - |
| NYL | +++ | + | - | - |
| PES | +++ | + | +++ | +++ |
| PTFE | - | +++ | - | + |
| Anopore™ | +++ | + | +++ | +++ |
| PC | +++ | + | +++ | +++ |

[1] *RC = regenerated cellulose; CA = cellulose acetate; ME = mixed ester; CN = cellulose nitrate; PVDF = polyvinylidene fluoride; PP = polypropylene; NYL = nylon; PES = polyethersulfone; PTFE = Polytetrafluoroethylene; PC = polycarbonate.*

*+++ strong characteristic*
*+ weak characteristic*
*- does not have characteristic*

# Standardize on a single membrane type across applications

Membrane filter

Degas and purify your mobile phase

**Mobile phase filtration p. 16**


Uniflo™ and Puradisc

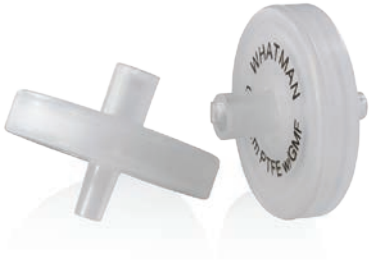
Everyday use

**Preventive care p. 17**

SPARTAN™

Every lot HPLC-tested to ensure low extractables

**Method development p. 21**




Whatman GD/X™

Processes more sample with less back pressure

**Syrups, sludges, and thick samples p. 22**

Mini-UniPrep™

Designed for autosamplers and out-of-lab sample prep

**Automated processing p.25**

# Mobile phase filtration

## Whatman RC55 and GV 050/2 vacuum filtration unit for solvent filtration

Use the same material for mobile phase filtration and sample filtration to:

- Reduce variation of analysis
- Reduce rate of column clogging
- Enhance lifetime of column

If in-line degassing is required, consider the Whatman In-line filter/degasser. Choose from two membrane options:

- Nylon – when mobile phase is > 20% aqueous
- Polypropylene – for non-aqueous solvents


Whatman RC55 filters and GV 050/2 vacuum filtration unit.

## Ordering information

| Description | Quantity/pack | Product code |
|---|---|---|
| Regenerated Cellulose circles (RC55), 0.45 µm, 47 mm | 100 | 10410212 |
| Regenerated Cellulose circles (RC55), 0.45 µm, 50 mm | 100 | 10410214 |
| GV 050/2, glass frit filter, hose coupling connection, Erlenmeyer flask 1000 mL (NS45) | 1 | 10442200 |
| Whatman In-line filter/degasser, polypropylene (0.8 mm -0 4 mm tubing) | 1 | 6725-5002 |
| Whatman In-line filter/degasser, polypropylene (1/8" tubing) | 1 | 6725-5002A |
| Whatman In-line filter/degasser, nylon (0.8 mm -0 4 mm tubing) | 1 | 6726-5002 |
| Whatman In-line filter/degasser, nylon (1/8" tubing) | 1 | 6726-5002A |

# Preventive care: Uniflo and Puradisc filters

Filtration of your samples is important as a preventive maintenance step for HPLC or UHPLC analysis. Keep unwanted particulate matter from entering the injector to increase column life, shorten run time, and optimize peak shape.

- Manufactured to a high standard in GE facilities operated to ISO 9001:2008 standards
- RC available in 13 mm and 25 mm diameters; hold-up volume < 25 µL for 13 mm and < 100 µL for 25 mm
- Available in non-RC membrane types to support a variety of other applications


Uniflo and Puradisc filters.

## Typical data

### Uniflo and Puradisc Syringe Filters

| | 4 mm diameter* | 13 mm diameter† | 25 mm diameter‡ | 30 mm diameter* |
|---|---|---|---|---|
| Housing | Polypropylene | Polypropylene | Polypropylene | Polycarbonate |
| Filtration area | 0.2 $cm^2$ | 1.3 $cm^2$ | 4.2 $cm^2$ | 5.7 $cm^2$ |
| Maximum pressure | 75 psi (5.2 bar) | 75 psi (5.2 bar) | 75 psi (5.2 bar) | 100 psi (6.9 bar) |
| Volume 'hold up' with air purge | < 10 µL | < 25 µL | < 100 µL | < 50 µL |
| Dimensions | 10.1 × 23.5 mm<br>19.5 × 7.7 mm<br>*(PVDF membrane only)* | 16.3 × 19.8 mm | 22.9 × 28.4 mm | 26 × 34 mm |
| Weight (approx) | 0.55 g | 0.95 g | 2.7 g | 4.7 g |
| Volume throughput | up to 2 mL | up to 10 mL | up to 100 mL | up to 100 mL |
| Inlet connection | Female Luer lock | Female Luer lock | Female Luer lock | Female Luer lock |
| Outlet connection | Male Luer/tube tip | Male Luer/tube tip | Male Luer | Male Luer/Luer lock |
| Sterilization§ | Autoclave at 121°C | Autoclave at 121°C | Autoclave at 121°C | Autoclaving not recommended |

* *Diameters available for Puradisc only.*
† *Data the same for Puradisc and Uniflo, except: Uniflo filtration area = 0.65 $cm^2$; Max pressure = 67.5 psi (4.7 bar); Volume hold up is < 50 µl; dimensions = 19.6 × 16.9 mm*
‡ *Data the same for Puradisc and Uniflo, except: Uniflo filtration area = 4.9 $cm^2$; Max pressure = 67.5 psi (4.7 bar); dimensions = 24.5 × 29.2 mm*
§ *Applies to nonsterile filters only. Do not autoclave sterile filters*

## Ordering information

### Uniflo filters

| Membrane | Diameter (mm) | Pore size (µm) | Quantity/pack | Product code |
|---|---|---|---|---|
| RC | 13 | 0.20 | 500 | 10463852 |
| | | | 1000 | 10463875 |
| | | 0.45 | 500 | 10463862 |
| | | | 1000 | 10463876 |
| | 25 | 0.20 | 500 | 10463452 |
| | | | 1000 | 10463453 |
| | | 0.45 | 500 | 10463462 |
| | | | 1000 | 10463463 |
| | | | 1000 | 10463876 |

## 4 mm Puradisc Syringe Filters

| | Nonsterile without tube tip | | | Nonsterile with tube tip | Sterile without tube tip | | |
|---|---|---|---|---|---|---|---|
| **Membrane†** | **Nylon** | **PVDF** | **PTFE** | **PVDF** | **Nylon** | **PVDF** | **Quantity/pack** |
| **Pore size (µm)** | | | | | | | |
| 0.2 | — | — | — | 6777-0402 | 6786-0402 | 6791-0402 | 50 |
| 0.45 | — | — | — | 6777-0404 | — | — | 50 |
| 0.2 | 6789-0402 | 6779-0402 | 6784-0402 | — | — | — | 100 |
| 0.45 | 6789-0404 | 6779-0404 | 6784-0404 | — | — | — | 100 |
| 0.2 | 6790-0402 | 6792-0402 | 6783-0402 | — | — | — | 500 |
| 0.45 | 6790-0404 | 6792-0404 | 6783-0404 | — | — | — | 500 |


