Process Filtration
A guide to products and services
change specification, it attempts to keep customers informed of any alterations. This publication is for general information.
Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to
change specification, it attempts to keep customers informed of any alterations. This publication is for general information
only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a
product’s suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Contents

<table>
<thead>
<tr>
<th>Process filtration</th>
<th>Quality &amp; control</th>
<th>Innovation</th>
<th>Technical support</th>
<th>Scientific approach</th>
<th>Dedicated product range</th>
<th>e-Learning &amp; training</th>
<th>A scientific approach</th>
<th>Chemical compatibility</th>
<th>Installation and operating guidelines</th>
<th>Filter discs</th>
<th>Endcap styles</th>
<th>Technical support</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-7</td>
<td>8-9</td>
<td>10-11</td>
<td>12-13</td>
<td>14-15</td>
<td>16-17</td>
<td>18-19</td>
<td>150-151</td>
<td>156-157</td>
<td>158-161</td>
<td>166</td>
<td>167</td>
<td>166</td>
</tr>
</tbody>
</table>

**General**

- DEMICAP options: 152-153
- MURUS and syringe options: 154
- Installation and operating guidelines: 155
- Conversion tables: 156-157
- Compressed air treatment: 166
- Gas generation: 166
- Parker motion & control technologies: 167

**Air / Gas**

- HIGH FLOW PREPOR GFA: ZCHP 22-23
- PEPLYN AIR: ZCPH 24-25
- BID-X II: ME MDR 26-27
- HIGH FLOW BIO-X: ZCHB 28-29
- HIGH FLOW BIO-X Vent Autoclave: ZDP 30-31
- TETPOR AIR: ZCM TMT ZEM TMT 32-35
- HIGH FLOW TETPOR II: ZHF 36-37
- HIGH FLOW TETPOR II Vent Autoclave: ZTA 38-39
- HIGH FLOW TETPOR H.T.: ZCHT 40-41
- TETPOR HF: ZCM TMT ZEM TMT 40-41

**Steam filters**

- PLEATED / SINTERED: ZCSS ZCHS 44-47

**Liquid filters**

- PROSPUN: PRSC PRST PRSA 50-51
- PROPLEAT PP: PRPP 52-53
- PROSTEEL A: ZCCF ZCMS 54-55
- PROSTEEL N: ZCCM ZCPM 54-57
- PEPLYN NE: ZCNE ZENE 58-59
- PEPLYN PLUS: ZCPP ZEPP ZSPP 60-61
- PREPOR GF: ZGOF ZEGF ZSGF 62-63
- PREPOR GP: ZGOF ZEGP 64-65
- PREPOR PES: ZCPS ZEPS 66-67
- TETPOR PLUS: ZCTP 68-69
- CARBOFLOW MX: 70-71

**Beverage filters**

- PEPLYN HD: PCH 76-77
- PEPLYN HA: PHA 76-77
- PREPOR GF: PPG 78-79
- PREPOR GP: PPG 80-81
- PREPOR PP: PPP 82-83
- CRYPTO CLEAR PLUS: ZCP ZECP 84-85
- CRYPTO CLEAR PES: ZCCS ZEC 86-87
- BEVPOR PS: BPS 88-89
- BEVPOR PH: BPH 90-91
- BEVPOR PT: BPT 92-93
- BEVPOR PW: BPW 94-95
- BEVPOR MS: BMS 96-97
- BEVPOR MT: BMT 98-99
- BEVPOR MH: BMH 100-101

**Pharmaceutical filters**

- PROCLEAR GF: PCGF PEGF ZSOF 104-107
- PREPOR HC: ZHCH ZLHC ZEHC HSC 124-127
- PROCLEAR GP: PCGF PEGF ZSOF 108-111
- PROCLEAR PP: PCPP PUGF ZUF 112-115
- PREPOR BR: ZCBL ZEBR ZEBR 116-119
- TETPOR HP: ZCM H 120-123
- PROPOR SG: ZCSO ZLSO ZSES ZSS 124-123

**Housings**

- HIGH FLOW BID-X: ZCHB 28-29

**Integrity test equipment**

- VALAIRDATA II: WVA 142-143
- POORECHECK IV: WPI 144-145

**Process filtration**

- BEVPOR PS: BPS 88-89
- BEVPOR PH: BPH 90-91
- BEVPOR PT: BPT 92-93
- BEVPOR PW: BPW 94-95
- BEVPOR MS: BMS 96-97
- BEVPOR MT: BMT 98-99
- BEVPOR MH: BMH 100-101

**Beverage filters**

- BEVCHECK: WBC 146-147
- BEVCHECK PLUS: WBC 146-147

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to
change specification, it attempts to keep customers informed of any alterations. This publication is for general information
only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a
product’s suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.
Parker domnick hunter specializes in the manufacture and supply of high quality products for the clarification, stabilization and sterilization of liquids and gasses, providing full scalability from membrane flat stock to multi-element filter systems. Each filter has been specifically developed to meet industry applications and requirements.

As a company it is our goal to deliver innovative quality products on time while responding to the needs of the end user with premier customer service. We know our success is only possible through increasing our customers’ productivity and profitability.

Parker domnick hunter manufacture products in the most efficient, effective and environmentally conscious way building on a culture of continuous improvement.

With nearly 50 years filtration experience in markets such as pharmaceutical, beverage and water treatment we have developed innovative and cost-effective solutions that will add value to your manufacturing process, providing reliable products and services that meet or exceed your expectations.

Our worldwide assistance extends to on-site evaluations, design, manufacture, validation, quality control and ongoing support long after the filters are installed.

In 2005 domnick hunter became part of the Parker Hannifin Corporation. Parker Hannifin is the world’s leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of commercial, mobile, industrial and aerospace markets. The company employs more than 50,000 people in more than 50 countries around the world.

- Continued investment in research & technology
- Application driven approach to new products
- Market specific experience leading to tailored solutions
- Global network providing technical, service and sales support
- Excellent reputation gained through working with some of the world’s leading companies
- Highly skilled and trained employees
Quality & control
At the forefront of manufacturing excellence

Parker domnick hunter’s commitment to leading quality standards in the filtration industry led to us being the first UK based filter company to achieve BS 5750 Pt 1 in 1984 and then BS EN ISO 14001 in 2001. The company is now certified to current version of ISO9001, ISO 13485 and is again leading the way through the implementation of a new application guide PS9100 in 2007.

In support of our on going commitment to quality, Parker domnick hunter has recently completed a £5 Million investment programme to upgrade and increase capacity at our Birtley, UK manufacturing facility. As well as investing in the latest clean room and custom manufacturing technologies, Parker domnick hunter has invested in key lean and six sigma initiatives.

Our focus on the selection of materials in accordance with current regulations such as FDA CFR’s, cGMP guidelines and specifications from our Scientists, Engineers and validation experts, together with the use of validated manufacturing and test methodologies ensures high batch-to-batch reproducibility.

A controlled approach
- Both lot number and serial number are recorded for all products providing complete traceability back to base materials
- Products, processes and software are validated at regular intervals
- Integration of productivity, product quality and employee safety into the design and construction of facilities and equipment
- Clean room environment used for all manufacturing operations
- Extensive supplier quality assurance program in place
- Regular process audits conducted by trained auditors from across the business
- Extensive customer audits completed
Innovation
Putting your future needs at the forefront of product development

Parker domnick hunter understands the need to be innovative and deliver real solutions to customer problems. As a company we are always striving to create a culture that will achieve this goal, both through individual team creativity and measured risk taking.

Project teams with members from technical, marketing, manufacturing and procurement functions are necessary for the success of this process. Working closely with our customers has enabled us to design innovative products with value-added benefits.

People are vital to this process and Parker domnick hunter recognizes and supports the need for continuous learning to ensure that its employees have the skills to meet the demands of the changing world we live in.

Winovation
Parker Hannifin has developed an NPD system called Winovation, focusing on long term development of products that will grow our business together.

"Winovation, creates value by determining customer needs and developing products that meet those needs."

- Focus on value proposition
- Unique customer benefits
- Provide a differentiated solution
- An effective discovery stage to generate great ideas
- Accountable and empowered cross functional teams
- Dedicated resource
- Strong market and voice of the customer input
- Products that are linked to customer goals and initiatives
- Accountable and empowered cross functional teams
- Dedicated resource
- Strong market and voice of the customer input
- Products that are linked to customer goals and initiatives

A forward thinking team provide:
- Introduction of new materials
- Sustained engineering
- Rapid response team
- Engineer existing products to meet demands of new applications
- Development to meet ever changing industry regulations
- Joint engineering projects, combining expertise
- Cross fertilization of ideas with industry leaders
- Cost reduction exercises
- Increased throughputs and lifetime as your business grows
- New products that can set new industry standards
- Helping to establish industry best practice
- Provide solutions to application driven problems
- Maximize value and user friendliness of products
- Joint projects with leading universities and institutions
- Access to Parker design and development global resource

Winovation
Technical support
Dedicated team committed to improving the efficiency of your filtration process

Parker domnick hunter has a multi-disciplinary team of Scientists and Engineers committed to the technical support of our products around the world, providing pre-active practical support in all areas. The aim is to improve economy of filter use and to improve product yield and quality. We understand the practical needs within the process. If system performance is found to be out of specification, or showing deviation from the norm, you can count on active support on-site to identify and resolve problems.

A process audit is an excellent way of identifying and addressing the main risks that may compromise the quality of your production process. From utilities through to your aseptic filling line we can help identify improvements and advise on areas such as applicable products, system layouts, steam sterilization and integrity testing.

System design and implementation
A full operationally qualified filter system can be implemented using sample and used cartridge analysis from laboratory and pilot scale investigations. This can include the specification for a fully automated filter system design. This allows the filter user to have the difficult task of commissioning a filter system shared and facilitated through the Parker domnick hunter team of process experts.

• Filter system audits to optimize system performance
• Contract integrity testing
• Practical laboratory scale testing for continuous process improvements
• Samples and used cartridge analysis to aid in filter system design
• Process simulation
• Chemical compatibility
• Microbial analysis
• Customer specific validation strategy and protocol
• Remote monitoring of system performance

Existing system optimization
Where a process is altered through increased operational demand, e.g. through extension of a production campaign, higher production volumes, an increased number of product changes or a more rigorous sanitization / sterilization regime, Parker domnick hunter offer support to ensure the system remains appropriate for these changed process demands.

Training
Specialists from across our business can provide training at our state-of-the-art facilities or at your own site, which includes:
• Filtration theory and practice
• Integrity testing and validation
• SIP, CIP and compatibility testing

Fault diagnosis
Often filtration is a critical step or control point within a process. Therefore, when finished product quality is not achieved, the filter is often the first point of call. The Parker domnick hunter TSG group can provide a reactive service to enable rapid ‘root cause’ analysis and assist in minimizing the risk of recurrence where filtration, filtrate or integrity test values are found to be out of specification.
Parker domnick hunter employ a combination of Engineers and Scientists with advanced degrees in a wide range of fields including bioscience, biotechnology, microbiology and chemistry.

Using state-of-the-art equipment and facilities, the Parker Laboratory Services Group are equipped to become a valued partner in your validation process.

Providing step-by-step validation support to the customer by developing and executing process-specific protocols based on your application.

The Laboratory Services Group (LSG) at Parker domnick hunter provides documented evidence that gives the customer a high degree of assurance that our filters will consistently produce a level of performance that meets its predetermined specifications and quality attributes.

Quality control testing
- Water testing: TOC, endotoxin, bioburden, pH and conductivity
- Environmental monitoring, microbial assay
- Filter characteristics, visual bubble point, liquid and air flow rates, porometry analysis, water intrusion
- Quality control testing of incoming filter materials including bacterial challenge to ASTM 838-05 for sterilizing grade products
- Lot release of finished products and rinse water / effluent analysis

Customer validation
- A bespoke service offering a full validation package to support sterile filtration steps
- Includes protocol and experimental design, technical support and production of an audit reference of each filter and filtered product
- Establish integrity test parameters
- Develop customer specific validation strategies
- Examination of filter extractables
- Documented assurance

Scientific research
- Microbial assays standard and bespoke
- Protein binding analysis via SDS PAGE and gel imagery
- Process simulation and scale-up support
- New product design and optimization
- Process characterization and filtration analysis
Parker domnick hunter manufacture a range of microfiltration cartridges for liquid and gas applications that utilize the latest production techniques, combining the most suitable membranes and filtration media with the latest easy to use formats.

All of Parker domnick hunter’s filters meet strict validation guidelines that provide a high degree of assurance that they will consistently achieve a high level of performance in a given application and meet the needs of the industry that they have been specifically designed for.

- Wide choice of filtration media and filter formats
- Technical and validation support
- Industry specific designed filters
- Fully retrofittable range of products
- Manufactured in state-of-the-art facilities

Scaleability provides flexibility
The ability to scale up from small area discs to process scale systems with minimal revalidation is paramount.

Parker domnick hunter provides a wide range of filter formats to ensure that the transition from pilot-scale through to full production is as smooth as possible.

Single use systems
Disposable systems can eliminate cleaning validation, reduce capital costs, minimize health & safety risks and lower the chance of product contamination.

Single use systems also provide a more convenient way of processing a product.

Close working relationships
Parker domnick hunter have partnered engineering companies on large-scale projects around the world that require filtration expertise and a capability to fabricate large-scale systems.
Understanding the principles of filtration

e-learning and training at your own speed

What is e-Learning?
e-Learning is an effective learning process created by interaction with digitally-delivered content, learning support and services. It uses a combination of text, voice-over and moving images to explain ideas and concepts.

Why has Parker domnick hunter developed e-Learning?
Parker operates in more than 50 countries and employs more than 50,000 people worldwide. e-Learning enables us to reach all the relevant people with a consistent and a clear message. e-Learning content has been developed in-house and we believe we have a unique and innovative package which provides world-class filtration training. We are now enabling our customers to access the same learning.

What courses are available?
We can provide access to the Certificate in Filtration Technology course. This course consists of 9 modules of e-learning. It is intended as an introductory level course which looks mainly at the management of compressed air. Two further modules cover sterile air filtration and the filtration of liquids. Taken together they provide an excellent introduction to the world of filtration.

Each module has its own test and these test results are retained by the Learning Management System for later review.

Further Parker domnick hunter Certificate courses include a Certificate in Compressed Air Quality Management which consists of three modules covering ISO 8573.1 Air Quality standards, dryers and compressed air filter solutions.

How can I access e-learning?
The e-Learning is held on a LMS (Learning Management System) at www.dhelolearning.com.

To access the e-Learning you will need a user name and password, supplied by Parker domnick hunter.

How long will the course take to complete?
Learners are able to complete the course at their own pace and can fit the course around the demands of a busy working day. The time taken to complete the course varies from person to person but for most people the Certificate in Filtration Technology represents 20 hours of study.

How do I find out more?
It is possible to demonstrate the e-Learning package (and some of the other e-Learning materials) to you and your learning and development specialists. We firmly believe that in-house e-Learning represents world-class learning which is not available elsewhere.

For further information, email: FGE.training@parker.com
There is an increasing demand in the food & beverage industry for sterile air / gas which can be used in applications such as line clearing, storage tanks, machines and the venting of gas from storage tanks. It is essential that whenever gases come into contact with product or process equipment, any microbiological contamination is removed to guarantee product safety, uniform quality and extended shelf life. Parker domnick hunter provide a range of class-leading products with a proven track record.

Filtration of air and gas

TETPOR filters from Parker domnick hunter utilize a PTFE membrane to provide competitive performance and value in sterile air applications. Also available in high temperature formats.

HIGH FLOW BIO-X - High flow rates and high dirt holding capacity make HIGH FLOW BIO-X the filter of choice within the fermentation and beverage industries. A combination of PTFE and glass fibre media provides a product with high voids volume and added strength giving unrivalled performance in applications such as the provision of sterile gas to filling machines.

Filters include:

- PTFE impregnated glass microfibre (PTFE / GF)
- Polypropylene (PP)
- Glass microfibre (GF)
- Polytetrafluoroethylene (PTFE)
HIGH FLOW PREPOR GFA is a high capacity glass fibre prefilter specifically designed for the removal of bulk particulate from compressed air and gases. It is used extensively for prefiltration duties in dry compressed air systems and provides excellent protection for final sterile filters.

HIGH FLOW PREPOR GFA utilizes pleated glass fibre filter media encased within an upstream and downstream expanded polypropylene mesh filter support. The pleat pack is supported by an inner stainless steel core and outer heat stabilized polypropylene cage, heat bonded to heat stabilized polypropylene end caps. The combination of high voids volume filter media and pleated construction results in a filter cartridge with exceptional dirt holding capacity, able to operate at very low differential pressures.

Features and Benefits
- High surface area and voids volume filter media
- Exceptionally high flow rates with low pressure drops
- Reliable efficient protection of final sterilization filters
- Heat stabilized componentry to allow operation at elevated temperatures

Performance Characteristics

<table>
<thead>
<tr>
<th>Cartridge flow rates</th>
<th>10¨ Size (250 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow (Nm³/hr) @ 21°C</td>
<td>Differential Pressure (mbar)</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>

Ordering Information

Recommended Operating Conditions
- The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 20 °C (68 °F).
- The maximum recommended continuous operating temperature is 70 °C (158 °F).
- For temperatures from 70 °C (158 °F) to 100 °C (212 °F) a special product with polyester supports is available.

Effective Filtration Area (EFA)
- 10¨ (250 mm): 0.48 m² (5.16 ft²)
- 20¨ (500 mm): 1.44 m² (15.45 ft²)
- 30¨ (750 mm): 2.4 m² (25.79 ft²)

Specifications

Materials of Construction
- Filtration Media: Glass Microfibre
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: 316L Stainless Steel
- Outer Protection Cage: Polypropylene
- End Caps: Stainless Steel
- Standard o-rings/gaskets: Silicone

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 20 °C (68 °F).
- The maximum recommended continuous operating temperature is 70 °C (158 °F). For temperatures from 70 °C (158 °F) to 100 °C (212 °F) a special product with polyester supports is available.
PEPLYN AIR filter cartridges have been specifically designed to guarantee removal of particulate from gas streams. They can be used to protect sterilizing grade filters in pressurized systems or in exhaust gas vent applications. PEPLYN AIR is particularly suitable for:

- Inlet gas in the fermentation industry as protection to sterilizing grade filters where polypropylene media is preferred
- As protection to sterilizing grade filters in exhaust gas systems
- Vent applications
- Systems where high particulate loading is expected

PEPLYN AIR has the ability to be steam sterilized and has a broad range of chemical compatibility.

Features and Benefits

- Cost-effective prefiltration
- Absolute micron rating range from 1.0 - 25 micron
- High flow rates and long life
- Steam sterilizable
- Graded density for excellent particle retention
- No release of particles even during system pressure fluctuations

Performance Characteristics

- Cartridge flow rates @ 0 barg
  - 10" Size (250 mm)

- Cartridge flow rates @ 2 barg
  - 10" Size (250 mm)

Specifications

Materials of Construction

- Filtration Media: Meltblown Polypropylene
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: 316L Stainless Steel
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- Standard o-rings/gaskets: Silicone

Food and Biological Safety


Recommended Operating Conditions

The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 20 °C (68 °F).

The maximum recommended continuous operating temperature is 50 °C (122 °F).

Effective Filtration Area (EFA)*

- 10" (250 mm) 0.49 m² (5.27 ft²)

*Values with micron rating

Cleaning and Sterilization

PEPLYN AIR cartridges can be repeatedly sterilized in situ steam sterilized or autoclaved up to 142 °C (287 °F).

Determination of Micron Ratings

Particle removal efficiencies of PEPLYN AIR cartridges have been determined independently by challenging with a cut silica test dust, generated by BUS1701 dust injector used in conjunction with laser particle counters.

Ordering Information

![Ordering Information Table](https://example.com/ordering-information)

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, the Company reserves the right to make alterations. The publications in this product sheet should be used as a general guide only and are subject to the Company’s General Conditions of Sale.

Contact Information

- **Telephone:** +44 (0)191 4105121
- **Email:** dhprocess@parker.com
- **Website:** www.parker.com/processfiltration
BIO-X II air sterilization filter cartridges utilize a borosilicate microfibre media. This media has proven to be particularly effective in the removal of sub-micron particles as small as 0.01 micron, therefore ensuring the removal of all microorganisms, including bacteria and viruses.

The media is sandwiched between Nomex support materials to provide additional strength and prevent media migration. This is rigidly held between stainless steel support cylinders and finally encapsulated into stainless steel end caps. The result is a filter cartridge with the exceptional strength and efficiency necessary for absolute security in the most testing of applications.

BIO-X II filter cartridges are particularly suitable for the increasing number of high temperature applications. They also fulfil the sterile compressed air and gas requirements of the dairy, brewery and food processing industries.

Features and Benefits
- Nomex support materials for high temperature operation
- Robust stainless steel construction
- High temperature operation 200 °C (392 °F)
- 100% integrity tested prior to dispatch
- Unique serial number for full traceability
- Fully validated by aerosol bacterial challenge

Performance Characteristics

![Graph showing performance characteristics](image)

### BIO-X II Filter Cartridges
- Air / gas filters
- Borosilicate microfibre

### Specifications

**Materials of Construction**
- **Filtration Media:** Borosilicate Microfibre
- **Upstream Support:** Nomex*
- **Downstream Support:** Nomex*
- **Inner Support Core:** Stainless Steel
- **Outer Protection Cage:** Stainless Steel
- **End Caps:** Epoxy Resin
- **Standard O-rings / Gaskets:** Silicone

*Nomex is a registered trademark of E.I. du Pont de Nemours and Co. Inc.

**Sterilization**
BIO-X II filter elements can withstand a maximum of 100 in-line sterilization cycles with purified saturated steam. In-line sterilization 142 °C (287.6 °F), 2.8 barg (40.7 psig) for 30 minutes.

**Integrity Test Data**
All cartridges are integrity tested prior to dispatch by the aerosol challenge test method using the Parker domnick hunter VALAIRDATA II.

**Recommended Operating Conditions**
The maximum differential pressure is 700 mbar for economical element change.

**Maximum Continuous Inlet Air Temperature**
- 200 °C (392 °F) Intermittent
- 170 °C (388 °F) Continuous

**Validation**
The BIO-X II range of cartridges have been fully validated by bacterial challenge of aerosolized *Brevundimonas diminuta*.

### Ordering Information

<table>
<thead>
<tr>
<th>Cartridge Code</th>
<th>Cartridge Length</th>
<th>End Cap Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME10AB75SRH</td>
<td>10¨ (250 mm)</td>
<td>BS226 (C)</td>
</tr>
<tr>
<td>ME20AB75SRH</td>
<td>20¨ (500 mm)</td>
<td>BS226 (C)</td>
</tr>
<tr>
<td>ME30AB75SRH</td>
<td>30¨ (750 mm)</td>
<td>BS226 (C)</td>
</tr>
</tbody>
</table>

### BIO-X II Retrofit Cartridge Part Numbers

<table>
<thead>
<tr>
<th>Parker domnick hunter Cartridge</th>
<th>Retrofitted Cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>MER12/10</td>
<td>SRF02/10</td>
</tr>
<tr>
<td>MER12/11</td>
<td>SRF02/11</td>
</tr>
<tr>
<td>MER15/10</td>
<td>SRF02/15</td>
</tr>
<tr>
<td>MER15/11</td>
<td>SRF02/15</td>
</tr>
<tr>
<td>MER20/10</td>
<td>SRF03/20</td>
</tr>
<tr>
<td>MER20/11</td>
<td>SRF03/20</td>
</tr>
<tr>
<td>MER25/10</td>
<td>SRF03/25</td>
</tr>
<tr>
<td>MER25/11</td>
<td>SRF03/25</td>
</tr>
<tr>
<td>MER30/10</td>
<td>SRF03/30</td>
</tr>
<tr>
<td>MER30/11</td>
<td>SRF03/30</td>
</tr>
<tr>
<td>MER40/10</td>
<td>SRF03/40</td>
</tr>
<tr>
<td>MER40/11</td>
<td>SRF03/40</td>
</tr>
</tbody>
</table>

Parker domnick hunter has a continuous policy of product development through regular machine tooling changes. For this reason, specific reference to specifications is not given in this information. The publication of this technical data is not intended to be a contractual offer but to provide information for the customer to determine suitability for use.

**Use:** This publication contains technical information and part details which are available to our products. Parker domnick hunter assumes no liability for the errors or inaccuracies contained in this document.
HIGH FLOW BIO-X combines proven depth filter technology and a pleated construction to provide retention down to 0.01 micron in gas. Flow rates typically 2-3 times that of membrane filters make HIGH FLOW BIO-X the filter that can dramatically reduce cartridge usage and installation size within the fermentation, food and beverage industries.

The specially developed PTFE impregnation process imparts greater strength and permanent hydrophobicity to the borosilicate microfibre media. This leads to excellent performance in applications such as the provision of sterile gas in filling machines.

Features and Benefits
- 94% voids volume PTFE impregnated microfibre
- Wide bore cartridge construction to maximize flow rate
- Stainless steel inner core
- Exceptionally high flow rates with low pressure drops
- Fully validated by aerosolized bacterial and viral challenge

Performance Characteristics

<table>
<thead>
<tr>
<th>Differential Pressure (mbar)</th>
<th>Flow (Nm³/hr) @ 21 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>150</td>
</tr>
<tr>
<td>3</td>
<td>200</td>
</tr>
<tr>
<td>4</td>
<td>250</td>
</tr>
<tr>
<td>5</td>
<td>300</td>
</tr>
<tr>
<td>6</td>
<td>350</td>
</tr>
<tr>
<td>7</td>
<td>400</td>
</tr>
<tr>
<td>8</td>
<td>450</td>
</tr>
</tbody>
</table>

Effective Filtration Area (EFA)
- 10" (250 mm) - 0.38 m² (4.09 ft²)

Specifications
Materials of Construction
- Filtration Media: PTFE Impregnated Borosilicate Microfibre
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: 316L Stainless Steel
- Outer Protection Cage: PTFE Impregnated Borosilicate Microfibre
- End Caps: PTFE Impregnated Borosilicate Microfibre
- Standard o-rings/gaskets: Silicone

Sterilization
HIGH FLOW BIO-X cartridges can be in situ steam sterilized or autoclaved up to 142 °C (287.6 °F) for a maximum of 150 steam cycles.

Retention Characteristics
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 70 °C (158 °F).

The maximum recommended continuous operating temperature is 70 °C (158 °F).

Integrity Test Data
All cartridges are integrity tested prior to dispatch by the aerosol challenge test method using the Parker domnick hunter VALAIRDATA II.

Ordering Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Endcap (10&quot;)</th>
<th>Endcap (Demi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10&quot; (250 mm)</td>
<td>BIO-X Retrofit</td>
<td>H UF Retrofit</td>
</tr>
<tr>
<td>B</td>
<td>10&quot; (250 mm)</td>
<td>GIT Retrofit</td>
<td>T TRUESEAL</td>
</tr>
<tr>
<td>C</td>
<td>10&quot; (250 mm)</td>
<td>Demi MCY</td>
<td>Z Demi A &amp; B Std</td>
</tr>
</tbody>
</table>

Flow rate for other sizes available upon request.

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 70 °C (158 °F).

The maximum recommended continuous operating temperature is 70 °C (158 °F).

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations to products or services or to discontinue such products or services, customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations to products or services or to discontinue such products or services, customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.
HIGH FLOW BIO-X Vent Autoclave filter cartridges are designed for critical applications where sterile air is required to break the vacuum formed by the condensation of steam inside the autoclave chamber.

At the heart of the HIGH FLOW BIO-X Vent Autoclave filter cartridge is the latest inherently hydrophobic PTFE impregnated microfibre. With a voids volume of 94%, this media gives exceptional flow rates when compared to membranes. It will remove all particles down to 0.01 micron therefore ensuring the removal of microorganisms, including bacteria and viruses. The filter cartridges are manufactured using a heat sealed construction and no adhesives or resins are used in fabrication. The result, a product of not only exceptional quality, but also a very cost effective solution for the production of sterile air.

Features and Benefits
- High flow rates
- Hydrophobic filter medium
- Exceeds requirements of HTM10 and EN285
- Detachable prefilter layer
- Exceptional strength
- Repeatedly autoclavable

Performance Characteristics
Cartridge flow rates @ 0 barg
Vacuum break time against autoclave volume

Specifications
Materials of Construction
- Filtration Media: PTFE Impregnated Borosilicate Glass Microfibre
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: Polypropylene
- Prefilter Sock: Polyurethane
- End Caps: Polypropylene
- Standard gaskets: EPDM

Effective Filtration Area (EFA)
5" (125 mm) 0.2 m² (2.3 ft²)
Sterilization
HIGH FLOW BIO-X Vent Autoclave filter cartridges can be repeatedly autoclaved up to 142 °C (288 °F) for a maximum of 150 cycles. Note: Remove prefilter layer before steaming.

Retention Characteristics
The HIGH FLOW BIO-X Vent Autoclave range of cartridges has been fully validated by aerosol bacterial challenge levels of >10^7 Brevundimonas diminuta per cm². Independent test work also shows full retention to MS-2 Coliphage.

Ordering Information
ZGP

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Code</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5/8&quot; (152 mm)</td>
<td>X</td>
<td>NPTM</td>
</tr>
</tbody>
</table>

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
The maximum differential pressure in direction of flow (outside to in) is 4.5 barg (65.26 psig) at 70 °C (158 °F).
The maximum recommended continuous operating temperature is 70 °C (158 °F).

Integrity Test Data
All cartridges are integrity tested prior to dispatch by the aerosol challenge test method using Parker domnick hunter’s VALAIRDATA II.
TETPOR AIR Filter Cartridges

Features and Benefits

- Assured biosecurity with absolute rated filtration
- High flow rates with low pressure drops
- Unique prefilter layer
- Steam sterilizable to 142 °C (287.6 °F)
- High voids volume PTFE membrane

Performance Characteristics

- air / gas filters
- expanded PTFE

TETPOR AIR sterilization filter cartridges offer exceptional filtration performance while providing the highest levels of biosecurity throughout the process industry.

Operating at ambient temperature conditions, TETPOR AIR filter cartridges provide a cost-effective filtration solution. A unique polypropylene prefilter layer extends service life in heavily contaminated environments.

TETPOR AIR filter cartridges also utilize a well-proven inherently hydrophobic expanded PTFE membrane with an absolute removal rating of 0.01 micron for gas applications. This ensures the removal of all airborne bacteria, viruses and bacteria.