## 13 mm Puradisc Syringe Filters (nonsterile)

| | Without tube tip | | | | | | | With tube tip | | Quantity/ pack |
|---|---|---|---|---|---|---|---|---|---|---|
| **Membrane*** | **Nylon** | **PVDF** | **PTFE** | **PES** | **PP** | **GMF** | **CA** | **PVDF** | **PTFE** | |
| **Pore size (µm)** | | | | | | | | | | |
| 0.2 | — | — | — | — | — | — | — | 6777-1302 | 6775-1302 | 50 |
| 0.45 | — | — | — | — | — | — | — | 6777-1304 | 6775-1304 | 50 |
| 0.1 | 6789-1301 | — | 6784-1301 | — | — | — | — | — | — | 100 |
| 0.2 | 6789-1302 | 6779-1302 | 6784-1302 | 6782-1302 | 6788-1302 | — | — | — | — | 100 |
| 0.45 | 6789-1304 | 6779-1304 | 6784-1304 | 6782-1304 | 6788-1304 | — | 6771-1304 | — | — | 100 |
| 1.0 | — | — | 6784-1310 | — | — | — | — | — | — | 100 |
| 5.0 | — | — | 6784-1350 | — | — | — | — | — | — | 100 |
| GF/A 1.6† | — | — | — | — | — | 6820-1316 | — | — | — | 100 |
| GF/B 1.0† | — | — | — | — | — | 6821-1310 | — | — | — | 100 |
| GF/C 1.2† | — | — | — | — | — | 6822-1312 | — | — | — | 100 |
| GF/D 2.7† | — | — | — | — | — | 6823-1327 | — | — | — | 100 |
| GF/F 0.7† | — | — | — | — | — | 6825-1307 | — | — | — | 100 |
| 934-AH 1.5† | — | — | — | — | — | 6827-1315 | — | — | — | 100 |
| 0.2 | 6790-1302 | 6792-1302 | 6783-1302 | — | 6785-1302 | — | — | — | - | 500 |
| 0.45 | 6790-1304 | 6792-1304 | 6783-1304 | 6781-1304 | 6785-1304 | 6818-1304 | — | — | - | 500 |
| GF/A 1.6† | — | — | — | — | — | 6806-1316 | — | — | — | 500 |
| 0.2 | 6768-1302 | 6765-1302 | 6766-1302 | — | — | — | — | — | — | 2000 |
| 0.45 | 6768-1304 | 6765-1304 | 6766-1304 | — | — | — | 6763-1304 | — | — | 2000 |

* *CA = Cellulose acetate; GMF = Glass microfiber filter; PES = Polyethersulfone; PP = Polypropylene; PTFE = Polytetrafluoroethylene; PVDF = Polyvinylidene difluoride*

† *Particle Retention Rating*

## 13 mm Puradisc Syringe Filters (sterile)

| | Without tube tip | | | With tube tip | |
|---|---|---|---|---|---|
| **Membrane*** | **Nylon** | **PVDF** | **PES** | **PVDF** | **Quantity/pack** |
| **Pore size (µm)** | | | | | |
| 0.1 | 6786-1301 | — | — | — | 50 |
| 0.2 | 6786-1302 | 6791-1302 | 6780-1302 | 6778-1302 | 50 |
| 0.45 | — | 6791-1304 | 6780-1304 | — | 50 |

* *PES = Polyethersulfone; PVDF = Polyvinylidene difluoride*

## 25 mm Puradisc Syringe Filters

| | Nonsterile | | | | | Sterile | | |
|---|---|---|---|---|---|---|---|---|
| **Membrane*** | **Nylon** | **PVDF** | **PTFE** | **PP** | **PES** | **GMF** | **PES** | **Quantity/pack** |
| **Pore size (µm)** | | | | | | | | |
| 0.1 | — | — | 6784-2501 | — | — | — | — | 50 |
| 0.2 | 6750-2502 | 6746-2502 | 6784-2502 | 6786-2502 | — | — | 6780-2502 | 50 |
| 0.45 | 6750-2504 | 6746-2504 | 6784-2504 | 6786-2504‡ | — | — | 6780-2504 | 50 |
| 1.0 | 6750-2510 | — | 6784-2510 | — | — | — | 6780-2510 | 50 |
| 0.7 (GF/F)† | — | — | — | — | — | 6825-2517 | — | 50 |
| 1.0 (GD 1)† | — | — | — | — | — | 6783-2510 | — | 100 |
| 2.0 (GD 2)† | — | — | — | — | — | 6783-2520 | — | 100 |
| 0.2 | 6751-2502 | 6747-2502 | 6785-2502 | 6788-2502 | 6781-2502 | — | — | 200 |
| 0.45 | 6751-2504 | 6747-2504 | 6785-2504 | 6788-2504‡ | 6781-2504 | — | — | 200 |
| 1.0 | 6751-2510 | — | — | — | 6781-2510 | — | — | 200 |
| 0.7 (GF/F)† | — | — | — | — | — | 6825-2527 | — | 200 |
| 0.2 | — | — | — | — | — | — | — | 300 |
| 0.45 | 6752-2504 | — | — | — | — | — | — | 500 |
| 0.1 | — | — | 6798-2501 | — | — | — | — | 1000 |
| 0.2 | 6753-2502 | — | 6798-2502 | 6790-2502 | 6794-2502 | — | 6794-2512 | 1000 |
| 0.45 | 6753-2504 | 6749-2504 | 6798-2504 | 6790-2504‡ | 6794-2504 | — | 6794-2514 | 1000 |
| 0.7 (GF/F)† | — | — | — | — | — | 6787-2520 | — | 1000 |
| 1.0 | 6753-2510 | — | 6798-2510 | — | 6794-2510 | — | — | 1000 |
| 1.0 (GD 1)† | — | — | — | — | — | 6792-2510 | — | 1000 |

* *GD = Graded Density; PES = Polyethersulfone; PP = Polypropylene; PTFE = Polytetrafluoroethylene: PVDF = Polyvinylidene difluoride*

† *Particle Retention Rating*

‡ *DpPP = Polypropylene Depth Filter*

## 30 mm Puradisc FP Syringe Filters

| Description | Diameter (mm) | Pore size (µm) | Membrane/housing* | Connection in/out† | Color code | Quantity/pack | Product code |
|---|---|---|---|---|---|---|---|
| **Individually sterile packed** | | | | | | | |
| FP 30 CA-S# | 30 | 0.2 | CA/PC | FLL/ML | red | 50 | 10 462 200 |
| FP 30 CA-S# | 30 | 0.2 | CA/PC | FLL/MLL | red | 50 | 10 462 205 |
| FP 30 CA-S# | 30 | 0.45 | CA/PC | FLL/ML | white | 50 | 10 462 100 |
| FP 30 CA-S# | 30 | 0.8 | CA/PC | FLL/ML | green | 50 | 10 462 240 |
| FP 30 CA-S# | 30 | 1.2 | CA/PC | FLL/ML | orange | 50 | 10 462 260 |
| FP 30 CN-S | 30 | 5.0 | CN/PC | FLL/ML | black | 50 | 10 462 000 |
| FP 30 RC# | 30 | 0.45 | RC | FLL/ML | — | 50 | 10 462 950 |
| FP 30 RC# | 30 | 0.2 | RC | FLL/ML | — | 50 | 10 462 960 |
| **Nonsterile** | | | | | | | |
| FP 30 CA# | 30 | 0.2 | CA/PC | FLL/ML | red | 50 | 10 462 701 |
| FP 30 CA# | 30 | 0.2 | CA/PC | FLL/ML | red | 100 | 10 462 710 |
| FP 30 CA# | 30 | 0.2 | CA/PC | FLL/ML | red | 500 | 10 462 700 |
| FP 30 CA# | 30 | 0.2 | CA/PC | FLL/MLL | red | 500 | 10 462 206 |
| FP 30 CA# | 30 | 0.45 | CA/PC | FLL/ML | white | 50 | 10 462 601 |
| FP 30 CA# | 30 | 0.45 | CA/PC | FLL/ML | white | 100 | 10 462 610 |
| FP 30 CA# | 30 | 0.45 | CA/PC | FLL/ML | white | 500 | 10 462 600 |
| FP 30 CA# | 30 | 0.8 | CA/PC | FLL/ML | green | 50 | 10 462 241 |
| FP 30 CA# | 30 | 0.8 | CA/PC | FLL/ML | green | 500 | 10 462 243 |
| FP 30 CA# | 30 | 1.2 | CA/PC | FLL/ML | orange | 50 | 10 462 261 |
| FP 30 CA# | 30 | 1.2 | CA/PC | FLL/ML | orange | 500 | 10 462 263 |
| FP 30 CN | 30 | 5.0 | CN/PC | FLL/ML | black | 50 | 10 462 520 |
| FP 30 CN | 30 | 5.0 | CN/PC | FLL/ML | black | 100 | 10 462 510 |
| FP 30 CN | 30 | 5.0 | CN/PC | FLL/ML | black | 500 | 10 462 500 |
| **Aqua 30** | | | | | | | |
| Aqua 30 CA# | 30 | 0.45 | CA/PC | FLL/ML | white | 50 | 10 462 656 |
| Aqua 30 CA# | 30 | 0.45 | CA/PC | FLL/ML | white | 100 | 10 462 655 |
| Aqua 30 CA# | 30 | 0.45 | CA/PC | FLL/ML | white | 500 | 10 462 650 |

* *CA = Cellulose acetate; CN = Cellulose nitrate; PC = Polycarbonate; FLL = Female Luer lock; ML = Male Luer; MLL = Male Luer lock*

\# *Sold under license to DE10102744 and foreign equivalents thereof*

# Certified quality for method development: SPARTAN filters

SPARTAN brand syringe filters are HPLC-certified for confidence and consistent results. Tested and certified for the absence of UV-absorbing substances (210 and 254 nm) with water, methanol, acetonitrile to ensure absence of interfering substances.

- Hydrophilic, low protein-binding membrane made of regenerated cellulose
- Excellent chemical resistance against the standard aqueous and organic HPLC solvents
- Tested and certified for the absence of UV-absorbing substances at wavelengths of 210 and 254 nm with water, methanol, and acetonitrile
- 13 mm diameter with Mini-Tip options
- 13 mm diameter with extremely low dead volume < 10 µL


Certificate Of Analysis
Whatman GmbH
Product Information
Quality Control


SPARTAN filters.

## Ordering information

### SPARTAN Syringe Filters

| Product code | Diameter (mm) | Pore size (µm) | Membrane/housing* | Connection in/out* | Color code | Quantity/pack |
|---|---|---|---|---|---|---|
| 10463040# | 13 | 0.2 | RC/PP | FLL/Mini-Tip | dark brown | 100 |
| 10463042# | 13 | 0.2 | RC/PP | FLL/Mini-Tip | dark brown | 500 |
| 10463100# | 13 | 0.2 | RC/PP | FLL/ML | dark brown | 100 |
| 10463102# | 13 | 0.2 | RC/PP | FLL/ML | dark brown | 500 |
| 10463030# | 13 | 0.45 | RC/PP | FLL/Mini-Tip | light brown | 100 |
| 10463032# | 13 | 0.45 | RC/PP | FLL/Mini-Tip | light brown | 500 |
| 10463110# | 13 | 0.45 | RC/PP | FLL/ML | light brown | 100 |
| 10463112# | 13 | 0.45 | RC/PP | FLL/ML | light brown | 500 |
| 10463060# | 30 | 0.2 | RC/PP | FLL/ML | dark brown | 100 |
| 10463062# | 30 | 0.2 | RC/PP | FLL/ML | dark brown | 500 |
| 10463053# | 30 | 0.45 | RC/PP | FLL/ML | light brown | 50 |
| 10463050# | 30 | 0.45 | RC/PP | FLL/ML | light brown | 100 |
| 10463052# | 30 | 0.45 | RC/PP | FLL/ML | light brown | 500 |

* *PP = Polypropylene; FLL = Female Luer lock; ML = Male Luer; RC = Regenerated cellulose*

\# *Sold under license to DE10102744 and foreign equivalents thereof*

# High-particulate, challenging sample filtration: Whatman GD/X filters

Filter even the most difficult samples and use less hand pressure with GD/X syringe filters.

- Exceptional loading capacity and fast flow rates – prevents back pressure and clogging of membrane
- Graduated microfiber prefilter from 1 µm to 0.7 µm
- Higher flow rates (3×) compared to unprotected membranes
- Uses glass microfiber-based prefilters


For metals testing and other applications where glass-based compounds could interfere with analysis, we offer a related syringe filter (GD/XP), which uses polypropylene prefilters.

## Typical data

### Whatman GD/X Syringe Filters

| Membrane | GD/X 13 mm | GD/X 25 mm |
|---|---|---|
| Housing | Polypropylene (pigment-free) | Polypropylene (pigment-free) |
| Filtration area | 1.3 $cm^2$ | 4.6 $cm^2$ |
| Maximum pressure | 100 psi (6.9 bar) | 75 psi (5.2 bar) |
| Volume “hold-up” full housing with air purge | 0.5 mL<br>50 µL (approx) | 1.4 mL<br>250 µL (approx) |
| Dimensions | 21.6 × 29.8 mm | 20.8 × 29.8 mm |
| Weight | 3 g (approx) | 3 g (approx) |
| Flow direction | Flow should enter from the inlet | Flow should enter from the inlet |
| Inlet connection | Female Luer lock | Female Luer lock |
| Outlet connection | Male Luer | Male Luer |
| Sterilization* | Autoclave at 121°C at 15 psi for 20 min | Autoclave at 121°C at 15 psi for 20 min |
| Glass microfiber prefiltration media | 100% borosilicate GMF 150:<br>1 µm GF/F 0.7 µm | 100% borosilicate GMF 150:<br>1 µm GF/F 0.7 µm |

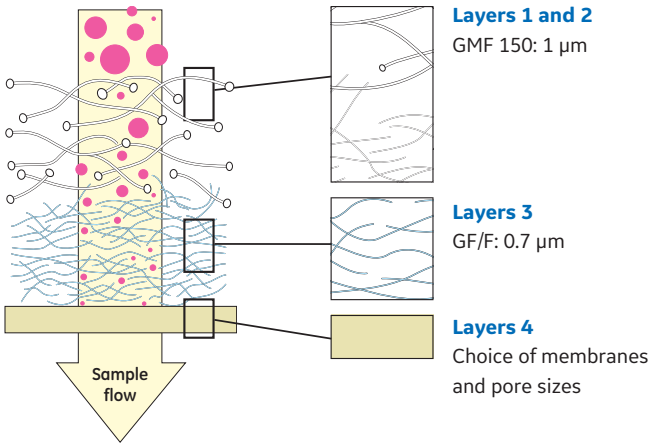
* *Applies to nonsterile filters only. Do not autoclave sterile GD/X filters.*

## Typical data

### GD/XP Syringe Filters

| | GD/XP 25 mm |
|---|---|
| Housing | Polypropylene (pigment-free) |
| Filtration area | 4.6 $cm^2$ |
| Maximum pressure | 75 psi (5.2 bar) |
| Volume ‘hold-up’ full housing | 1.4 ml with air purge 250 µL (approx) |
| Dimensions | 20.8 × 30.0 mm |
| Weight | 3 g (approx) |
| Flow direction | Flow should enter from the inlet |
| Inlet connection | Female Luer lock |
| Outlet connection | Male Luer |
| Sterilization† | Autoclave at 121°C at 15 psi for 20 min |
| Prefiltration media | PP 20 µm: 5 µm |

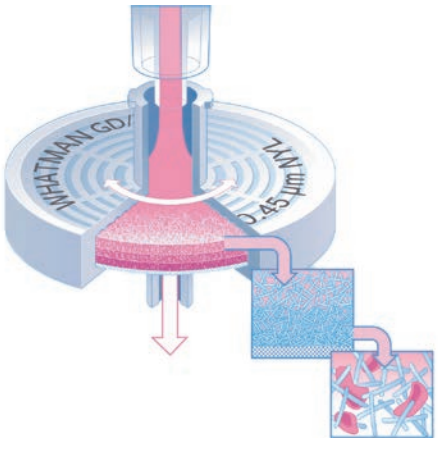
† *Not recommended for nylon.*




**Layers 1 and 2**
GMF 150: 1 µm

**Layers 3**
GF/F: 0.7 µm

**Layers 4**
Choice of membranes and pore sizes




Whatman GD/X Syringe filters contain several filtration layers that substantially reduce blockage and increase volume throughput.