Materials of Construction

- Filtration Membrane: Expanded PTFE
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene

Filter Cartridges

- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: 316L Stainless Steel
- Standard o-rings/gaskets: Silicone

DEMICAP Filter Capsules

- Core: Polypropylene
- Sleeves: Polypropylene
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- Filling Bell: Polycarbonate

Syringe Filters

- Body: Polypropylene
- Core: Polypropylene
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone
- Filling Bell: Polycarbonate

SYRINGE ø50 mm: 14.50 cm² (2.25 in²)

Effective Filtration Area (EFA)

- 10¨ (250 mm): 0.77 m² (8.28 ft²)
- K Size: 0.36 m² (3.87 ft²)
- A Size: 0.25 m² (2.69 ft²)
- B Size: 0.12 m² (1.29 ft²)
- E Size: 0.06 m² (0.66 ft²)

Recommended Operating Conditions

Filter Cartridges

- Up to 60 °C (140 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Max. Exposure (30 min.) %</th>
<th>DPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>60</td>
<td>1%</td>
<td>60</td>
</tr>
<tr>
<td>85</td>
<td>1%</td>
<td>80</td>
</tr>
<tr>
<td>95</td>
<td>1%</td>
<td>90</td>
</tr>
</tbody>
</table>

MURUS Disposable Filter Capsules

- Up to 25 °C (77 °F) 8.5 barg (121 psig)
- Up to 60 °C (140 °F) 2.8 barg (40.6 psig)

Parker Hannifin certify that the product complies with the European Union Pressure Equipment Directive (PED) 97/23/EC. This product is intended for use with Group 1 & 2 Steamseal and Demineralised Water and Gases as stated in the operating and technical data in this document. In compliance with PED Article 3, Paragraph 2, 4PE, this product does not bear the CE mark.

DEMICAP Filter Capsules

- Up to 40 °C (104 °F) 16.50 cm² (2.25 in²)
- Up to 60 °C (140 °F) continuous operating temperature and 9 barg (132 psig)

Sterilization

Autoclave 120 °C (250 °F) 120 min

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker Hannifin contact.

Food and Biological Safety

Materials conform to the relevant requirements of 21 CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water and integrity tested prior to dispatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Materials conform to the relevant requirements of 21 CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Note: TETPOR is a registered trademark of Parker domnick hunter
Performance Characteristics

TDC / Conductivity
The filtrate quality from a 1" (250 mm) TETPOR AIR conforms to the requirements of current USP <443> (TDC) and USP <455> (conductivity).

Endotoxins
Aqueous extracts from the 1" (250 mm) TETPOR AIR contain < 0.25 EU / ml when tested in accordance with the USP Endotoxins test method.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10" (250 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group [LSG].

Special Features
- The TETPOR AIR filter cartridges are validated to current USP <643> (TOC) and USP <645> (conductivity).

Retention Characteristics
TETPOR AIR filter cartridges are validated by bacterial challenge testing with Brevundimonas diminuta to current ASTM F838-05 methodology (10^7 organisms / cm^2 / 60 min) and USP 85-13 (F67) methodology (10^8 organisms / cm^2 / 60 min).

Chemical Compatibility
All filters are integrity testable to the following limits when wet with 60 / 40 IPA / water and using air as the test gas.

Performance Characteristics

Cartridge Test Diffusional Water Water Water
Pressure Flow Intrusion Intrusion Flow
Test Pressure (barg) (psig) (ml / min) (barg) (psig) (ml / 10 min) (µl / 10 min)

K 0.8 11.6 8.5 2.5 36.3 7.5 2142
A 0.8 11.6 6.0 2.5 36.3 5.3 1514

Retention Characteristics
TETPOR AIR filter cartridges are tested in accordance with the USP <645> (TDC) and USP <647> (Conductivity).

Oxidizable Substances
TETPOR AIR filter cartridges meet current USP and EP quality standards for sterilization and water for oxidizable substances following a <1 litre water flush.

Integrity Test Data
All filters are integrity testable to the following limits when wet with 60 / 40 IPA / water and using air as the test gas.

Ordering Information

Cartridges

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCMT</td>
<td>0.2 µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZCMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZLMT</td>
<td>1/8&quot; NPT Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZLMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZEMT</td>
<td>3/8&quot; NPT Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZEMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MURUS Capsules

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ZLMT</td>
<td>1/8&quot; NPT Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZLMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZEMT</td>
<td>3/8&quot; NPT Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZEMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DEMICAP Capsules

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ZEMT</td>
<td>3/8&quot; NPT Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZEMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Syringe Filters

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ZEMT</td>
<td>3/8&quot; NPT Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ZEMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: This data has been compiled by Parker from a variety of sources and may be subject to change. It is intended for general information only. Parker shall not be responsible for any errors or omissions in this publication or for the consequences thereof. No warranty is expressed or implied as to the accuracy or completeness of the information presented.

Contact Information

Parker Domnick Hunter
34 TETPOR AIR Filter Cartridges

DS_GF_D01/D07 Rev.6A 1/11

For more information, please contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Tel: +44 (0)191 410 5121
Fax: +44 (0)191 410 5122
Email: dhprocess@parker.com
Website: www.parker.com/processfiltration

© Parker Hannifin 1999 US07 01 11 dhprocess@parker.com...
HIGH FLOW TETPOR II gas sterilization filters have been developed to benefit from technological advances within the manufacturing of PTFE membranes. This new generation of filter sets the standard with an unrivalled combination of efficiency, flow rate and strength.

The HIGH FLOW TETPOR II is validated as a 0.2 micron sterilizing grade filter in liquids through ASTM E88-05 and 0.01 micron in gas through full retention to an aerosol challenge of MS2 phage. This ensures the filter will guarantee the sterility of your process in the worst-case scenario where the filter may be subjected to bulk liquid due to a process problem. Subtle changes to the structure of the PTFE have also resulted in the production of an extremely robust product now validated for 225 steam sterilization cycles at 142 °C (287.6 °F). The combination of non-an extremely robust product now validated for 225 steam sterilization cycles @ 142 °C (287.6 °F). The combination of non-an extremely robust product now validated for 225 steam sterilization cycles @ 142 °C (287.6 °F). The combination of non-

- **Optimum pleat configuration**
- **Steam sterilizable up to 225 cycles at 142 °C (287.6 °F)**
- **Unirrival flow rates combined with low pressure drops**
- **Fully validated to ASTM E88-05 for liquid bacterial challenge**
- **Fully validated to aerosol and viral challenge**
- **Integrity testable by all methods including water intrusion test**

**Features and Benefits**

**Performance Characteristics**

- **Filter Cartridges**
  - **Polytetrafluoroethylene (PTFE)**
  - **Upstream Support:** Polypropylene
  - **Downstream Support:** Polypropylene
  - **Inner Support Core:** Stainless Steel
  - **Outer Protection Cage:** Polypropylene
  - **End Caps:** Polypropylene
  - **End Cap Insert:** Polysulphone
  - **Standard o-rings:** Silicone
  - **Materials of Construction**
    - **Filtration Membrane:** Polytetrafluoroethylene (PTFE)
    - **Upstream Support:** Polypropylene
    - **Downstream Support:** Polypropylene
    - **Inner Support Core:** Stainless Steel
    - **Outer Protection Cage:** Polypropylene
    - **End Caps:** Polypropylene
    - **End Cap Insert:** Polysulphone
    - **Standard o-rings:** Silicone

**Materials conform to the relevant requirements of 21 CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.**

**Recommended Operating Conditions**

- **The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 60 °C (140 °F).**
- **The maximum recommended continuous inlet air temperature is 60 °C (140 °F).**

**Integration Test Data**

<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
<th>Flow (Nm³/hr) (air @ 21 °C)</th>
<th>Pressure (psi)</th>
<th>Pressure Decay</th>
<th>Water Intrusion</th>
<th>Water Intrusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>10¨</td>
<td>ZHFT</td>
<td>10.6</td>
<td>49.5</td>
<td>2.5</td>
<td>36.2</td>
<td>40.5</td>
</tr>
<tr>
<td>K</td>
<td>0.8</td>
<td>11.6</td>
<td>7.7</td>
<td>2.5</td>
<td>36.2</td>
<td>6.4</td>
</tr>
<tr>
<td>A</td>
<td>0.8</td>
<td>11.6</td>
<td>5.6</td>
<td>2.5</td>
<td>36.2</td>
<td>4.6</td>
</tr>
<tr>
<td>B</td>
<td>0.8</td>
<td>11.6</td>
<td>2.8</td>
<td>2.5</td>
<td>36.2</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>0.8</td>
<td>11.6</td>
<td>1.1</td>
<td>2.5</td>
<td>36.2</td>
<td>N / A</td>
</tr>
<tr>
<td>D</td>
<td>0.8</td>
<td>11.6</td>
<td>0.6</td>
<td>2.5</td>
<td>36.2</td>
<td>N / A</td>
</tr>
</tbody>
</table>

**Ordering Information**

**HIGH FLOW TETPOR II gas sterilization filters have been validated for 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+ as well as the provision of particle free air within the electronics industry.**

**Specifications**

- **Materials of Construction**
  - **Filtration Membrane:** Polytetrafluoroethylene (PTFE)
  - **Upstream Support:** Polypropylene
  - **Downstream Support:** Polypropylene
  - **Inner Support Core:** Stainless Steel
  - **Outer Protection Cage:** Polypropylene
  - **End Caps:** Polypropylene
  - **End Cap Insert:** Polysulphone
  - **Standard o-rings:** Silicone

**Food and Biological Safety**

Materials conform to the relevant requirements of 21 CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Retention Characteristics**

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

In addition, HIGH FLOW TETPOR II is also validated by aerosol bacterial and MS-2 Coliphage challenge testing.

**Sterilization**

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

**Materials of Construction**

- **Filtration Membrane:** Polytetrafluoroethylene (PTFE)
- **Upstream Support:** Polypropylene
- **Downstream Support:** Polypropylene
- **Inner Support Core:** Stainless Steel
- **Outer Protection Cage:** Polypropylene
- **End Caps:** Polypropylene
- **End Cap Insert:** Polysulphone
- **Standard o-rings:** Silicone

**Filter Cartridges**

- **PTFE Encapsulated Silicone**
- **Silicone**
- **Viton**

**Ordering Information**

**HIGH FLOW TETPOR II Filter Cartridges**

**Specifications**

- **Materials of Construction**
  - **Filtration Membrane:** Polytetrafluoroethylene (PTFE)
  - **Upstream Support:** Polypropylene
  - **Downstream Support:** Polypropylene
  - **Inner Support Core:** Stainless Steel
  - **Outer Protection Cage:** Polypropylene
  - **End Caps:** Polypropylene
  - **End Cap Insert:** Polysulphone
  - **Standard o-rings:** Silicone

**Food and Biological Safety**

Materials conform to the relevant requirements of 21 CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Retention Characteristics**

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

In addition, HIGH FLOW TETPOR II is also validated by aerosol bacterial and MS-2 Coliphage challenge testing.

**Recommended Operating Conditions**

The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 60 °C (140 °F).

The maximum recommended continuous inlet air temperature is 60 °C (140 °F).

Note: HIGH FLOW TETPOR II cartridges can be used as WFI inlet air temperature is 60 °C (140 °F).

**Integrity Test Data**

All cartridges are integrity tested prior to despatch by the pressure decay and aerosol challenge test methods. Values are for cartridges wetted with 60 / 40 IPA / Water.

**Ordering Information**

**HIGH FLOW TETPOR II Filter Cartridges**

**Specifications**

- **Materials of Construction**
  - **Filtration Membrane:** Polytetrafluoroethylene (PTFE)
  - **Upstream Support:** Polypropylene
  - **Downstream Support:** Polypropylene
  - **Inner Support Core:** Stainless Steel
  - **Outer Protection Cage:** Polypropylene
  - **End Caps:** Polypropylene
  - **End Cap Insert:** Polysulphone
  - **Standard o-rings:** Silicone

**Retention Characteristics**

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

HIGH FLOW TETPOR II gas sterilization filters have been validated as 0.2 micron sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM+.

In addition, HIGH FLOW TETPOR II is also validated by aerosol bacterial and MS-2 Coliphage challenge testing.

**Recommended Operating Conditions**

The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 60 °C (140 °F).

The maximum recommended continuous inlet air temperature is 60 °C (140 °F).

Note: HIGH FLOW TETPOR II cartridges can be used as WFI inlet air temperature is 60 °C (140 °F).

**Integrity Test Data**

All cartridges are integrity tested prior to despatch by the pressure decay and aerosol challenge test methods. Values are for cartridges wetted with 60 / 40 IPA / Water.
HIGH FLOW TETPOR II Vent Autoclave filter cartridges are designed for critical applications where sterile air is required to break the vacuum formed by the condensation of steam inside the autoclave chamber.

At the heart of the HIGH FLOW TETPOR II Vent Autoclave filter cartridge is the latest inherently hydrophobic PTFE membrane. This absolute rated membrane will remove all particles down to 0.01 micron, thus removing airborne bacteria, viruses and bacteriophage.

The filter cartridges are manufactured using a heat sealed construction, thus eliminating the need for adhesives or resins in fabrication. The result is a product of exceptional strength and quality.

Features and Benefits
- Hydrophobic PTFE membrane
- Fully validated
- Exceptional strength
- Repeatedly autoclavable
- Detachable prefilter layer

Performance Characteristics
- Cartridge flow rates @ 0 barg
- Vacuum break time against autoclave volume

Specifications
- Materials of Construction
  - Filtration Membrane: Polytetrafluoroethylene (PTFE)
  - Upstream Support: Polypropylene
  - Downstream Support: Polypropylene
  - Inner Support Core: Polypropylene
  - Outer Protection Cages: Polyurethane
  - Prefilter Sock: Polyethylene
  - End Caps: Polypropylene
  - Standard gaskets: EPDM
- Effective Filtration Area (EFA): 0.3 m² (3.22 ft²)
- Integrity Test Data: All cartridges are integrity tested prior to dispatch by the aerosol challenge test method using Parker domnick hunter’s VALAIRDATA II.
- Recommended Operating Conditions
  - The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 60 °C (140 °F).
  - The maximum recommended continuous operating temperature is 60 °C (140 °F).

Ordering Information
- ZTA Code
- Length (Nominal)
  - A: 5.98¨ (152 mm)
  - B: 3.46¨ (88 mm)
- Endcap Code
  - B: 1/2¨ BSPP
  - A: 1/2¨ NPTM
- Integrity Test Data: All cartridges are integrity tested prior to dispatch by the aerosol challenge test method using Parker domnick hunter’s VALAIRDATA II.
- Food and Biological Safety: Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.
- Sterilization: HIGH FLOW TETPOR II Vent Autoclave filter cartridges can be repeatedly autoclaved up to 142 °C (287.6 °F) for a maximum of 100 cycles.
- Retention Characteristics: The HIGH FLOW TETPOR II Vent Autoclave range of cartridges has been fully validated by aerosol bacterial challenge levels of >10⁷ Brevundimonas diminuta per cm². Independent test work also shows full retention to MS-2 Coliphage.
- Integrity Test Data: All cartridges are integrity tested prior to dispatch by the aerosol challenge test method using Parker domnick hunter’s VALAIRDATA II.
- Recommended Operating Conditions
  - The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 60 °C (140 °F).
  - The maximum recommended continuous operating temperature is 60 °C (140 °F).