# Ordering information

## Whatman GD/X Syringe Filters

| | | | Nonsterile | | Sterile | |
|---|---|---|---|---|---|---|
| **Membrane*** | **Pore size (µm)** | **Diameter (mm)** | **150/pack** | **1500/pack** | **50/pack** | **500/pack** |
| Nylon high charge (positive) | 0.2 | 25 | 6869-2502 | – | – | – |
| | 0.45 | 25 | 6869-2504 | – | – | – |
| Nylon | 0.2 | 13 | 6870-1302 | 6871-1302 | – | – |
| | 0.2 | 25 | 6870-2502 | 6871-2502 | – | – |
| | 0.45 | 13 | 6870-1304 | 6871-1304 | – | – |
| | 0.45 | 25 | 6870-2504 | 6871-2504 | – | – |
| | 5 | 25 | 6870-2550 | 6871-2550 | – | – |
| PVDF | 0.2 | 13 | 6872-1302 | – | – | – |
| | 0.2 | 25 | 6872-2502 | 6873-2502 | 6900-2502 | – |
| | 0.45 | 13 | 6872-1304 | 6873-1304 | – | – |
| | 0.45 | 25 | 6872-2504 | 6873-2504 | 6900-2504 | – |
| PTFE | 0.2 | 13 | 6874-1302 | 6875-1302 | – | – |
| | 0.2 | 25 | 6874-2502 | 6875-2502 | – | – |
| | 0.45 | 13 | 6874-1304 | 6875-1304 | – | – |
| | 0.45 | 25 | 6874-2504 | 6875-2504 | – | – |
| PES | 0.2 | 13 | 6876-1302 | – | – | – |
| | 0.2 | 25 | 6876-2502 | 6905-2502 | 6896-2502 | 6897-2502 |
| | 0.45 | 13 | 6876-1304 | – | – | – |
| | 0.45 | 25 | 6876-2504 | 6905-2504 | 6896-2504 | 6897-2504 |
| PP | 0.2 | 13 | 6878-1302 | – | – | – |
| | 0.2 | 25 | 6878-2502 | – | – | – |
| RC | 0.2 | 25 | 6887-2502 | – | – | – |
| | 0.45 | 25 | 6882-2504 | 6883-2504 | – | – |
| CA | 0.2 | 13 | 6880-1302 | – | – | – |
| | 0.2 | 25 | 6880-2502 | – | 6901-2502 | – |
| | 0.45 | 13 | 6880-1304 | – | – | – |
| | 0.45 | 25 | 6880-2504 | – | 6901-2504 | – |
| GF/A‡ | 1.6† | 13 | 6882-1316 | – | – | – |
| | 1.6† | 25 | 6882-2516 | 6883-2516 | – | – |
| GF/B‡ | 1† | 13 | 6884-1310 | – | – | – |
| | 1† | 25 | 6884-2510 | – | – | – |
| GF/C‡ | 1.2† | 13 | 6883-1312 | – | – | – |
| | 1.2† | 25 | 6886-2512 | – | – | – |
| GF/D‡ | 2.7† | 13 | 6888-1327 | – | – | – |
| | 2.7† | 25 | 6888-2527 | – | – | – |
| GF/F‡ | 0.7† | 13 | 6890-1307 | – | – | – |
| | 0.7† | 25 | 6890-2507 | 6891-2507 | – | – |
| | 0.45† | 13 | 6894-1304 | – | – | – |
| 934-AH‡ | 1.5† | 25 | 6892-2515 | – | – | – |
| GMF† | 0.45† | 25 | 6894-2504 | 6895-2504 | 6902-2504 | – |

* *PP = Polypropylene; CA = Cellulose acetate; PES = Polyethersulfone; GF = Glass fiber; PVDF = Polyvinylidene difluoride; GMF = Glass microfiber; PTFE = Polytetrafluoroethylene*

† *Glass microfiber particle retention rating*

‡ *Contains GMF 150 without the GF/F prefilter*

## GD/XP Syringe Filters

| Product code | Membrane* | Pore size (µm) | Diameter (mm) | Hydrophilic | Solvent resistance | Quantity/pack |
|---|---|---|---|---|---|---|
| 6970-2504 | Nylon | 0.45 | 25 | Yes | Good | 150 |
| 6971-2504 | Nylon | 0.45 | 25 | Yes | Good | 1500 |
| 6972-2504 | PVDF | 0.45 | 25 | Yes | Good | 150 |
| 6973-2504 | PVDF | 0.45 | 25 | Yes | Good | 1500 |
| 6974-2504 | PTFE | 0.45 | 25 | No | Very good | 150 |
| 6978-2504 | PP | 0.45 | 25 | No | Good | 150 |
| 6993-2504 | DpPP | 0.45 | 25 | No | Good | 1500 |
| 6992-2504 | DpPP | 0.45 | 25 | No | Good | 150 |
| 6994-2504 | PES | 0.45 | 25 | Yes | Poor | 150 |
| 6995-2504 | PES | 0.45 | 25 | Yes | Poor | 1500 |

* *PP = Polypropylene; PES = Polyethersulfone; PVDF = Polyvinylidene difluoride; PTFE = Polytetrafluoroethylene; DpPP = Polypropylene depth filter*

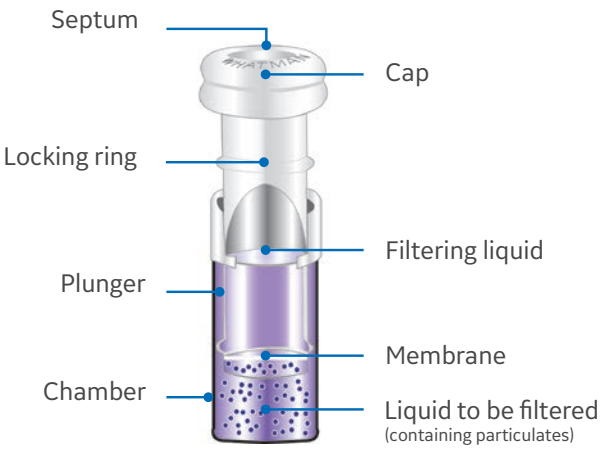
# Autosampler and workflow support: Mini-UniPrep filters

## Whatman Mini-UniPrep Syringeless Filters – polypropylene or glass chambers

The Mini-UniPrep syringeless filters are compatible with most autosamplers.

- Easy-to-use design supports sample preparation outside of the lab if needed
- Process samples in one-third the time of traditional syringe filtration
- Replaces syringe, syringe filter, vial, and cap in one consumable
- Polypropylene or glass chamber options to prevent interference from chemical leaching
- Amber vials available for light sensitive samples
- Multi-compressors available for ease of use
- 12 × 33 mm vial can be used to filter up to 400 µL

### Parts of a Mini-UniPrep filter




## Typical data

### Mini-UniPrep and Mini-UniPrep G2 filter vials

| | Mini-UniPrep | Mini-UniPrep G2 |
|---|---|---|
| Dimensions | Equivalent in size to 12 mm × 32 mm vials | Equivalent in size to 12 × 32 mm vials |
| Materials of construction | | |
| Chamber: | Polypropylene | Borosilicate glass |
| Plunger housing: | Polypropylene | Polypropylene |
| Plunger inner storage vial: | N/A | Borosilicate glass |
| Filter medium: | As specified | As specified |
| Septum: | Silicone with PTFE liner | Silicone with PTFE liner |
| Cap: | Polypropylene | Polypropylene |
| Maximum operating temp | 50°C (122°F) | 50°C (122°F) |
| Max. unfiltered sample capacity | 400 µL | 500 µL |
| Max. filtered sample capacity | 350 µL | 330 µL |
| Dead volume | 50 µL | 170 µL |
| Recommended minimum filtering volume | 100 µL | 220 µL placed in the chamber to obtain 50 µL in inner storage vial |
| Nominal force needed to compress | Approx. 8.2 kg (18 lbs) | Approx. 11.3 kg (25 lbs) |
| Autosampler needle height adjustment: | 3 mm from the bottom of Mini-UniPrep | 5 mm from the bottom of Mini-UniPrep G2 |
| Autosampler compatibility | Any autosampler that accommodates standard 12 × 32 mm profile vials | Any autosampler that accommodates standard 12 × 32 mm profile vials |