Ordering Information
- ZTA Code
- Length (Nominal)
  - A: 5.98¨ (152 mm)
  - B: 3.46¨ (88 mm)
- Endcap Code
  - B: 1/2¨ BSPP
  - A: 1/2¨ NPTM

Specifications
- Materials of Construction
  - Filtration Membrane: Polytetrafluoroethylene (PTFE)
  - Upstream Support: Polypropylene
  - Downstream Support: Polypropylene
  - Inner Support Core: Polypropylene
  - Outer Protection Cages: Polyurethane
  - Prefilter Sock: Polyethylene
  - End Caps: Polypropylene
  - Standard gaskets: EPDM

Effective Filtration Area (EFA)
- 0.3 m² (3.22 ft²)

Integrity Test Data
- All cartridges are integrity tested prior to dispatch by the aerosol challenge test method using Parker domnick hunter’s VALAIRDATA II.

Cartridge flow rates @ 0 barg
- 400
- 300
- 200
- 100
- 0

Differential Pressure (mbar)
- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 1
- 0

Flow (Nm³ / hr)
- 600
- 500
- 400
- 300
- 200
- 100
- 0

Differential Pressure (psi)
- 0
- 10
- 20
- 30
- 40
- 50
- 60
- 70
- 80

Volume of Autoclave (m³)
- 0
- 50
- 100
- 150
- 200

Time (seconds)
- 0
- 100
- 200
- 300
- 400

For further details please contact sales@parker.com or visit www.parker.com/processfiltration
HIGH FLOW TETPOR H.T. gas sterilization filter cartridges provide unrivalled performance in process industry applications where continuous cartridge operation of up to 100 °C (212 °F) is a requirement.

Applications include specific biological fermentations which use high inlet air temperatures and heated vent filters on storage tanks whose contents are at elevated temperatures >80 °C (176 °F), e.g. WFI tanks.

HIGH FLOW TETPOR H.T. cartridges utilize a proven inherently hydrophobic, expanded PTFE membrane with an absolute removal rating of 0.01 micron. This ensures the removal of all airborne bacteria, viruses and bacteriophage. Nomex membrane support layers facilitate continuous operation at temperatures up to 100 °C (212 °F).

### Features and Benefits
- Long service life even at elevated temperatures 100 °C (212 °F)
- Assured biosecurity with absolute rated filtration
- Stainless steel inner core
- Steam sterilizable to 142 °C (287 °F)
- Exceptionally high flow rates with low pressure drops

### Performance Characteristics

![Graph showing differential pressure vs. flow rate at 0.31 °C](image)

10¨ Size (250 mm) Cartridge

### Specifications

#### Materials of Construction
- Filtration Membrane: Expanded PTFE
- Upstream Support: Nomex®
- Downstream Support: Nomex®
- Inner Support Core: 316L Stainless Steel
- Outer Protection Cage: Heat Stabilized Polypropylene
- End Caps: Heat Stabilized Stainless Steel
- End Cap Insert: Stainless Steel
- Standard o-rings: Silicone
- Nomex® is a registered trademark of E.I. du Pont de Nemours and Co Inc

#### Integrity Test Data

- All cartridges are integrity tested prior to despatch by the pressure decay and aerosol challenge test methods. Values are for cartridges wetted with 60 / 40 IPA / Water.

#### Ordering Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Endcap (10¨)</th>
<th>Material</th>
<th>Code</th>
<th>Variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCHT</td>
<td>10¨ (250 mm)</td>
<td>BF / 226 Bayonet</td>
<td>P</td>
<td>E</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>20¨ (500 mm)</td>
<td>BF / 226 Bayonet</td>
<td>P</td>
<td>PTFE Encapsulated Silicone</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>30¨ (750 mm)</td>
<td>BF / 226 Bayonet</td>
<td>P</td>
<td>Silicone</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIO-X Retrofit</td>
<td>P</td>
<td>Viton</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P</td>
<td>E</td>
<td>N *</td>
</tr>
</tbody>
</table>

#### Effective Filtration Area (EFA)
- 10¨ (250 mm): 0.9 m² (9.8 ft²)

#### Sterilization

HIGH FLOW TETPOR H.T. cartridges can be in situ steam sterilized for up to 120 cycles at 142 °C (287.6 °F).

#### Retention Characteristics

HIGH FLOW TETPOR H.T. cartridges have been fully validated as sterilizing grade filter cartridges, for compressed air and gas applications. They exceed liquid bacterial challenge levels as recommended by ASTM®. In addition, HIGH FLOW TETPOR H.T. is further validated by aerosol bacterial challenge testing.

+ASTM American Society for Testing and Materials

#### Integrity Test Data

- All cartridges are integrity tested prior to despatch by the pressure decay and aerosol challenge test methods. Values are for cartridges wetted with 60 / 40 IPA / Water.

### Order Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Endcap (10¨)</th>
<th>Material</th>
<th>Code</th>
<th>Variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCHT</td>
<td>10¨ (250 mm)</td>
<td>BF / 226 Bayonet</td>
<td>P</td>
<td>E</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>20¨ (500 mm)</td>
<td>BF / 226 Bayonet</td>
<td>P</td>
<td>PTFE Encapsulated Silicone</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>30¨ (750 mm)</td>
<td>BF / 226 Bayonet</td>
<td>P</td>
<td>Silicone</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIO-X Retrofit</td>
<td>P</td>
<td>Viton</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P</td>
<td>E</td>
<td>N *</td>
</tr>
</tbody>
</table>

### Performance Characteristics

- Differential Pressure (mbar)
- Flow (Nm³/h) at 21 °C

- Differential Pressure (psi)

- Maximum Differential Pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 100 °C (212 °F).

- The maximum recommended continuous operating temperature is 100 °C (212 °F).

#### Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

### Recommended Operating Conditions

- The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 100 °C (212 °F).

- The maximum recommended continuous operating temperature is 100 °C (212 °F).

### Specifications

#### Materials of Construction

- Filtration Membrane: Expanded PTFE
- Upstream Support: Nomex®
- Downstream Support: Nomex®
- Inner Support Core: 316L Stainless Steel
- Outer Protection Cage: Heat Stabilized Polypropylene
- End Caps: Heat Stabilized Stainless Steel
- End Cap Insert: Stainless Steel
- Standard o-rings: Silicone

#### Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

### Recommended Operating Conditions

- The maximum differential pressure in direction of flow (outside to in) is 3.5 barg (50.76 psig) at 100 °C (212 °F).

- The maximum recommended continuous operating temperature is 100 °C (212 °F).
Steam filters

Filtration of steam

Steam is utilized in many areas of process manufacturing both directly and indirectly coming into contact with product, process lines and equipment. The quality of this steam varies considerably depending on methods of generation, additives, condition of supply pipelines and condensate management. If not treated, poor quality steam that is used to sterilize downstream process filters will lead to premature blockage.

Steam filters from Parker domnick hunter have been specifically designed to protect process equipment and pipework from particulate contamination, extending their overall life.

Pleated Steam filters from Parker domnick hunter are designed to provide a culinary grade steam coupled with exceptionally high flow rates. The 1 micron version guarantees steam to 3A.697-03 standard.

Sintered Steam filters from Parker domnick hunter are manufactured from a highly porous sintered stainless steel available in 1 and 25 micron. The 1 micron filter provides culinary grade steam that meets 3A standards. The general purpose 25 micron filter provides protection for membrane filters located downstream in the process.
Steam is an often neglected part of a process, regarded as an add on to a customers liquid or gas filtration needs. It has however, large specific applications in its own right and should be treated with the same level of importance as air, gas and liquid systems if long filter lifetimes and system cost effectiveness are to be achieved.

The quality of steam used within the food and dairy industries has been raised higher on the agenda in an ever increasing number of companies. Minimum acceptable standards are now being quoted on a more regular basis with particular reference to ‘culinary grade’ steam. Steam serves several purposes in the food & beverage industry. It is critical that this steam is of a high quality to ensure effective and continuous operation of the process.

### Features and Benefits
- 316L stainless steel filter cartridges
- Exceptionally high flow rates
- Available in culinary grade 1 micron
- High dirt holding capacity
- JUMBO filter configuration ensures maximum utilization of pipework capacity

### Which Filter for Which Application?

#### Process Steam
- Direct from boiler
- No direct contact with product being manufactured

#### Applications
- General heating
- Steam jackets
- Bio waste kill systems

#### Cartridges
- Required if steam is used to sterile liquid and gas cartridge filters

- **Sintered 25 µm**
  - Selection Criteria: For relatively low flow rates
- **Plated 5 µm**
  - Selection Criteria: High flow rate and dirt holding capacity

#### Culinary Steam (3A Standard 609-03)
- 95% retention of >2 micron particles in the liquid phase
- Manufactured from 300 series stainless steel
- Any additives to the boiler feed should conform to CFR Title 21, Chapter 1, Part 172, Section 172.350

#### Applications
- Used in direct contact with food
- Direct contact with food processing equipment and HVAC systems

#### Cartridges
- Selection dependent on flow parameters

- **Sintered 1 µm**
  - Selection Criteria: For relatively low flow rates
- **Plated 1 µm**
  - Selection Criteria: Used to maximize steam capacity of pipe
- **JUMBO Filters**
  - Selection Criteria: Highest available capacity

#### Clean Steam (HTM 2031:1997)*
- Condensate to WFI standards

#### Applications
- Pharmaceutical products
- Pharmaceutical plant HVAC systems

#### Cartridges
- For removal of magnetic particles generated from stainless steel pipes due to corrosive purity of steam

- **HIGH FLOW TETPOR II**
  - Selection Criteria: PTFE membrane, 100% removal of magnetic particles generated from stainless steel pipes
- **Culinary 1µm**
  - Selection Criteria: To conform to HTM 2031 Point of Use filter rated at <5 µm

* HTM: Hospital Technical Memorandum
Specifications - PLEATED

Materials of Construction
- Media: 316L Stainless Steel
- Inner Support Core: 316L Stainless Steel
- End Caps: 316L Stainless Steel
- O-rings/foam: EPDM (standard)
- Silicone and Viton (system available)

Recommended Operating Conditions
- Maximum differential pressure in direction of flow (in to outside) is 10 barg (145.03 psig).
- The maximum recommended continuous operating temperature range is -75 °C (-103 °F) to +200 °C (392 °F).

Housing Materials of Construction
- Material: 316L Stainless Steel
- Surface Finish: Electropolished Ra 0.8
- Single Internal: Mechanical Polish (Commercial Bright)
- Jumbo Internal: Upstream - Bleedblot
- Vent / Drain: Bleedblot
- Seal Material: EPDM Aquapor Seal

Housing Design Pressure and Temperature
- Single: 16 barg (232 psig)
- Jumbo: 25.0 µm (1.61 ft²)

Effective Filtration Area (EFA)
- 10¨ (250 mm) 0.15 m² (1.61 ft²)

To use the table above, the steam flow rates must be at 1 barg (14.50 psig). For system flows at different line pressures, divide the system flow by the correction factor below to find the equivalent steam flow at 1 barg (14.50 psig).

Correction Factors

<table>
<thead>
<tr>
<th>Steam Pressure Correction Factor</th>
<th>0.5</th>
<th>1.0</th>
<th>1.5</th>
<th>2.0</th>
<th>2.5</th>
<th>3.0</th>
<th>3.5</th>
<th>4.0</th>
<th>4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/100 mbar to 10 mbar / sec</td>
<td>1.0</td>
<td>2.0</td>
<td>3.0</td>
<td>4.0</td>
<td>5.0</td>
<td>6.0</td>
<td>7.0</td>
<td>8.0</td>
<td>9.0</td>
</tr>
<tr>
<td>160 21 45 90 135 180 225 270 315</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table showing the relative system size difference between pleated cartridges right and sintered cartridges right.

Specifications - SINTERED

Materials of Construction
- Media: Sintered Stainless Steel (316L)
- End Caps: 316L Stainless Steel
- Standard o-rings/foam: EPDM (system available)
- Silicone and Viton (system available)

Recommended Operating Conditions
- Maximum differential pressure in direction of flow (outside to in) is 10 barg (145.03 psig).
- The maximum recommended continuous operating temperature range is -75 °C (-103 °F) to +200 °C (392 °F). Non-tempered rings depend on component compound.

Housing Materials of Construction
- Material: 316L Stainless Steel
- End Caps: Stainless Steel (316L)
- Surface Finish: Electropolished Ra 0.8
- Mechanical Polish (Commercial Bright)
- Internal: 1/4” BSPF Female Thread
- Vent / Drain: 1/4” BSPP Female Thread (Supplied with Plug)
- Seal Material: EPDM Aquapor Seal

Housing Design Pressure and Temperature
- 16 barg (232 psig) @ 200 °C (392 °F)

Ordering Information

SINTERED

ZCSS

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Nominal Micron Rating (Steam)</th>
<th>Code</th>
<th>Code (Endcap)</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>005</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>010</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>015</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>020</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>025</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>030</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>035</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>040</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>045</td>
<td>5.0 µm (Culinary)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
</tbody>
</table>

PLEATED

ZCHS

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Nominal Micron Rating (Steam)</th>
<th>Code</th>
<th>Code (Endcap)</th>
</tr>
</thead>
<tbody>
<tr>
<td>005</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>010</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>015</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>020</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>025</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>030</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>035</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>040</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>045</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
</tbody>
</table>

Retrofit Cartridge

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Nominal Micron Rating (Steam)</th>
<th>Code</th>
<th>Code (Endcap)</th>
</tr>
</thead>
<tbody>
<tr>
<td>005</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>010</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>015</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>020</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>025</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>030</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>035</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>040</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
<tr>
<td>045</td>
<td>25 µm (Standard)</td>
<td>120</td>
<td>D</td>
<td>DF / 422 Stainless</td>
</tr>
</tbody>
</table>

Parker domeck hunter has a continuous policy of product development and although the Company reserves the right to make changes, it is not bound to do so and is informed of any alterations. This publication is for general information only and customers are requested to contact Parker domeck hunter for specific information.
Liquid filters

Filtration of liquids

Covering a wide range of process applications, Parker domnick hunter manufacture a range of filters that exceed industry requirements, providing high flow rates and long life in often demanding environments. With the ability to withstand aggressive chemicals and high temperature operations, Parker domnick hunter has a liquid filter that will match your requirements.

As an industry focussed manufacturer, Parker domnick hunter understand that every process or application can be different, which is why we have a Sustaining Engineering Group whose purpose is to tailor our product range to meet your exacting needs, making our filters truly fit for purpose.

Filters include:

- Polypropylene (PP)
- Glass microfibre (GF)
- Polyethersulphone (PES)
- Polytetrafluoroethylene (PTFE)

PEPLYN filters from Parker domnick hunter are used for clarification and prefiltration in a wide range of applications. The polypropylene construction makes them the ideal choice for aggressive and viscous chemicals and solvents.
PROSPUN Filter Cartridges

- Liquid filters
- Polypropylene

Performance Characteristics

- Range of end cap adapters
- High dirt holding capacity
- Ideal for primary stage filtration
- Nominal retention efficiency for general clarification duties

PROSPUN T offers consistent retention characteristics and a high level of security that is enhanced by the option to incorporate plug-in O-ring seal adapters on the cartridge. The service life of PROSPUN T is maximized through the use of closely controlled density and diameter fibre technology.

- High dirt holding capacity
- End cap adapters and seals
- >90% efficiency at given rating

PROSPUN A - Closely controlled fibre diameter and density in a multiple layered construction serve to maximize service life of PROSPUN A whilst delivering absolute particle retention.