# Ordering Information

## Mini-UniPrep G2 filter vials with inner glass storage vial

**Note:** Adjust autosampler needle height to a minimum of 5 mm from the bottom of the Mini-UniPrep G2.

| Membrane | Pore size (µm) | Housing | Cap | Product code 100/pack | Product code 1000/pack | Product code Starter pack (100/pack + Hand compressor) |
|---|---|---|---|---|---|---|
| RC* | 0.2 | Translucent | Normal | GN203NPERC | GN503NPERC | GN203NPERCSP |
| RC | 0.45 | Translucent | Normal | GN203NPURC | GN503NPURC | GN203NPURCSP |
| PTFE* | 0.2 | Translucent | Normal | GN203NPEORG | GN503NPEORG | GN203NPEORGSP |
| PTFE | 0.2 | Translucent | Slit septum | GS203NPEORG | GS503NPEORG | GS203NPEORGSP |
| PTFE | 0.2 | Amber | Normal | GN203APEORG | – | GN203APEORGSP |
| PTFE | 0.45 | Translucent | Normal | GN203NPUORG | GN503NPUORG | GN203NPUORGSP |
| PTFE | 0.45 | Translucent | Slit septum | GS203NPUORG | GS503NPUORG | GS203NPUORGSP |
| PVDF* | 0.2 | Translucent | Normal | GN203NPEAQU | GN503NPEAQU | GN203NPEAQUSP |
| PVDF | 0.2 | Translucent | Slit septum | GS203NPEAQU | GS503NPEAQU | GS203NPEAQUSP |
| PVDF | 0.2 | Amber | Normal | GN203APEAQU | – | GN203APEAQUSP |
| PVDF | 0.45 | Translucent | Normal | GN203NPUAQU | GN503NPUAQU | GN203NPUAQUSP |
| PVDF | 0.45 | Translucent | Slit septum | GS203NPUAQU | GS503NPUAQU | GS203NPUAQUSP |
| Nylon | 0.2 | Translucent | Normal | GN203NPENYL | GN503NPENYL | GN203NPENYLSP |
| Nylon | 0.2 | Translucent | Slit septum | GS203NPENYL | GS503NPENYL | GS203NPENYLSP |
| Polypropylene | 0.2 | Translucent | Normal | GN203NPEPP | GN503NPEPP | GN203NPEPPSP |
| Polypropylene | 0.2 | Translucent | Slit septum | GS203NPEPP | – | GS203NPEPPSP |
| Glass fiber | 0.45 | Translucent | Normal | GN203NPUGMF | GN503NPUGMF | GN203NPUGMFSP |
| Glass fiber | 0.45 | Translucent | Slit septum | GS203NPUGMF | – | GS203NPUGMFSP |

## Compressors

| Description | Product code |
|---|---|
| Mini-UniPrep G2 Hand Compressor 1/pack | MUPG2HCPWC1 |
| Mini-UniPrep G2 Multi-Compressor 1/pack, comes with one tray | MUPG2MCPWC8 |
| Mini-UniPrep G2 Multi-Compressor Tray 1/pack | MUPG2MCWT8 |

* *PTFE = polytetrafluoroethylene; PVDF = polyvinylidene difluoride; RC = regenerated cellulose*

## Mini-UniPrep filter vial with polypropylene housing

**Note:** Adjust autosampler needle height to a minimum of 3 mm from the bottom of the Mini-UniPrep.

| Membrane | Pore size (µm) | Housing | Cap | Product code 100/pack | Product code 1000/pack |
|---|---|---|---|---|---|
| PTFE* | 0.2 | Translucent | Standard | UN203NPEORG | UN503NPEORG |
| PTFE | 0.2 | Translucent | Slit septum | US203NPEORG | US503NPEORG |
| PTFE | 0.2 | Amber | Standard | UN203APEORG | – |
| PTFE | 0.45 | Translucent | Standard | UN203NPUORG | UN503NPUORG |
| PTFE | 0.45 | Translucent | Slit septum | US203NPUORG | US503NPUORG |
| PTFE | 0.45 | Amber | Standard | UN203APUORG | – |
| PVDF* | 0.2 | Translucent | Standard | UN203NPEAQU | UN503NPEAQU |
| PVDF | 0.2 | Translucent | Slit septum | US203NPEAQU | US503NPEAQU |
| PVDF | 0.2 | Amber | Standard | UN203APEAQU | – |
| PVDF | 0.45 | Translucent | Standard | UN203NPUAQU | UN503NPUAQU |
| PVDF | 0.45 | Translucent | Slit septum | US203NPUAQU | US503NPUAQU |
| PVDF | 0.45 | Amber | Standard | UN203APUAQU | – |
| PES* | 0.2 | Translucent | Standard | UN203NPEPES | UN503NPEPES |
| PES | 0.2 | Translucent | Slit septum | US203NPEPES | US503NPEPES |
| PES | 0.2 | Amber | Standard | UN203APEPES | – |
| PES | 0.45 | Translucent | Standard | UN203NPUPES | UN503NPUPES |
| PES | 0.45 | Amber | Standard | UN203APUPES | – |
| PES | 0.45 | Translucent | Slit septum | US203NPUPES | US503NPUPES |
| RC* | 0.2 | Translucent | Standard | UN203NPERC | UN503NPERC |
| RC | 0.45 | Translucent | Standard | UN203NPURC | UN503NPURC |
| Nylon | 0.2 | Translucent | Standard | UN203NPENYL | UN503NPENYL |
| Nylon | 0.2 | Translucent | Slit septum | US203NPENYL | US503NPENYL |
| Nylon | 0.2 | Amber | Standard | UN203APENYL | – |
| Nylon | 0.45 | Translucent | Standard | UN203NPUNYL | UN503NPUNYL |
| Nylon | 0.45 | Translucent | Slit septum | US203NPUNYL | US503NPUNYL |
| Nylon | 0.45 | Amber | Standard | UN203APUNYL | – |
| PP* | 0.2 | Translucent | Standard | UN203NPEPP | UN503NPEPP |
| PP | 0.2 | Translucent | Slit septum | US203NPEPP | US503NPEPP |
| PP | 0.2 | Amber | Standard | UN203APEPP | – |
| PP | 0.45 | Translucent | Standard | UN203NPUPP | UN503NPUPP |
| PP | 0.45 | Translucent | Slit septum | US203NPUPP | US503NPUPP |
| PP | 0.45 | Amber | Standard | UN203APUPP | – |
| DpPP* | 0.45 | Translucent | Standard | UN203NPUDPP | UN503NPUDPP |
| DpPP | 0.45 | Translucent | Slit septum | US203NPUDPP | US503NPUDPP |
| DpPP | 0.45 | Amber | Standard | UN203APUDPP | – |
| Glass fiber | 0.45 | Translucent | Standard | UN203NPUGMF | UN503NPUGMF |
| Glass fiber | 0.45 | Translucent | Slit septum | US203NPUGMF | US503NPUGMF |
| Glass fiber | 0.45 | Amber | Standard | UN203APUGMF | – |

## Multi Compressor

| Description | Product code |
|---|---|
| Multi Compressor - 6 positions 1/pack | CR0000006 |

* *RC = regenerated cellulose, PVDF = Polyvinylidene difluoride, PTFE = Polytetrafluoroethylene, PP = Polypropylene, PES = Polyethersulfone, DpPP: Polypropylene depth filter*

# Sample preparation prior to other instrumentation

GE's Whatman products are among the industry leaders in separations technology, and our analytical sample filtration collection is no exception. Every filter is manufactured to exacting specifications that ensure reliable results and uncompromised performance.

**Puradisc FP**
3* 4 8* 10 13
*Notes:
3 and 8: CA

**Puradisc Aqua 30**
11 12

**ReZist**
1 4 13

Start here

## Applications

1. Air venting
2. Automated filtration of samples/ Tablet dissolution testing
3. Biological sample preparation
4. Capillary electrophoresis
5. Difficult-to-filter samples (high solid content samples)
6. Filtration of colloidal material
7. Ion chromatography
8. Filtration of protein-containing samples
9. Filtration of nanoparticles
10. Sterile filtration (use sterile filter and membrane with pore size 0.2 µm)
11. COD/TOC/DOC
12. Trace metal analysis (ICP/AAS/ICP-MS)
13. UV/VIS analysis

COD = Chemical oxygen demand;
TOC = Total organic carbon;
DOC = Dissolved organic carbon
Note: For guidance only. Only a selection of applications shown above


**Anotop**
3 4 6 7 8 9* 10 13
*Notes: 0.02 µm

**Puradisc**
3* 4 8* 10 11* 12* 13
*Notes:
3 and 8: CA, PES, PVDF
11 and 12: PES



**Anotop Plus**
4 5 9*
*Notes: 0.02 µm

**Mini-UniPrep**
2

**Roby**
2



**GD/XP**
4 5 7 11 12 13

**SPARTAN**
4 8 13

**Whatman GD/X**
4 5 10 13

# Ordering information

## ReZist

| Product code | Diameter (mm) | Pore size (µm) | Membrane/housing* | Connection in/out* | Color code | Quantity/pack |
|---|---|---|---|---|---|---|
| 10463703 | 13 | 0.2 | PTFE/PP | FLL/Mini-Tip | white | 100 |
| 10463713 | 13 | 0.45 | PTFE/PP | FLL/Mini-Tip | green | 100 |
| 10463503 | 30 | 0.2 | PTFE/PP | FLL/ML | white | 100 |
| 10463505 | 30 | 0.2 | PTFE/PP | FLL/ML | white | 500 |
| 10463513 | 30 | 0.45 | PTFE/PP | FLL/ML | green | 100 |
| 10463515 | 30 | 0.45 | PTFE/PP | FLL/ML | green | 500 |
| 10463523 | 30 | 1.0 | PTFE/PP | FLL/ML | yellow | 100 |
| 10463525 | 30 | 1.0 | PTFE/PP | FLL/ML | yellow | 500 |
| 10463533 | 30 | 5.0 | PTFE/PP | FLL/ML | gray | 100 |
| 10463535 | 30 | 5.0 | PTFE/PP | FLL/ML | gray | 500 |
| 10463500† | 30 | 0.2 | PTFE/PP | FLL/ML | white | 50 |
| 10463543 | 30 | > 1 | GF92/PP | FLL/MLL | natural | 100 |
| 10463545 | 30 | > 1 | GF92/PP | FLL/MLL | natural | 500 |

* *FLL = Female Luer lock; GF = Glass fiber; ML = Male Luer; MLL = Male Luer lock; PP = Polypropylene; PTFE = Polytetrafluoroethylene*

† *Sterile*

## Roby Syringe Filters

| Product code | Description | Diameter (mm) | Pore size (µm) | Membrane/housing* | Connection in/out* | Color code | Quantity/pack |
|---|---|---|---|---|---|---|---|
| 10463803 | Roby 25 NL | 25 | 0.45 | NYL/PP | FLL/ML | translucent yellow | 200† |
| 10463802 | Roby 25 NL | 25 | 0.45 | NYL/PP | FLL/ML | translucent yellow | 1000 |
| 10463805 | Roby 25 NL-GF92 | 25 | 0.45 | NYL-GF/PP | FLL/ML | yellow | 200† |
| 10463804 | Roby 25 NL-GF92 | 25 | 0.45 | NYL-GF/PP | FLL/ML | yellow | 1000 |
| 10463807# | Roby 25 RC | 25 | 0.45 | RC/PP | FLL/ML | translucent brown | 200† |
| 10463806# | Roby 25 RC | 25 | 0.45 | RC/PP | FLL/ML | translucent brown | 1000 |
| 10463809# | Roby 25 RC-GF92 | 25 | 0.45 | RC-GF/PP | FLL/ML | brown | 200† |
| 10463808# | Roby 25 RC-GF92 | 25 | 0.45 | RC-GF/PP | FLL/ML | brown | 1000 |
| 10463813# | Roby 25 CA-GF92 | 25 | 0.45 | CA-GF/PP | FLL/ML | green | 200† |
| 10463812# | Roby 25 CA-GF92 | 25 | 0.45 | CA-GF/PP | FLL/ML | green | 1000 |
| 10463814 | Roby 25/GF55 | 25 | 0.7 | GF/PP | FLL/ML | natural | 200† |
| 10463815 | Roby 25/GF55 | 25 | 0.7 | GF/PP | FLL/ML | natural | 1000 |
| 10463801 | Roby 25/GF92 | 25 | > 1 | GF/PP | FLL/ML | natural | 200† |
| 10463800 | Roby 25/GF92 | 25 | > 1 | GF/PP | FLL/ML | natural | 1000 |
| 10463898# | Filter Validation Kit‡ | 25 | – | – | FLL/ML | – | 150 |

* *GF = Glass fiber; PP = Polypropylene; NYL = Nylon; RC = Regenerated cellulose; FLL = Female Luer lock; ML = Male Luer*

† *8 tubes with 25 pieces each*

‡ *Filter Validation Kit includes: Roby 25/GF92; Roby 25/GF55; Roby 25/RC; Roby 25/RC-GF92; Roby 25 NL; Roby 25 NL-GF92. (6 tubes of 25 pieces each)*

\# *Sold under license to DE10102744 and foreign equivalents thereof*

## Anotop Syringe Filters

| Product code | IC certified | Pore size (µm) | Diameter (mm) | Glass prefilter | Sterile blister packed | Quantity/pack |
|---|---|---|---|---|---|---|
| 6809-1002 | No | 0.02 | 10 | No | No | 50 |
| 6809-1012 | No | 0.1 | 10 | No | No | 50 |
| 6809-1022 | No | 0.2 | 10 | No | No | 50 |
| 6809-1102 | No | 0.02 | 10 | No | Yes | 50 |
| 6809-1112 | No | 0.1 | 10 | No | Yes | 50 |
| 6809-1122 | No | 0.2 | 10 | No | Yes | 50 |
| 6809-3002 | No | 0.02 | 10 | Yes | No | 50 |
| 6809-3012 | No | 0.1 | 10 | Yes | No | 50 |
| 6809-3022 | No | 0.2 | 10 | Yes | No | 50 |
| 6809-3102 | No | 0.02 | 10 | Yes | Yes | 50 |
| 6809-3112 | No | 0.1 | 10 | Yes | Yes | 50 |
| 6809-3122 | No | 0.2 | 10 | Yes | Yes | 50 |
| 6809-2002 | No | 0.02 | 25 | No | No | 50 |
| 6809-2012 | No | 0.1 | 25 | No | No | 50 |
| 6809-2022 | No | 0.2 | 25 | No | No | 50 |
| 6809-2102 | No | 0.02 | 25 | No | Yes | 50 |
| 6809-2112 | No | 0.1 | 25 | No | Yes | 50 |
| 6809-2122 | No | 0.2 | 25 | No | Yes | 50 |
| 6809-4002 | No | 0.02 | 25 | Yes | No | 50 |
| 6809-4012 | No | 0.1 | 25 | Yes | No | 50 |
| 6809-4022 | No | 0.2 | 25 | Yes | No | 50 |
| 6809-4102 | No | 0.02 | 25 | Yes | Yes | 50 |
| 6809-4112 | No | 0.1 | 25 | Yes | Yes | 50 |
| 6809-4122 | No | 0.2 | 25 | Yes | Yes | 50 |
| 6809-9233 | Yes | 0.2 | 10 | No | No | 100 |
| 6809-9232 | Yes | 0.2 | 10 | No | Yes | 50 |
| 6809-9244 | Yes | 0.2 | 25 | No | No | 200 |

*IC = ion chromatography*

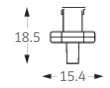
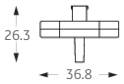
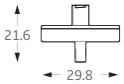
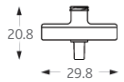
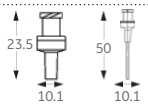
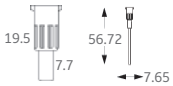
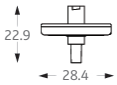
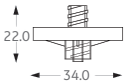
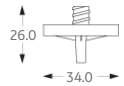
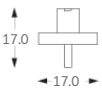
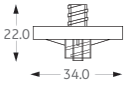
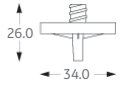
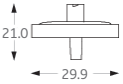
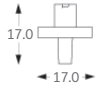
Whatman Autovial™ Syringeless Filters replace syringe-coupled filtration devices with a single, convenient disposable unit. Consisting of a plunger and a graduated filter barrel with a choice of filtration media, Autovial speeds sample preparation—so you can get more work done in less time. Simply pour the sample directly into the filter barrel, insert the plunger, and compress the unit. The filter barrel has a support stand to protect the slip Luer outlet. Autovial Syringeless Filters are desiged for filtration both into an autosampler and through direct instrument injection, by connecting a needle to the slip Luer outlet.