- High dirt holding capacity
- Range of end cap adapters, seals and additional support for backwash applications

Materials of Construction
- Filtration media: Polypropylene
- End caps: Polypropylene
- Seals: As Required

Food and Biological Safety

Materials conform to the relevant requirements of 21 CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 60 °C (140 °F) continuous operating and temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Max. Forward dP (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>40</td>
<td>200</td>
</tr>
<tr>
<td>60</td>
<td>250</td>
</tr>
<tr>
<td>80</td>
<td>300</td>
</tr>
<tr>
<td>100</td>
<td>350</td>
</tr>
<tr>
<td>121</td>
<td>400</td>
</tr>
</tbody>
</table>

Cleaning and Sterilization

PROSPUN cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (249.8 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

Recommended Rinse Volume

Prior to use - 10 litres per 10¨ (250 mm) filter cartridge.

Ordering Information

- PROSPUN T
- PROSPUN A

Recommended Rinse Volume

Optional reinforcing cage available for PROSPUN A, contact Parker domnick hunter for details.
PROPLEAT PP Filter Cartridges

Features and Benefits
- Continuous length rigid sleeve and core provide high strength during normal and reverse flow operations
- Retention ratings to suit a wide range of clarification applications
- Excellent chemical compatibility
- Elevated temperature option available for hot water sanitization and steam sterilization

Performance Characteristics

**Flow Characteristics**

- **Differential Pressure (mbar)**
  - 0
  - 10
  - 20
  - 30
  - 40
  - 50
  - 60
  - 70
  - 80
  - 90
  - 100

- **Flow (L/min) for liquid @ 20 °C and 1 cp**
  - M
  - N
  - H
  - U
  - G
  - P
  - E
  - L

**Differential Pressure (psi)**

- **Temperature Max. Forward dP**
  - 40 (104 °C)
  - 60 (140 °C)
  - 80 (176 °C)
  - 100 (212 °C)

**Effective Filtration Area (EFA)**

- 40¨ (1000 mm)
- 30¨ (750 mm)
- 20¨ (500 mm)
- 10¨ (250 mm)

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

**Recommended Box Quantities**

- Minimum Box Quantities: All cartridges supplied in boxes of 6.

**Minimum Box Quantities**

- **Specifications**
  - **Materials of Construction**
    - Filtration Media: Polypropylene
    - Upstream Support: Polypropylene
    - Downstream Support: Polypropylene
    - Inner Support Core: Polypropylene
    - Outer Protection Cage: Polypropylene
    - End Caps: Polypropylene
  - **End Cap Insert (if specified):**
    - 316L Stainless Steel*

**Cleaning and Sterilization**

- PROPLEAT PP cartridges can be repeatedly in situ steam sterilized or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.
- For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

**Ordering Information**

- **Code**
  - PRPP
  - N
  - L

- **Enforcement Rating**
  - G
  - F
  - H
  - K
  - L
  - M
  - N
  - P
  - U

- **Length (Nominal)**
  - 10¨ (250 mm)
  - 20¨ (508 mm)
  - 30¨ (762 mm)
  - 40¨ (1016 mm)

- **Endcap (10¨)**
  - 1.0¨ (28 mm)
  - 2.5¨ (64 mm) B,L Style
  - 2.8¨ (70 mm) C,D,E,R Style

- **Nominal Inside Diameter:**
  - 1.1¨ (28 mm)

- **Nominal Outside Diameter:**
  - 2.8¨ (70 mm)

- **Option**
  - Hot Water / Steam Option

- **Minimum Box Quantities**
  - All cartridges supplied in boxes of 6.

- **Dimensions**
  - **Nominal Outside Diameter:**
    - 2.8¨ (70 mm) D,E,R Style
    - 2.5¨ (64 mm) B,L Style
  - **Nominal Inside Diameter:**
    - 1.1¨ (28 mm)

- **Standard Lengths (DOE seal to seal) – mm (inch)**

**Food and Biological Safety**


**Recommended Operating Conditions**

- Up to 60 °C (160 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

  - **Temperature**
    - 40 (104 °C)
    - 60 (140 °C)
    - 80 (176 °C)
    - 100 (212 °C)
  - **Max. Forward dP**
    - 0.3
    - 4.0

- **Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

**Recommend Retention Characteristics**

- The retention characteristics of PROPLEAT PP have been determined by a single-pass technique using suspension of ISO 12103 Part 1 A2 Fine and As coarse test dust in water.

- **Flow (L/min) for liquid @ 20 °C and 1 cp**
  - M
  - N
  - H
  - U
  - G
  - P
  - E
  - L

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

**Effective Filtration Area (EFA)**

- 40¨ (1000 mm)
- 30¨ (750 mm)
- 20¨ (508 mm)
- 10¨ (250 mm)

- **Performance Characteristics**

**Continuous length rigid sleeve and core** provide high strength during normal and reverse flow operations.

**Retention ratings to suit a wide range of clarification applications**

**Excellent chemical compatibility**

**Elevated temperature option available for hot water sanitization and steam sterilization**

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

Our Process Filtration Sales Department for detailed information and advice on a product's suitability for specific applications. All products are sold subject to the company's Standard Conditions of Sale.

Parker domnick hunter has a continuous policy of product development and although the company reserves the right to alter specifications, we will endeavor to inform you of any alterations. This publication is for general information only and customers are requested to contact the Technical Support Group through your usual Parker domnick hunter contact.

**For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.**

**Contact the Technical Support Group through your usual Parker domnick hunter contact.**

*Not available in B & L endcap variants

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.

For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker domnick hunter contact.

**Recommended Rinse Volume**

Prior to use - 10 litres per 10¨ (250 mm) cartridge.
PROSTEEL A filter cartridges provide the ideal solution in applications where traditional polymer based filters are limited by compatibility, exposure time or a combination of high temperature and viscosity.

They are ideally suited to filtration of the solvents used in a wide range of process industries from pharmaceuticals, food & beverage and electronics through to paints and inks. The Parker domnick hunter range of stainless steel filters provides a solution to compatibility issues while maintaining absolute retention ratings down to 3.0 micron. 316L stainless steel fibres are sintered together into a graded pore structure.

The efficiency of the media increases through the filtration bed resulting in excellent dirt holding capacity while maintaining high relative flow rates compared to alternative technology such as sintered powder tubes and metal membranes. The filters are available in two formats both using the same filtration media relative flow rates compared to alternative technology such as sintered powder tubes and metal membranes. The filters are available in two formats both using the same filtration media including a pleated construction and one in a cylindrical wrap. This allows a cost-effective solution depending on flow rate and dirt holding requirements.

**Features and Benefits**

- Absolute rated stainless steel liquid filters
- Ideal for aggressive solvents, viscous and hot solutions
- Removal rating 3, 5 and 10 microns
- Compatible with most solvents
- Graded density metal fibre technology provides exceptional dirt holding capacity while retaining excellent flow rates
- Available in two formats; pleated and wrapped, for complete system optimization

**Performance Characteristics**

- Liquid filters
- 316L stainless steel

**Materials of Construction**

- Filtration Media: 316L Stainless Steel
- Inner Support Core: 316L Stainless Steel
- Outer Protection Cage: 316L Stainless Steel
- End Caps: Standard o-rings/Epdm
- Assembly Method: Tig Welded

**Recommended Operating Conditions**

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Maximum Flow Rate (L/min)</th>
<th>Maximum Pressure Drop (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>1</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>2</td>
<td>140</td>
<td>175</td>
</tr>
<tr>
<td>3</td>
<td>160</td>
<td>200</td>
</tr>
</tbody>
</table>

Note: The maximum operating temperature is dependent on o-ring selection and properties of the liquid being filtered.

**Effective Filtration Area (EFA)**

- ZC/CF Cylindrical Wrap
  - 10" (250 mm) 0.05 m² (0.53 ft²)
- ZCMF Pleated
  - 10" (250 mm) 0.13 m² (1.39 ft²)

**Retention Characteristics**

The retention characteristics of the stainless steel filters are determined using ACFTD in accordance with the single pass test ASTM 795-88.

<table>
<thead>
<tr>
<th>Micron Rating</th>
<th>% Retention Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td>98</td>
</tr>
<tr>
<td>5.0</td>
<td>95</td>
</tr>
<tr>
<td>10.0</td>
<td>92</td>
</tr>
</tbody>
</table>

**Dirt Holding Capacity**

The table below gives an indication of dirt holding capacity in grams when tested in accordance with the Multi pass method ISO 16892.

<table>
<thead>
<tr>
<th>Type</th>
<th>Micron Rating</th>
<th>% Retention Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCMF</td>
<td>3.0</td>
<td>98</td>
</tr>
<tr>
<td>ZCMF</td>
<td>5.0</td>
<td>95</td>
</tr>
<tr>
<td>ZCMF</td>
<td>10.0</td>
<td>92</td>
</tr>
</tbody>
</table>

**Ordering Information**

- Code: A
  - Type: Pleated
  - Size: 10" (250 mm) Cartridge
- Code: B
  - Type: Wrapped
  - Size: 10" (250 mm) Cartridge

**Specifications**

- Effective Filtration Area (EFA)
- Temperature Forward DP Reverse DP
- Operating Temperature Forward DP Reverse DP
- Maximum Flow Rate Forward DP Reverse DP
- Maximum Pressure Drop Forward DP Reverse DP

**Ordering Information**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCMF</td>
<td>Pleated</td>
<td>6</td>
<td>2.5</td>
<td>3.0</td>
<td>6.5</td>
<td>316L</td>
<td>Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>ZCMF</td>
<td>Pleated</td>
<td>7</td>
<td>2.5</td>
<td>5.0</td>
<td>8.5</td>
<td>316L</td>
<td>Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>ZCMF</td>
<td>Pleated</td>
<td>8</td>
<td>2.5</td>
<td>10.0</td>
<td>17.0</td>
<td>316L</td>
<td>Stainless Steel</td>
<td></td>
</tr>
<tr>
<td>ZCMF</td>
<td>Pleated</td>
<td>9</td>
<td>2.5</td>
<td>12.0</td>
<td>23.0</td>
<td>316L</td>
<td>Stainless Steel</td>
<td></td>
</tr>
</tbody>
</table>

**Materials of Construction**

- Filtration Media: 316L Stainless Steel
- Outer Protection Cage: 316L Stainless Steel
- End Caps: Standard o-rings/Epdm
- Assembly Method: Tig Welded

**Materials of Construction**

- Filtration Media: 316L Stainless Steel
- Outer Protection Cage: 316L Stainless Steel
- End Caps: Standard o-rings/Epdm
- Assembly Method: Tig Welded

**Filtration Media**: 316L Stainless Steel

**Outer Protection Cage**: 316L Stainless Steel

**End Caps**: Standard o-rings/Epdm

**Assembly Method**: Tig Welded

**Note**: All o-rings are manufactured from FDA approved compounds.
PROSTEEL N filters provide the ideal solution in applications where traditional polymer based filters are limited by compatibility, exposure times or a combination of high temperature and viscosity.

They are ideally suited to filtration of solvents used in a wide range of processes in pharmaceuticals, food & beverage and electronics through to paints and inks.

The Parker domnick hunter range of stainless steel filters provides the solution to compatibility issues while maintaining excellent flow rates for clarifying duties. The filters are available in two formats both using the same filtration media but one manufactured in a pleated construction and one in a cylindrical wrap. This allows a cost-effective selection depending on flow rate and dirt holding requirements.

Features and Benefits

- Nominally rated stainless steel liquid filters
- Ideal for aggressive solvents, viscous and hot solutions
- Removal rating from 5 to 100 microns
- Compatible with most solvents
- Stainless steel mesh ensures excellent regeneration characteristics for extended service life
- Available in two formats, pleated and wrapped, for complete system optimisation

Performance Characteristics

- Pleated cartridge flow rates
  - 10" (250 mm) Cartridge
- Cylindrically wrapped cartridge flow rates
  - 10" (250 mm) Cartridge

Specifications

Materials of Construction
- Filtration Media: 316L Stainless Steel
- Inner Support Core: 316L Stainless Steel
- Outer Protection Cage: 316L Stainless Steel
- End Caps: Stainless Steel
- Standard o-rings/gaskets: EPDM
- Assembly Method: TIG Welded

Recommended Operating Conditions

Effective Filtration Area (EFA)
- ZCCM Cylindrical Wrap
  - 10" (250 mm) 0.05 m² (0.53 ft²)
- ZCPM Pleated
  - 10" (250 mm) 0.13 m² (1.39 ft²)

Ordering Information

Example Code: ZC 100 010 0 B
- Code 1: Type
- Code 2: Length (Nominal)
- Code 3: Micron
- Code 4: Endcaps (10"
- Code 5: O-rings

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make changes, this publication gives general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications.
PEPLYN NE Filter Cartridges

• Liquid filters  
• Polypropylene

PEPLYN NE liquid filter cartridges are designed for use in the microelectronics industry for filtration of water, process chemicals, photochemicals, solvents and etchants.

PEPLYN NE filters resist hydrolysis in aggressive solutions which would otherwise result in the contamination of the process fluid. The filter media has graded fibre diameter and density, resulting in progressively finer retention through the depth of the media. This graded density depth mechanism, combined with optimized pleated pack configuration and high surface area, affords high flow capability and exceptional dirt holding capacity when compared with competitive pleated cartridges and meltblown depth filters. PEPLYN NE provides consistent retention and stability over a wide range of operating conditions.

Features and Benefits
• Nominal micron ratings ranging from 0.1 to 50 micron
• Graded density for excellent particle retention
• Pleated media for high flow rates and long life
• All polypropylene construction
• Wide range of end caps to provide retrofitting of existing systems

Performance Characteristics

For use in a given flow rate and a 10¨ size differential pressure by 2

Ordering Information

Cartridges

PEPLYN NE Filter Cartridges

Specifications

Materials of Construction
Filtration Media: Polypropylene
Upstream Support: Polypropylene
Downstream Support: Polypropylene
Inner Support Core: Polypropylene
Outer Protection Cage: Polypropylene
End Caps: Polypropylene
End Cap Inserts (if applicable): 316L Stainless Steel*

Recommended Operating Conditions
Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Max. Forward DF</th>
<th>psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°</td>
<td>118</td>
<td>150</td>
</tr>
<tr>
<td>48°</td>
<td>90</td>
<td>175</td>
</tr>
<tr>
<td>98°</td>
<td>60</td>
<td>222</td>
</tr>
<tr>
<td>148°</td>
<td>40</td>
<td>276</td>
</tr>
<tr>
<td>198°</td>
<td>20</td>
<td>339</td>
</tr>
</tbody>
</table>

Effective Filtration Area (EFA)
10¨ (250 mm) Up to 0.79 m² (8.50 ft²)

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Capsules can be operated at a temperature of 60 °C (140 °F) at line pressures up to 5.0 bar (72.5 psi) for liquids.

Materials of Construction
- Code
- Length (Nominal)
- Micron
- Endcap (10¨)
- Endcap (Demi)
- O-rings
- Capsules

Effective Filtration Area (EFA)

For K size for a given flow rate multiply 10¨ size differential pressure by 2

For A size for a given flow rate divide B size differential pressure by 2

For E size for a given flow rate multiply B size differential pressure by 2

For Z size for a given flow rate multiply 10¨ size differential pressure by 2

For Z size for a given flow rate multiply 10¨ size differential pressure by 2

Note: PEPLYN is a registered trademark of Parker domnick hunter

All polypropylene
- Liquid filters
- Polypropylene

Pleated polypropylene
- Liquid filters
- Polypropylene

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.

Pleated media for high flow rates and long life

Graded density for stability over a wide range of operating conditions.
PEPLYN PLUS liquid filter cartridges are utilized for the clarification and prefiltration of a wide range of products in the pharmaceutical, beverage, ultrapure water and fine chemical industries.

The all polypropylene construction ensures a broad range of chemical compatibility making PEPLYN PLUS cartridges suitable for the pharmaceutical, beverage, ultrapure water and fine chemical industries.

Features and Benefits

- Wide range of end caps to provide retrofitting of existing systems
- All polypropylene construction
- Graded density for excellent particle retention

PEPLYN PLUS cartridges exceptional lifetime performance. This combined with optimized media plating density gives particulate retention through the depth of the media.

Extensive research has resulted in filter media with aggressive solutions which would result in the contamination of process fluid. The all polypropylene construction ensures a broad range of chemical compatibility making PEPLYN PLUS cartridges suitable for the pharmaceutical, beverage, ultrapure water and fine chemical industries.

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Temperature: 135 °C (275 °F) with maximum 1.4% reduction in effective filtration area.
- Pressure: 2.5 barg (36.2 psig) for temperatures up to 100 °C (212 °F).
- Temperature: 100 °C (212 °F) with maximum 1.4% reduction in effective filtration area.
- Pressure: 1.4 barg (20.4 psig) for temperatures up to 100 °C (212 °F).

Ordering Information

Cartridges

PEPLYN PLUS Filter Cartridges

Specifications

Materials of Construction

- Filtration Media: Polypropylene
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: Polypropylene
- End Caps: Polypropylene
- End Cap Insert (if required): 316L Stainless Steel*
- Standard o-rings/gaskets: Silicone / EPDM
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- Filling Belt: Polycarbonate
- Syringe Filter Body: Polypropylene

Chemical Compatibility

PEPLYN PLUS cartridges are utilized for the pharmaceutical, beverage, ultrapure water and fine chemical industries.

Capsules may be operated up to a temperature of 180 °C (105 °F) at line pressures up to 5.0 barg (72.5 psig) for liquids.

Effective Filtration Area (EFA)

Up to 0.79 m² (8.50 ft²)

Pharmaceutical Validation

A full validation guide is available upon request from Laboratory Services Group (LSG).

Performance Characteristics

PEPLYN PLUS Filter Cartridges

Flow vs. Differential Pressure

Flow Rate (l/min) vs. Flow Rate at 20 °C and 1% TDF

For use in a given flow rate multiply 1% TDF differential pressure by 2

Temperature vs. Max. Forward DF

Temperature vs. Max. Forward DF

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Temperature: 135 °C (275 °F) with maximum 1.4% reduction in effective filtration area.
- Pressure: 2.5 barg (36.2 psig) for temperatures up to 100 °C (212 °F).
- Temperature: 100 °C (212 °F) with maximum 1.4% reduction in effective filtration area.
- Pressure: 1.4 barg (20.4 psig) for temperatures up to 100 °C (212 °F).
PREPOR GF liquid filter cartridges are utilized for the clarification, stabilization and bioburden reduction of aqueous solutions, media and biologics.

These filters have a high dirt holding capacity and exhibit exceptional flow performance compared to polypropylene filters. The hydrophobic nature of PREPOR GF filter cartridges also makes them more suitable for gravity fed systems.

PREPOR GF utilizes a glass microfibre filter medium encased within an upstream polypropylene mesh and a downstream non-woven filter support material. PREPOR GF filter cartridges are dimensionally stable with no media migration. The pleat non-woven filter support material. PREPOR GF filter cartridges makes them more suitable for gravity fed systems.

Features and Benefits
- Micron rating range from 0.6 to 10 micron
- High capacity filter media giving microbial retention
- Wide range of end caps to allow retrofitting of existing systems
- High filtration area
- High capacity filter media giving microbial retention
- Heat bonded construction

Performance Characteristics
- Micron rating range from 0.6 to 10 micron
- Wide range of end caps to allow retrofitting of existing systems
- High filtration area
- High capacity filter media giving microbial retention
- Heat bonded construction

Food and Biological Safety
Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions
Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Capsules may be operated up to a temperature of 100 °C (212 °F) at line pressures up to 5.0 barg (72.5 psi) for liquids.
- Cleaning and Sterilization: PREPOR GF cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (249 °F). They can be sanitized with hot water at up to 95 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 121 °C (249 °F).

Specifications
- Materials of Construction:
  - Filtration Membrane: Glass Microfibre
  - Upstream Support: Polypropylene
  - Downstream Support: Polypropylene
  - Inner Core Support: Polypropylene
  - End Caps: Polypropylene
  - End Cap Insert (if applicable): 316L Stainless Steel*
- Recommended CIP Conditions:
  - Up to 70 °C (158 °F) continuous operating
  - For E size for a given flow rate multiply B size differential pressure by 2
- For CIP to the following limits:
  -TEMP`: `T°`C °F (bar) (psi)
  - 0.6 0.5 0.4 0.3 0.2 0.1
  - 0.60 72.5 65 58.5 52 45 38.5
  - 0.80 76 68.5 61 54 47
  - 1.0 80 72.5 66 59 52.5
  - 1.2 84 77 70.5 64 57.5
  - 1.5 90 82.5 76 69 62.5
  - 2.0 96 90 83.5 77 70.5
  - 2.5 102 97.5 91 84.5 78.5
  - 3.0 108 105 98.5 92 86.5
  - 4.0 116 112 106 100 94
  - 5.0 120 115 110
- Recommended Operating Condition:
  - Up to 70 °C (158 °F) continuous operating
  - For a given flow rate multiply B size differential pressure by 2
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- Filling Bell: Polycarbonate
- Inner Support Core: Polypropylene
- End Caps: Polypropylene
- End Cap Insert (if applicable): 316L Stainless Steel*
- Specifications
  - Dimensions:
    - ZCGF - 7.9¨ (200 mm)
    - ZEGF - 5.9¨ (150 mm)
    - ZGF - 4.4¨ (113 mm)
    - A 7.9¨ (200 mm)
    - B 5.5¨ (140 mm)
    - E 4.4¨ (113 mm)
    - A* 5¨ (125 mm)
    - B* 2.5¨ (65 mm)
    - E* 40¨ (1000 mm)
    - 1 10¨ (250 mm)
    - 2 40¨ (1000 mm)
    - 3 30¨ (750 mm)
    - 4 40¨ (1000 mm)
    - 5 50¨ (1250 mm)
    - 6 125¨ (3125 mm)
    - Filling Bell: Polycarbonate
    - O-rings/gaskets: Silicone / EPDM
    - Filtration Membrane: Glass Microfibre
    - Capsule Body: Polypropylene
    - Capsule Vent Seals: Silicone
    - Filling Bell: Polycarbonate
    - Inner Support Core: Polypropylene
    - End Caps: Polypropylene
    - End Cap Insert (if applicable): 316L Stainless Steel*

- Recommended CIP Conditions:
  - Up to 70 °C (158 °F) continuous operating
  - For a given flow rate multiply B size differential pressure by 2
- Recommended Operating Condition:
  - Up to 70 °C (158 °F) continuous operating

- Capsules can be repeatedly autoclaved up to 121 °C (249 °F).

- Recommended CIP Conditions:
  - Up to 70 °C (158 °F) continuous operating
  - For a given flow rate multiply B size differential pressure by 2
- Recommended Operating Condition:
  - Up to 70 °C (158 °F) continuous operating

- Capsules may be operated up to a temperature of 100 °C (212 °F) at line pressures up to 5.0 barg (72.5 psi) for liquids.
- Cleaning and Sterilization: PREPOR GF cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (249 °F). They can be sanitized with hot water at up to 95 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 121 °C (249 °F).
PREPOR GP Filter Cartridges

- Liquid filters
- Glass microfibre / polypropylene

PREPOR GP is a new prefilter that combines the strength of polypropylene with the microbial retention of glass fibre for demanding applications such as long term exposure to steam, high differential pressures or aggressive chemicals.

The combined media will also provide a significant microbial reduction that makes PREPOR GP equally suitable for biofouling reductions in pharmaceutical liquids as well as offering excellent protection to sterilizing grade membrane cartridges. By using graded density media, PREPOR GP has a higher voids volume (95%) and greater dirt holding capacity than surface filtration membranes which means that filtration costs are reduced without affecting the product quality. PREPOR GP can also provide excellent prefiltration to membrane filters in proteinaceous and high contamination applications by extending the life of the membrane cartridge and hence reducing filtration costs.

Features and Benefits
- Combined media for microbial retention and mechanical strength
- Graded density media gives increased dirt holding capacity
- Suitable for biofouling reduction and fine prefiltration
- Pleated construction with rigid core and sleeve

Performance Characteristics

![Flow vs Pressure Graph](image)

Flow (gpm (US)) for liquid @ 20 °C and 1 cp

10" size (250 mm) filters

B size (125 mm) filters

Ordering Information

**Capsules**

- ZCGP
- ZEGP

**Cartridges**

- ZCGP
- ZEGP

**Code**

- ZCGP: 50, 100, 150, 200, 300, 500, 800
- ZEGP: 100, 200, 300, 500, 800

**Length (Nominal)**

- ZCGP: 2.5, 5, 10, 15, 20
- ZEGP: 1.5, 2.0, 3.0, 4.0

**Micron Size**

- ZCGP: 0.5, 1.0, 1.5
- ZEGP: 0.5, 1.0, 1.5

**Endcaps**

- ZCGP: A, B, N, M, P, T
- ZEGP: A, B, N, M, P, T

**Inlet Connection**

- ZCGP: NPT Male, Hose Barb, Tri-Clamp
- ZEGP: NPT Male, Hose Barb

**Outlet Connection**

- ZCGP: NPT Female, Hose Barb
- ZEGP: NPT Female, Hose Barb

**End Cap Insert**

- ZCGP: 316L Stainless Steel *
- ZEGP: PTFE Encapsulated Silicone

**Materials of Construction**

- Glass Microfibre / Polypropylene

**Effective Filtration Area (EFA)**

- 10" (250 mm)

Cleaning and Sterilization

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 95 °C (199 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Maximum differential pressure (mbar)
- Maximum flow (L/min)

**Temperature**

- 60 °C (140 °F)
- 80 °C (176 °F)
- 90 °C (194 °F)
- 100 °C (212 °F)
- 121 °C (250 °F)

**Flow (L/min)**

- 0.5 µm: 3.0 µm: 2.0 µm: 1.0 µm: 0.5 µm

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Maximum differential pressure (mbar)
- Maximum flow (L/min)

Effective Filtration Area (EFA)

- 10" (250 mm)

Cleaning and Sterilization

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 95 °C (199 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Maximum differential pressure (mbar)
- Maximum flow (L/min)

Effective Filtration Area (EFA)

- 10" (250 mm)

Cleaning and Sterilization

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 95 °C (199 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Maximum differential pressure (mbar)
- Maximum flow (L/min)

Effective Filtration Area (EFA)

- 10" (250 mm)

Cleaning and Sterilization

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 95 °C (199 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Maximum differential pressure (mbar)
- Maximum flow (L/min)

Effective Filtration Area (EFA)

- 10" (250 mm)

Cleaning and Sterilization

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 95 °C (199 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Maximum differential pressure (mbar)
- Maximum flow (L/min)

Effective Filtration Area (EFA)

- 10" (250 mm)

Cleaning and Sterilization

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 95 °C (199 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).
PREPOR PES is an innovative particulate grade membrane prefilted cartridge designed to work in harmony with final sterilizing filters, to guarantee the highest levels of performance and security.

PREPOR PES combines high flow rate characteristics with good microbial reduction and minimum product adsorption by using the latest hydrophilic polyethersulphone membrane technology.

PREPOR PES uses all polypropylene hardware to offer good technology.

Use in many pharmaceutical applications including terminal and chemical compatibility and low extractables and is suitable for PREPOR PES uses all polypropylene hardware to offer good technology.

by using the latest hydrophilic polyethersulphone membrane good microbial reduction and minimum product adsorption PREPOR PES combines high flow rate characteristics with and security.

sterilizing filters, to guarantee the highest levels of performance and security.

• Micron rating from 0.04 to 0.8 micron

• Versatile particulate grade membrane filter for bioburden reduction and prefiltration duties

• Available in a comprehensive range of end cap configurations for retrofitting existing applications

Features and Benefits

Performance Characteristics

- High filtration area with asymmetrical membrane giving long life and high flow rates

- Available in a comprehensive range of end cap configurations for retrofitting existing applications

Materials of Construction

- Filtration Membrane: Polyethersulphone

- Upstream Support: Polypropylene

- Downstream Support: Polypropylene

- Inner Support Core: Polypropylene

- Outer Protection Cage: Polypropylene

- End Caps: Polypropylene

- End Cap Insert (if applicable): 316L Stainless Steel*

- Standard 3-rings/epoxyseals: Silicone / EPDM

- Capsule Body: Polypropylene

- Capsule Vent Seals: Silicone

- Filling Bed: Polypropylene

+ Prepor PES Filter Cartridges

Capsules can be repeatedly autoclaved up to 100 °C (212 °F) and are compatible with a wide range of chemicals. They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Effective Filtration Area (EFA) 10¨ (250 mm) Up to 0.69 m² (7.42 ft²)

Recommended Operating Conditions Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

To maximize the life of the cartridge, the differential pressure across the cartridge should not exceed 0.3 barg (4.35 psig) at 130 °C (266 °F).

The PREPOR PES product is rated for particulate retention, the performance of PREPOR PES products has been assessed to bacterial titre reduction using a challenge methodology based on the ASTM F838-05 methodology applied to sterilizing grade filters. Typical levels are given below:

Ordering Information

Cartridges

Capsules

To maximize the life of the cartridge, the differential pressure across the cartridge should not exceed 0.3 barg (4.35 psig) at 130 °C (266 °F).

RetentionPolicy

While the PREPOR PES product is rated for particulate retention, the performance of PREPOR PES products has been assessed to bacterial titre reduction using a challenge methodology based on the ASTM F838-05 methodology applied to sterilizing grade filters. Typical levels are given below:

Ordering Information

Cartridges

Capsules

Capsules may be operated up to a temperature of 60 °C (140 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids.

Effective Filtration Area (EFA) 10¨ (250 mm) Up to 0.69 m² (7.42 ft²)

Recommended Operating Conditions Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Prepor PES products has been assessed to bacterial titre reduction using a challenge methodology applied to sterilizing grade filters. Typical levels are given below:

Ordering Information

Cartridges

Capsules

To maximize the life of the cartridge, the differential pressure across the cartridge should not exceed 0.3 barg (4.35 psig) at 130 °C (266 °F).

RetentionPolicy

While the PREPOR PES product is rated for particulate retention, the performance of PREPOR PES products has been assessed to bacterial titre reduction using a challenge methodology based on the ASTM F838-05 methodology applied to sterilizing grade filters. Typical levels are given below:

Ordering Information

Cartridges

Capsules

To maximize the life of the cartridge, the differential pressure across the cartridge should not exceed 0.3 barg (4.35 psig) at 130 °C (266 °F).