## Autovial Syringeless Filters

| Product code | Prefilter | Pore size (µm) | Media | Sterile blister packed | Quantity/pack |
|---|---|---|---|---|---|
| AV115NPUNYL | None | 0.45 | NYL | No | 50 |
| AV115NPUAQU | None | 0.45 | PVDF | No | 50 |
| AV115NPUORG | None | 0.45 | PTFE | No | 50 |
| AV115UGMF | None | 0.45 | GMF | No | 50 |
| AV125SNAO | – | 0.2 | NYL | Yes | 40 |
| AV125SAQU | – | 0.2 | PVDF | Yes | 40 |
| AV125SORG | Glass | 0.2 | PTFE | Yes | 40 |
| AV125UCA | Glass | 0.45 | CA | No | 50 |
| AV125ENAO | Glass | 0.2 | NYL | No | 50 |
| AV125UNAO | Glass | 0.45 | NYL | No | 50 |
| AV125NPUPSU | None | 0.45 | PES | No | 50 |
| AV125EAQU | Glass | 0.2 | PVDF | No | 50 |
| AV125UAQU | Glass | 0.45 | PVDF | No | 50 |
| AV125NPUAQU | None | 0.45 | PVDF | No | 50 |
| AV125EPP | PP | 0.2 | PP | No | 50 |
| AV125UPP | PP | 0.45 | PP | No | 50 |
| AV125EORG | Glass | 0.2 | PTFE | No | 50 |
| AV125UORG | Glass | 0.45 | PTFE | No | 50 |
| AV125UGMF | Glass | 0.45* | GMF | No | 50 |
| AV55UNAO | Glass | 0.45 | NYL | No | 100 |
| AV525UAQU | Glass | 0.45 | PVDF | No | 100 |
| AV525UORG | Glass | 0.45 | PTFE | No | 100 |
| AV525BGMF | Glass | 1.0* | GF/B | No | 100 |

** Particle retention rating*

# Technical data of syringe filters

| Name | Dia. (mm) | Housing material* | Max. operating pressure (psi/bar) | Effective filter area (cm²) | Hold-up volume after air purging (µl) | Inlet* | Outlet* | Dimensions (mm) |
|---|---|---|---|---|---|---|---|---|
| Anotop 10, Anotop 10 Plus, Anotop 10 IC | 10 | PP | 100/6.9 | 0.78 | Anotop 10 & 1C: < 20<br>Anotop 10 Plus: < 30 | FLL | ML |  |
| Anotop 25, Anotop 25 Plus, Anotop 25 IC | 25 | PP | 100/6.9 | 4.78 | Anotop 25 & 1C: < 150<br>Anotop 25 Plus: < 200 | FLL | ML |  |
| GD/X 13 | 13 | PP | 75/5.2 | 1.3 | 50 (approx) | FLL | ML |  |
| GD/X 25, GD/XP | 25 | PP | 75/5.2 | 4.6 | 250 (approx) | FLL | ML |  |
| Puradisc 4 with and without tip (all membranes apart from PVDF) | 4 | PP | 75/5.2 | 0.2 | < 10 | FLL | ML |  |
| Puradisc 4 with and without tip (PVDF membrane only) | 4 | PP | 75/5.2 | 0.2 | < 10 | FLL | ML Tube Tip |  |
| Puradisc 13 | 13 | PP | 75/5.2 | 1.3 | < 25 | FLL | ML |  |
| Puradisc 13 with Tube Tip | 13 | PP | 75/5.2 | 1.3 | < 25 | FLL | Tube Tip |  |
| Puradisc 25 | 25 | PP | 75/5.2 | 4.2 | < 100 | FLL | ML |  |
| Puradisc FP | 30 | PC | 100/6.9 | 5.7 | ≤ 50 | FLL | MLL |  |
| Puradisc FP, Aqua 30 | 30 | PC | 100/6.9 | 5.7 | ≤ 50 | FLL | ML |  |
| ReZist 13, Spartan 13 with Mini-Tip | 13 | PP | 100/6.9 | 0.75 | ≤ 10 | FLL | Mini-Tip |  |
| ReZist 30 | 30 | PP | 100/6.9 | 5.7 | ≤ 50 | FLL | MLL |  |
| ReZist 30, Spartan 30 | 30 | PP | 100/6.9 | 5.7 | ≤ 50 | FLL | ML |  |
| Roby 25 | 25 | PP | 100/6.9 | 4.2 | ≤ 50 | FLL | ML |  |
| Spartan 13 | 13 | PP | 100/6.9 | 0.75 | ≤ 10 | FLL | ML |  |

* *FLL = Female Luer lock; ML = Male Luer; MLL = Male Luer lock; PP = Polypropylene*

# General laboratory accessories

In addition to the filtration consumable range, we provide a comprehensive range of accessories for routine work in your laboratory.

1PS phase separator


Grade 105 lens cleaning tissue

Benchkote™ protection paper

pH paper


Vacu-Guard Pump protection filter

| Description | Product name | Dimension | Quantity | Product code |
|---|---|---|---|---|
| **Phase separation paper**<br>• Separatory funnel replacement: Automatic cut-off<br>• Ease of use: No special training required | 1PS Phase separator paper | Diam. 125 mm | 100/pack | 2200-125 |
| | | Diam. 150 mm | 100/pack | 2200-150 |
| **Optical lens cleaning tissue**<br>• Soft tissue for removing surface moisture and grease from lenses and other optical surfaces | Grade 105 | 100 × 150 mm | 25 wallets of 25 sheets | 2105-841 |
| | | 200 × 300 mm | 100/pack | 2105-862 |
| **Benchkote bench protection papers**<br>• High-quality, smooth, absorbent Whatman paper<br>• Quickly absorbs liquid spills and protect the working surface<br>• Benchkote Plus is thicker and more absorbent | Benchkote | 460 × 570 mm | 50/pack | 2300-916 |
| | | 460 mm × 50 m | 1/pack | 2300-731 |
| | Benchkote Plus | 500 × 600 mm | 50/pack | 2301-6150 |
| | | 600 mm × 50 m | 1/pack | 2301-6160 |
| **pH Indicator Paper**<br>• Range of pH indicator and test papers for rapid results | Color Bonded, 0.0 to 14.0 range | 6 × 80 mm | 100 strips, 1/pack | 2613-991 |
| | Standard Full Range, Reel, 1.0 to 14.0 range | 7 mm × 5 m | 1/pack | 2600-100A |
| | Standard Narrow Range, Reel, 4.0 to 7.0 range | 7 mm × 5 m | 1/pack | 2600-102A |
| **Pump protection filters**<br>• Protects vacuum pump systems from aqueous aerosols. Hydrophobic PTFE membranes retain 99,99% of airborne particles > 0.1 µm | Vacu-Guard | 50 mm | 10/pack | 6722-5000 |
| **Weighing papers**<br>• Reliably allow samples to be transferred to scales without adding unwanted substances that could impact analytical results | Grade 2122 weighing paper | 100 × 100 m* | 500/pack | 10347893 |