RetentionPolicy

While the PREPOR PES product is rated for particulate retention, the performance of PREPOR PES products has been assessed to bacterial titre reduction using a challenge methodology based on the ASTM F838-05 methodology applied to sterilizing grade filters. Typical levels are given below:
**Performance Characteristics**

- Liquid filters
- polytetrafluoroethylene

**Features and Benefits**

- Sterile filtration of oxygen / oxygen enriched feeds in cell culture
- Exceptional resistance to solvents and oxidative environments
- Ideal for sterile venting on ozonated water systems
- Fully validated to ASTM F838-05 for sterilizing grade filters
- PTFE membrane
- Available in a wide range of micron ratings to suit all applications

**Materials of Construction**

- Filtration Membrane: Polytetrafluoroethylene
- Upstream Support: Polytetrafluoroethylene
- Downstream Support: Polytetrafluoroethylene
- Inner Support Core: PFA
- Outer Protection Cage: PFA
- End Caps: PFA

**Food and Biological Safety**


**Recommended Operating Conditions**

Up to 125 °C (257 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Temperature: Max. Forward dP
- Temperature Max. Forward dP
- Temperature Max. Forward dP
- Temperature Max. Forward dP
- Temperature Max. Forward dP

**Effective Filtration Area (EFA)**

10¨ (250 mm) Up to 0.32 m² / (3.44 ft²)
K Size (125 mm) Up to 0.32 m² / (3.44 ft²)

**Cleaning and Sterilization**

TETPOR PLUS filter cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 142 °C (287 °F) for a maximum of 30 cycles.

**Retention Characteristics**

TETPOR PLUS filter cartridges are validated by bacterial challenge testing with Bacillus subtilis and current ASTM F838-05 methodology (10⁷ organisms / cm² EFA minimum) with typical in-house challenge levels being 10⁸ organisms per 10¨ (250 mm) module.

**Ordering Information**

- Code / Length (Nominal)
- Code / Micron
- Code / Endcap (10¨)
- Code / Insert Option
- Code / Diameter
- Code / Material
- Code / Temperature
- Code / Endcap (20¨)
- Code / Diameter
- Code / Material
- Code / Temperature

**Integrity Test Data**

The following is the integrity test information for the micron ratings available within the TETPOR PLUS product range. Diffusional flow and bubble point values are given for cartridges wetted in 60:40 v/v IPA/Water solution.

**Pharmaceutical Validation**

A full validation guide is available upon request from Laboratory Services Group (LSG).
CARBOFLOW MX cartridges are offered in both high efficiency and general grades. They consist of bituminous coal sourced carbon, extruded together with an FDA listed thermoplastic binder, to produce an extremely porous yet rigid structure.

The result is a filter offering unsurpassed adsorptive capacity, up to 20 times that of traditional granular carbon or carbon impregnated filters, and high particle removal efficiency. The rigid structure of CARBOFLOW MX not only minimizes any possibility of channeling, bypass or fluidizing, but also the release of carbon fines during start up and operation. Such problems are common with more traditional carbon filters. CARBOFLOW MX is available in lengths up to 40¨ (1016 mm) together with end fittings to suit most industry standard housings.

Features and Benefits
- Available in lengths 5¨ to 60¨
- Ideal for chlorine and chloroform reduction
- Available in 2 grades
- FDA approved materials

Performance Characteristics

<table>
<thead>
<tr>
<th>Flow (L / min)</th>
<th>High Efficiency</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>0.3</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Recommended Changeout Differential Pressure
- 2 bar (29.00 psi)

Retention Characteristics

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>High Efficiency</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 mic</td>
<td>99.9%</td>
<td>98%</td>
</tr>
</tbody>
</table>

Chlorine Reduction
- **Based on an inlet concentration of 2 ppm chlorine.**

Applications
- Pre and post R.O. Filtration
- Domestic drinking water
- De-chlorination
- Process water
- Product rinse waters
- Plating solutions
- De-colourization

Ordering Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Flow Path</th>
<th>Flow Type</th>
<th>End Fitting</th>
<th>Seal Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>4.75¨ (124 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>DOE</td>
<td>EPDM</td>
</tr>
<tr>
<td>09</td>
<td>9.75¨ (247 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 226</td>
<td>EPDM</td>
</tr>
<tr>
<td>10</td>
<td>9.875¨ (251 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 222</td>
<td>EPDM</td>
</tr>
<tr>
<td>11</td>
<td>10¨ (254 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 222</td>
<td>EPDM</td>
</tr>
<tr>
<td>19</td>
<td>19.50¨ (500 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 226</td>
<td>EPDM</td>
</tr>
<tr>
<td>20</td>
<td>20¨ (508 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 226</td>
<td>EPDM</td>
</tr>
<tr>
<td>29</td>
<td>29.50¨ (750 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 226</td>
<td>EPDM</td>
</tr>
<tr>
<td>30</td>
<td>30¨ (762 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 226</td>
<td>EPDM</td>
</tr>
<tr>
<td>39</td>
<td>39.25¨ (1000 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 226</td>
<td>EPDM</td>
</tr>
<tr>
<td>40</td>
<td>40¨ (1016 mm)</td>
<td>C</td>
<td>Carbon</td>
<td>Flat / 226</td>
<td>EPDM</td>
</tr>
</tbody>
</table>

Materials of Construction
- Carbon:
  - Bituminous Coal
  - Steam Activated, Acid Wash
- Carbon Type:
  - General Grade
- Weight (per 10¨):
  - 350 g
- End Caps:
  - Polypropylene

Food and Biological Safety

Maximum Operating Temperature
- 40 ºC (158 ºF)

Maximum Differential Pressure
- 7 bar (101.52 psi)

Specifications

<table>
<thead>
<tr>
<th>Materials of Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon: Bituminous Coal</td>
</tr>
<tr>
<td>Carbon Type: Steam Activated, Acid Wash</td>
</tr>
<tr>
<td>Weight (per 10¨): 350 g</td>
</tr>
<tr>
<td>End Caps: Polypropylene</td>
</tr>
</tbody>
</table>

Performance Exhibited
- 10¨ Size (250 mm) Cartridge
- Available in lengths 5¨ to 40¨
- Ideal for chlorine and chloroform reduction
- Available in 2 grades
- FDA approved materials

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make technical changes, the user is strongly advised to contact the Parker domnick hunter Process Filtration Sales Department for the latest information or to confirm the technical specifications to which the products are sold. The details contained in this publication are for general information only and customers are requested to contact our Process Filtration Sales Department for full details and advice on a product’s suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Contact Information

+44 (0)191 4105121
dhprocess@parker.com
www.parker.com/processfiltration
Beverage filters

Beverage liquids

Parker domnick hunter has supplied the beverage industry with high quality filter products since 1963. During this time the company has worked hand in hand with leading beverage manufacturers to develop an industry specific range of filter products.

Experience in local markets, supported by a dedicated team of Engineers and Scientists allows Parker domnick hunter to maximize your manufacturing process and support your future development plans.

PREPOR - Prefiltration liquid filters from Parker domnick hunter provide high efficiency removal of spoilage organisms and yeast removal, providing economic stabilization of your product.

BEVPOR - PES membrane range of filters from Parker domnick hunter have been specifically designed for the beverage industry to provide microbial stabilization that extends shelf-life, while maintaining colour and flavour of the final product.
PEPLYN HD Filter Cartridges

**Features and Benefits**
- Raw water filtration for the protection of downstream process such as RO membranes
- Removal of carbon and resin fines downstream from treatment processes
- Trap filtration removing precoat and body fed particles that have been released from powder filters

**Performance Characteristics**

**Specifications**

**Materials of Construction**

- **Filtration Media**: Polypropylene
- **Prefilter Media**: Polypropylene
- **Upstream Support**: Polypropylene
- **Downstream Support**: Polypropylene
- **Inner Support Core**: Polypropylene
- **Outer Protection Cage**: Polypropylene
- **End Caps**: Polypropylene
- **End Cap Insert (if applicable)**: 316L Stainless Steel*

**Food and Biological Safety**

Materials conform to the relevant requirements of 21 CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- **Efficiency**: >99.99% 99.98% 99.90% 99% 95% 90%
- **Micron Rating at Various Efficiencies**
  - Efficiency >99.99%: 10 µm (0.3 μm)
  - Efficiency 99.98%: 10 µm (2 μm)
  - Efficiency 99.90%: 10 µm (3 μm)
  - Efficiency 99%: 10 µm (4 μm)
  - Efficiency 95%: 10 µm (5 μm)
  - Efficiency 90%: 10 µm (6 μm)

**Cleaning and Sterilization**

PEPLYN HD cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 135 °C (275 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).

**Ordering Information**

**Cartridges**

- **PHD -**

  - **Code | Length (Nominal) | Retention Rating | Code | Filters | Code | Endcap | Code | Drainage**
  - **G | N | None | G | Restrict**

- **Capsules**

  - **PHD -**

  - **Code | Length (Nominal) | Retention Rating | Code | Filters | Code | Unit Connection | Code | Outlet Connection**
  - **G | N | None | G | Restrict**

**Retention Characteristics**

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>% Retention</th>
<th>Max Forward dP (bar)</th>
<th>Max Backwash dP (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>95</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>60</td>
<td>99</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>80</td>
<td>99.9</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>100</td>
<td>99.99</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>121</td>
<td>99.9</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>135</td>
<td>99.9</td>
<td>5.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

*Not available in B & L endcap variants

**Filtration and Cleaning**

Frequent backwash cleaning is the two ways to increase the lifetime of a filter is to increase the amount of contamination it can handle, or to improve the efficiency of cleaning procedures.

PEPLYN HD combines both of these capabilities in an advanced pleated construction. PEPLYN HD utilizes high depth pleated polypropylene media that balances high contaminant loading capacity with efficient cleaning.

Capture of particles is throughout the depth of the media, larger particles being retained in the outer prefiltration layers, while the inner graded density PEPLYN media provides accurately the amount of contamination it can handle, or to improve the effectiveness of cleaning procedures.

To increase the lifetime of a filter are to increase the amount of contamination it can handle, or to improve the effectiveness of cleaning procedures. PEPLYN HD combines both of these capabilities in an advanced pleated construction. PEPLYN HD utilizes high depth pleated polypropylene media that balances high contaminant loading capacity with efficient cleaning.

Capture of particles is throughout the depth of the media, larger particles being retained in the outer prefiltration layers, while the inner graded density PEPLYN media provides accurately the amount of contamination it can handle, or to improve the effectiveness of cleaning procedures.

To increase the lifetime of a filter are to increase the amount of contamination it can handle, or to improve the effectiveness of cleaning procedures. PEPLYN HD combines both of these capabilities in an advanced pleated construction. PEPLYN HD utilizes high depth pleated polypropylene media that balances high contaminant loading capacity with efficient cleaning.

Capture of particles is throughout the depth of the media, larger particles being retained in the outer prefiltration layers, while the inner graded density PEPLYN media provides accurately the amount of contamination it can handle, or to improve the effectiveness of cleaning procedures.
Performance Characteristics

- Liquid filters
- Polypropylene

Two ways to increase the lifetime of a filter are to increase the amount of contamination it can handle or to improve the effectiveness of cleaning procedures. PEPLYN HA combines both of these features in its advanced pleated construction.

PEPLYN HA utilizes polypropylene filter media and support materials, which balance a high surface area and closely controlled porosity, in a configuration that maximizes the cleaning efficiency of the cartridge.

Capture of larger particles is predominantly on the surface of the media, where the rigid, open pleat structure ensures that backwashing cleaning provides effective removal. Smaller particles are retained throughout the depth of the graded density PEPLYN media, providing accurately defined retention under wide extremes of operating conditions.

Features and Benefits

- Ideally suited for raw water filtration where the longevity of the filter can be enhanced by repetitive backwashing
- Trap filtration (also known as police or guard filtration) removing preclean and body feed particles that have been released from powder filters, for example, in a brewing process
- Removal of carbon and resin fines downstream from treatment processes
- Clarification of CIP solutions prior to their use and advice on cleaning and disinfection.

Food and Biological Safety


Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Temperature limits:
  - 10¨ (250 mm): Up to 0.7 m² (7.53 ft²)
  - Other lengths:
    - A* 5¨ (125 mm): Up to 0.7 m² (7.53 ft²)
    - B* 2.5¨ (65 mm): Up to 0.5 m² (5.21 ft²)
    - N None: 0.3 m² (3.14 ft²)
  - End Cap Insert (if applicable): 316L Stainless Steel*

Retention Characteristics

The retention characteristics of PEPLYN HA filter cartridges have been determined by a single-pass technique using suspensions of ISO 12103 Pt. 1 A2 Fine and A4 Course test dust in water.
PREPOR GF filter cartridges have been specifically developed for fine clarification of water, products and ancillary liquids.

The higher efficiency grades also provide excellent bioburden reduction and protection to microporous membranes.

The high porosity of the microfibre filter media means that the filters have high dirt holding capacity and exhibit exceptional flow performance compared to similarly rated polypropylene filters. Coupled with the hydrophilic nature of the media, this makes them more suitable for low pressure and gravity fed systems, viscous liquids and an option for all systems where long-term elevated temperature and chemical cleaning are not required.

**Features and Benefits**
- Clarification of products for the purpose of visual aesthetics
- Fine clarification of products and ancillary liquids to extend the lifetime of microporous membrane filters
- Removal of low levels of bioburden, such as natural yeasts, from incoming liquids
- Clarification of viscous liquids such as syrups, especially where low transfer pressures are used

**Performance Characteristics**

**Flow (gpm US)**

<table>
<thead>
<tr>
<th>Temperature °F</th>
<th>Retention Rating</th>
<th>Micron Rating at Various Efficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention Rating</td>
<td>Micron Rating at Various Efficiencies</td>
<td></td>
</tr>
</tbody>
</table>

**Materials of Construction**
- **Filtration Membrane**: Glass Microfibre
- **Upstream Support**: Polypropylene
- **Downstream Support**: Polypropylene
- **Inner Support Core**: Polypropylene
- **Outer Protection Cage**: Polypropylene
- **End Caps**: Polypropylene
- **End Cap Insert (if applicable)**: 316L Stainless Steel*
- **Standard o-rings/seals**: Silicone / EPDM
- **Capsule Body**: Polypropylene
- **Capsule Vent Seals**: Silicone

**Food and Biological Safety**
Materials conform to the relevant requirements of 21CFR Part 177, EC1935/2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Recommended Operating Conditions**
Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

**Ordering Information**

**Cartridges**

**Capsules**

Capsules may be operated up to a temperature of 60 °C (140 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids.

**Effective Filtration Area (EFA)**
10¨ (250 mm) High porosity of the microfibre filters have high dirt holding capacity and exhibit exceptional flow performance compared to similarly rated polypropylene filters.