** Other dimensions available upon request*


## Fermentation vessel venting

| | Membrane type | Filtration area | Product code |
|---|---|---|---|
| Polydisc TF | PTFE | 16 $cm^2$ | 6720-5002 |
| Hepavent | Hydrophobically treated glass microfiber | 16 $cm^2$ | 6723-5000 |
| Polyvent | PTFE | 500 $cm^2$ | 6713-5036 |
| | | 1000 $cm^2$ | 6713-1075 |
| Hepacap | Hydrophobically treated glass microfiber | 625 $cm^2$ | 2609T |
| | | 1300 $cm^2$ | 2709T |
| | | 2590 $cm^2$ | 2809T |

| Description | Product name | Dimension | Quantity | Product code |
|---|---|---|---|---|
| **Filtration flask for batch filtration**<br>• Consists of a 250 mL glass filtration funnel and 1000 mL flask, funnel base, top, and clamp<br>• Good choice for use with Whatman filtration membranes | Whatman GV050/2 vacuum filtration unit | | | 10442200 |
| **Pressure filtration apparatus**<br>• Stainless steel<br>• Infusion vessel 2200 mL | MD142/5/3 | 142 mm | 1 | 10451610 |
| **Pressure filter holder**<br>• PTFE<br>• Infusion vessel 1500 mL | MD142/7/3 | 142 mm | 1 | 10451710 |
| **3-piece filter funnel**<br>• For quick and easy filtration<br>• Choice of 3 plates | Filter funnel | 47 mm | 1 | 1950-004 |
| | Filter funnel | 90 mm | 1 | 1950-009 |
| | Filter funnel | 70 mm | 1 | 1950-017 |
| **Membrane holder**<br>• Produced from borosilicate glass<br>• Suitable for aqueous and organic solvent filtration | Vacuum-type glass membrane holder | 47 mm | 1 | 1960-004 |
| | Vacuum-type glass membrane holder | 90 mm | 1 | 1960-009 |

# Chemical compatibility of membranes and housings*

Selecting the right filter depends on the solvent that you are using for your application. This table will help ensure that you get it right the first time.

| Solvent | ANP | CA | CN | PC | PE | GMF | NYL | PP | DpPP | PES | PTFE‡ | PVDF | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acetic acid, 5% | R | LR | R | R | | R | R | R | R | R | R | R | R |
| Acetic acid, glacial | R | NR | NR | | | R | LR | R | R | R | R | R | NR |
| Acetone | R | NR | NR | NR | R | R | R | R | R | NR | R | NR | R |
| Acetonitrile | R | NR | NR | | | R | R | R | R | NR | R | R | R |
| Ammonia, 6 N | NR | | NR | NR | LR | LR | R | R | R | R | R | LR | LR |
| Amyl acetate | LR | NR | NR | NR | R | R | R | R | R | LR | R | LR | R |
| Amyl alcohol | R | LR | LR | | | R | R | R | R | NR | R | R | R |
| Benzene† | R | R | R | NR | R | R | LR | NR | NR | R | R | R | R |
| Benzyl alcohol† | R | LR | LR | LR | R | R | LR | R | R | NR | R | R | R |
| Boric acid | R | R | R | R | R | R | LR | R | R | | R | R | R |
| Butyl alcohol | R | R | R | R | R | R | R | R | R | R | R | R | R |
| Butyl chloride† | | | | | | R | NR | NR | NR | | R | R | |
| Carbon tetrachloride† | R | NR | R | LR | R | R | LR | NR | NR | NR | R | R | R |
| Chloroform† | R | NR | R | NR | R | R | NR | LR | LR | NR | R | R | R |
| Chlorobenzene† | R | | LR | NR | | R | NR | LR | | NR | R | R | R |
| Citric acid | | | | | | R | LR | R | | R | R | R | R |
| Cresol | | NR | R | | | R | NR | NR | NR | NR | R | NR | R |
| Cyclohexane | R | NR | NR | R | R | R | NR | NR | NR | NR | R | R | R |
| Cyclohexanone | R | NR | NR | | | R | NR | R | R | NR | R | R | R |
| Diethylacetamide | | NR | NR | | | R | R | R | R | | R | NR | R |
| Dimethylformamide | LR | NR | NR | | | R | R | R | R | NR | R | NR | LR |
| Dioxane | R | NR | NR | NR | R | R | R | R | R | LR | R | LR | R |
| DMSO | LR | NR | NR | NR | R | R | R | R | R | NR | R | LR | LR |
| Ethanol | R | R | NR | R | R | R | R | R | R | R | R | R | R |
| Ethers | R | LR | LR | R | R | R | R | NR | NR | R | R | LR | R |
| Ethyl acetate | R | NR | NR | NR | R | R | R | R | R | NR | R | NR | R |
| Ethylene glycol | R | LR | LR | R | R | R | R | R | R | R | R | R | R |

| Solvent | ANP | CA | CN | PC | PE | GMF | NYL | PP | DpPP | PES | PTFE‡ | PVDF | RC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Formaldehyde | LR | LR | R | R | R | R | R | LR | LR | R | R | R | LR |
| Freon TF | R | R | R | R | R | R | NR | NR | NR | R | R | R | |
| Formic acid | | LR | LR | | | R | NR | R | R | R | R | R | LR |
| Hexane | R | R | R | R | R | R | R | R | R | R | R | R | R |
| Hydrochloric acid, conc. | NR | NR | NR | NR | NR | R | NR | LR | LR | R | R | R | NR |
| Hydrofluoric acid | | NR | NR | | | NR | NR | LR | LR | | R | R | NR |
| Isobutyl alcohol | R | LR | LR | R | R | R | R | R | R | | R | R | R |
| Isopropyl alcohol | R | R | LR | | | R | R | R | R | | R | R | R |
| Methanol | R | R | NR | R | R | R | R | R | R | R | R | R | R |
| Methyl ethyl ketone | R | LR | NR | NR | R | R | R | R | R | NR | R | NR | R |
| Methylene chloride† | R | NR | LR | | | R | NR | LR | LR | NR | R | R | R |
| Nitric acid, conc. | | NR | NR | LR | NR | R | NR | NR | NR | NR | R | R | NR |
| Nitric acid, 6 N | | LR | LR | | | R | NR | LR | LR | LR | R | R | LR |
| Nitrobenzene† | LR | NR | NR | NR | R | R | LR | R | R | NR | R | R | R |
| Pentane | R | R | R | R | R | R | R | NR | NR | R | R | R | R |
| Perchloroethylene | R | R | R | | | R | LR | NR | NR | NR | R | R | R |
| Phenol 0.5% | LR | LR | R | | | R | NR | R | R | NR | R | R | R |
| Pyridine | R | NR | NR | NR | R | R | LR | R | R | NR | R | NR | R |
| Sodium hydroxide, 6N | NR | NR | NR | NR | NR | NR | LR | R | R | R | R | NR | NR |
| Sulfuric acid, conc. | NR | NR | NR | NR | NR | R | NR | NR | NR | NR | R | NR | NR |
| Tetrahydrofuran | R | NR | NR | | | R | R | LR | LR | NR | R | R | R |
| Toluene† | R | LR | R | NR | R | R | LR | LR | LR | NR | R | R | R |
| Trichloroethane† | R | NR | LR | NR | R | R | LR | LR | LR | NR | R | R | R |
| Trichloroethylene† | R | | R | | | R | NR | LR | LR | NR | R | R | R |
| Water | R | R | R | R | R | R | R | R | R | R | R | R | R |
| Xylene† | R | R | R | | | R | LR | LR | LR | LR | R | R | R |
| Xylene† | R | R | R | | | R | LR | LR | LR | LR | R | R | R |

* *ANP = Anopore; CA = Cellulose acetate; CN = Cellulose nitrate; DpPP = Polypropylene depth filter; GMF = Glass microfiber; NYL = Nylon; PC = Polycarbonate; PE = Polyester; PES = Polyethersulfone; PP = Polypropylene; PTFE = Polytetrafluoroethylene; PVDF = Polyvinylidene difluoride; RC = Regenerated cellulose , R = Resistant; LR = Limited Resistance; NR = Not Recommended*

† *Short Term Resistance of Housing*

‡ *Membrane may need pre-wetting with isopropanol/methanol if filtering a polar liquid*

*The above data is to be used as a guide only. Testing prior to application is recommended*

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