For a given flow rate multiply 10¨ size differential pressure by 2
For B size for a given flow rate multiply B size differential pressure by 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Retention Rating</th>
<th>Code</th>
<th>Flow (gpm US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 7.9¨ (200 mm)</td>
<td>Capsule and Capsule</td>
<td>A 7.9¨ (200 mm)</td>
<td>B 7.9¨ (200 mm)</td>
<td></td>
</tr>
<tr>
<td>H 10¨ (250 mm)</td>
<td>Capsule and Capsule</td>
<td>V 3/8¨ NPT Female</td>
<td>G Stepped Hosebarb</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>Capsule and Capsule</td>
<td>N Internal 213</td>
<td>H 1/2¨ Hosebarb</td>
<td></td>
</tr>
<tr>
<td>E 1.5 1.2 0.93 0.77 0.63 0.47</td>
<td>Capsule and Capsule</td>
<td>J SOE (no o-ring)</td>
<td>HUF Retrofit</td>
<td></td>
</tr>
<tr>
<td>D 1.0 0.80 0.60 0.52 0.42 0.35</td>
<td>Capsule and Capsule</td>
<td>C BF / 226 Bayonet</td>
<td>G Recess / 222</td>
<td></td>
</tr>
<tr>
<td>C 0.60 0.50 0.46 0.33 0.25 0.22</td>
<td>Capsule and Capsule</td>
<td>B* dh DOE</td>
<td>D Fin / 222</td>
<td></td>
</tr>
<tr>
<td>B 0.60 0.50 0.46 0.33 0.25 0.22</td>
<td>Capsule and Capsule</td>
<td>T TRUESEAL</td>
<td>A 10¨ Modular</td>
<td></td>
</tr>
<tr>
<td>N 1/2¨ NPT Male</td>
<td>Capsule and Capsule</td>
<td>Z Demi A &amp; B Std</td>
<td>N 1/2¨ NPT Male</td>
<td></td>
</tr>
<tr>
<td>M 1/4¨ NPT Male</td>
<td>Capsule and Capsule</td>
<td>Y Demi Stub</td>
<td>T 1¨ Tri-Clamp</td>
<td></td>
</tr>
<tr>
<td>H 1/2¨ Hosebarb</td>
<td>Capsule and Capsule</td>
<td>R BF / 222 Bayonet</td>
<td>F 7.9¨ (200 mm)</td>
<td></td>
</tr>
<tr>
<td>G Stepped Hosebarb</td>
<td>Capsule and Capsule</td>
<td>S Silicone</td>
<td>G Stepped Hosebarb</td>
<td></td>
</tr>
<tr>
<td>H 1/2¨ Hosebarb</td>
<td>Capsule and Capsule</td>
<td>S Silicone</td>
<td>H 1/2¨ Hosebarb</td>
<td></td>
</tr>
</tbody>
</table>

**Retention Characteristics**

The retention characteristics of PREPOR GF have been determined through controlled laboratory tests, challenging with a standard aqueous suspension of ACFTD (AC Fine Test Dust) using on-line laser particle counters.

**Cleaning and Sterilisation**
PREPOR GF cartridge filters may be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (249.8 °F). They may be sanitized with hot water at up to 95 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).
PREPOR GP filter cartridges will significantly reduce numbers of yeast and spoilage organisms in beverage products to provide extremely cost-effective microbiological stabilization.

The cartridges will also condition liquids and can be used to improve the filterability of products prior to terminal stabilization by thermal or filtrative methods.

The filters utilize a unique combination of graded density glass microfibre and polypropylene media. Combined together in a pleated construction, this configuration provides a high surface area and couples the advantages of glass microfibre with the inherent strength and durability of polypropylene.

### Features and Benefits

- Microbial reduction in beverage applications
- Ideally suited for yeast removal and bacterial reduction to provide short-term microbiological stability
- Fine clarification to provide bright finished product
- Adjustment of filterability of bulk liquids after tank storage transport
- Prefiltration duty to extend the lifetime of downstream microporous membrane filters

### Performance Characteristics

- **Flow (gpm)** vs. **Differential Pressure (psi)**

  - *Flow (gpm) for a given flow rate multiplying 10° size differential pressure by 2*

  - *10° size (250 mm) Cartridge*

### Specifications

**Materials of Construction**

- Glass Microfibre / Polypropylene
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- End Cap Insert (if applicable): 316L Stainless Steel*

**Filtration Membrane**

- Glass Microfibre / Polypropylene
- Liquid Filters
- Capsules

**Food and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177, EC 1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Temperature: °C °F
- Max. Forward GPM
- Max. Reverse GPM

**Effective Filtration Area (EFA)**

- 10¨ (250 mm) Up to 0.37 m² (3.9 ft²)

**Cleaning and Sterilization**

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

### Ordering Information

**Capsules**

- **Retention Characteristics**
  - The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.
  - Capsules may be operated up to a temperature of 60 °C (140 °F) at line pressures up to 5.0 barg (72.5 psi) for liquids.
  - Capsules are supplied in packs of 3.

- **Filtration Membrane**
  - Glass Microfibre / Polypropylene
  - Standard o-rings/gaskets: Silicone / EPDM
  - Capsule Body: Polypropylene
  - Upstream Support: Polypropylene
  - Downstream Support: Polypropylene
  - Inner Support Core: Polypropylene
  - Outer Protection Cage: Polypropylene
  - End Cap Insert (if applicable): 316L Stainless Steel*

- **Materials of Construction**
  - Glass Microfibre / Polypropylene
  - Standard o-rings/gaskets: Silicone / EPDM
  - Capsule Body: Polypropylene
  - Upstream Support: Polypropylene
  - Downstream Support: Polypropylene
  - Inner Support Core: Polypropylene
  - Outer Protection Cage: Polypropylene
  - End Cap Insert (if applicable): 316L Stainless Steel*

### Performance Characteristics

- **Flow (gpm)** vs. **Differential Pressure (psi)**

  - *Flow (gpm) for a given flow rate multiplying 10° size differential pressure by 2*

  - *10° size (250 mm) Cartridge*

### Specifications

**Materials of Construction**

- Glass Microfibre / Polypropylene
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- End Cap Insert (if applicable): 316L Stainless Steel*

**Filtration Membrane**

- Glass Microfibre / Polypropylene
- Liquid Filters
- Capsules

**Food and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177, EC 1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Recommended Operating Conditions**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Temperature: °C °F
- Max. Forward GPM
- Max. Reverse GPM

**Effective Filtration Area (EFA)**

- 10¨ (250 mm) Up to 0.37 m² (3.9 ft²)

**Cleaning and Sterilization**

PREPOR GP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 121 °C (250 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

### Ordering Information

**Capsules**

- **Retention Characteristics**
  - The retention characteristics of PREPOR GP have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.
  - Capsules may be operated up to a temperature of 60 °C (140 °F) at line pressures up to 5.0 barg (72.5 psi) for liquids.
  - Capsules are supplied in packs of 3.

- **Filtration Membrane**
  - Glass Microfibre / Polypropylene
  - Standard o-rings/gaskets: Silicone / EPDM
  - Capsule Body: Polypropylene
  - Upstream Support: Polypropylene
  - Downstream Support: Polypropylene
  - Inner Support Core: Polypropylene
  - Outer Protection Cage: Polypropylene
  - End Cap Insert (if applicable): 316L Stainless Steel*

- **Materials of Construction**
  - Glass Microfibre / Polypropylene
  - Standard o-rings/gaskets: Silicone / EPDM
  - Capsule Body: Polypropylene
  - Upstream Support: Polypropylene
  - Downstream Support: Polypropylene
  - Inner Support Core: Polypropylene
  - Outer Protection Cage: Polypropylene
  - End Cap Insert (if applicable): 316L Stainless Steel*

### Performance Characteristics

- **Flow (gpm)** vs. **Differential Pressure (psi)**

  - *Flow (gpm) for a given flow rate multiplying 10° size differential pressure by 2*

  - *10° size (250 mm) Cartridge*
PREPOR PP filter cartridges will significantly reduce numbers of yeast and spoilage organisms from beverage products, to provide extremely cost effective microbial stabilization.

The cartridges will also 'condition' liquids and can be used to improve the filterability of products prior to terminal sterilization by thermal or filtration methods.

The filters will withstand harsh operational conditions and repeated cleaning, making them ideal for extended use in the food and biological industries. Their mechanical strength and wide chemical resistance also make them suitable for long-term contact with strong cleaning agents and detergents.

Features and Benefits

- Yeast and bacterial reduction to provide short term microbial stability
- Prolonged contact with hot water, steam and chemicals
- Adjustment of filterability of bulk liquids after tank storage or transport
- Prefiltration duty to extend the lifetime of downstream microporous filters
- Fine clarification to provide bright finished product

Performance Characteristics

- Liquid filters
- Polypropylene

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC/90/126 and current USP Plastics Class VI - 121 °C and ISO 10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

- Up to 80 °C (176 °F) for 10 minutes
- Up to 90 °C (194 °F) for up to 2 hours
- Up to 135 °C (275 °F) for up to 1.5 hours

Effective Filtration Area (EFA)

10” (250 mm) Up to 0.5 m² (5.38 ft²)

Cleaning and Sterilization

PREPOR PP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 135 °C (275 °F). They can be sterilized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).

Ordering Information

**Cartridges**

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Flange/Fitting</th>
<th>Code</th>
<th>Flange/Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.5” 145 mm</td>
<td>B Flange</td>
<td>P</td>
<td>10° Modular</td>
</tr>
<tr>
<td>B</td>
<td>5” 175 mm</td>
<td>D Flange</td>
<td>E</td>
<td>10° Modular</td>
</tr>
<tr>
<td>C</td>
<td>10” 250 mm</td>
<td>D Flange</td>
<td>S</td>
<td>Silicone</td>
</tr>
<tr>
<td>D</td>
<td>20” 500 mm</td>
<td>D Flange</td>
<td>D</td>
<td>Silicone</td>
</tr>
<tr>
<td>E</td>
<td>30” 750 mm</td>
<td>D Flange</td>
<td>E</td>
<td>Silicone</td>
</tr>
<tr>
<td>F</td>
<td>40” 1000 mm</td>
<td>D Flange</td>
<td>F</td>
<td>Silicone</td>
</tr>
<tr>
<td>G</td>
<td>50” 1250 mm</td>
<td>D Flange</td>
<td>G</td>
<td>Silicone</td>
</tr>
<tr>
<td>H</td>
<td>60” 1500 mm</td>
<td>D Flange</td>
<td>H</td>
<td>Silicone</td>
</tr>
</tbody>
</table>

**Capsules**

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Flange/Fitting</th>
<th>Code</th>
<th>Flange/Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10” 250 mm</td>
<td>B Flange</td>
<td>P</td>
<td>10° Modular</td>
</tr>
<tr>
<td>B</td>
<td>15” 375 mm</td>
<td>B Flange</td>
<td>E</td>
<td>10° Modular</td>
</tr>
<tr>
<td>C</td>
<td>20” 500 mm</td>
<td>B Flange</td>
<td>S</td>
<td>Silicone</td>
</tr>
<tr>
<td>D</td>
<td>25” 625 mm</td>
<td>B Flange</td>
<td>D</td>
<td>Silicone</td>
</tr>
</tbody>
</table>

Specifications

**Materials of Construction**

- Filtration Media: Polypropylene
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- End Cap Inserts: 316L Stainless Steel

- Not available in B & L endcap variants

**Resistance to Chemicals**

- Hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

**Cleaning and Sterilization**

- PREPOR PP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 135 °C (275 °F). They can be sterilized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

**Effective Filtration Area (EFA)**

- 10” (250 mm) Up to 0.5 m² (5.38 ft²)

**Recommended Operating Conditions**

- Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:
  - Up to 80 °C (176 °F) for 10 minutes
  - Up to 90 °C (194 °F) for up to 2 hours
  - Up to 135 °C (275 °F) for up to 1.5 hours

**Cleaning and Sterilization**

- PREPOR PP cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 135 °C (275 °F). They can be sterilized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 °C (275 °F).
CRYPTO CLEAR PLUS pleated filter cartridges have been designed specifically for the removal of Cryptosporidium parvum and Giardia intestinalis from water in the food, beverage and healthcare industries. Extensive research, including live oocyst challenge has resulted in a graded density filtration medium that maximizes loading capacity of the filters whilst accurately defining particle and oocyst retention under a variety of operating conditions.

CRYPTO CLEAR PLUS cartridges can be repeatedly sanitized using hot water, steam and a wide range of chemicals. They can be sanitized with hot water at up to 90 ºC (194 ºF) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 ºC (275 ºF).

### Performance Characteristics

**Features and Benefits**

- Specifically designed for the reduction of Cryptosporidium parvum oocysts
- 0.6 and 1.0 micron retention ratings
- All polypropylene construction
- Graded density pleated media optimized dirt capacity and oocyst retention
- Independently tested with viable Cryptosporidium parvum oocysts

**Capabilities**

- Effectively remove Cryptosporidium parvum parvum from water in the food, beverage and healthcare industries.
- Independently tested with viable Cryptosporidium parvum oocysts.

### Cleaning and Sterilization

Cryptoclear PLUS cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 142 ºC (287.6 ºF). They can be sanitized with hot water at up to 90 ºC (194 ºF) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 135 ºC (275 ºF).

### Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 ºC and ISO10993 equivalents. CRYPTO CLEAR PLUS is listed as a WRAS Approved Product. WRAS - Water Regulations Advisory Scheme BSI K04 Test of Effectiveness & Quality.

### Effective Filtration Area (EFA)

Up to 70 ºC (158 ºF) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

**Effective Filtration Area (EFA)**

<table>
<thead>
<tr>
<th>Temperature ºC</th>
<th>Max. Forward dP (bar) (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.5</td>
</tr>
<tr>
<td>40</td>
<td>1.0</td>
</tr>
<tr>
<td>60</td>
<td>1.5</td>
</tr>
<tr>
<td>80</td>
<td>2.0</td>
</tr>
<tr>
<td>90</td>
<td>2.5</td>
</tr>
<tr>
<td>100</td>
<td>3.0</td>
</tr>
<tr>
<td>120</td>
<td>3.5</td>
</tr>
<tr>
<td>140</td>
<td>4.0</td>
</tr>
<tr>
<td>160</td>
<td>4.5</td>
</tr>
</tbody>
</table>

### Recommended Operating Conditions

For detailed operational procedures For detailed operational procedures and advice on cleaning and sterilization, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

### Specfications

**Materials of Construction**

- **Filtration Media:** Polypropylene
- **Upstream Support:** Polypropylene
- **Downstream Support:** Polypropylene
- **Inner Support Core:** Polypropylene
- **Outer Protection Cage:** Polypropylene
- **End Caps:** Polypropylene
- **End Cap Insert (if applicable):** 316L Stainless Steel

**Capsule Body:** Polypropylene

**Capsule Vent Seals:** Silicone

**Downstream Support:** Polypropylene

**Inner Support Core:** Polypropylene

**Outer Protection Cage:** Polypropylene

**End Caps:** Polypropylene

**End Cap Insert (if applicable):** 316L Stainless Steel

### Ordering Information

**Cartridges**

- **ZCCP**
- **ZCEP**

**Capsules**

- **ZCCP**
- **ZCEP**

### Decision Points

- For detailed operational procedures For detailed operational procedures and advice on cleaning and sterilization, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

For detailed operational procedures For detailed operational procedures and advice on cleaning and sterilization, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to make alterations, please contact the Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.
CRYPTOCLEAR PES utilizes the unique properties of a microbially retentive polyethersulphone membrane that provides absolute retention of Cryptosporidium parvum oocysts to meet the specific needs of the food, beverage and potable water industries.

CRYPTOCLEAR PES membrane has an asymmetrical pore structure with a high voids volume which offers unrivalled performance characteristics.

The microporous membrane is inherently hydrophilic and can be integrity tested repeatedly, providing a valuable quality assurance tool that fits well into a HACCP framework.

Features and Benefits

- Specifically developed for the removal of Cryptosporidium parvum oocysts
- 1.0 micron absolute rated polyethersulphone membrane
- High throughputs and flow rates
- Can be repeatedly steam sterilized or chemically sanitized
- Repeatedly integrity testable
- 100% retention of oocysts

Performance Characteristics

- Temperature vs. Flow Rate
  - Temperature (°C) vs. Flow Rate (L/min)
    - Temperature Max. Forward dP
  - Temperature vs. Micron Retention
    - Micron Rating vs. Product Micron Retention

Ordering Information

- Cartridges
  - ZCCS
    - Code (Length/Hosebarb) / Code (Endcap)
    - Code (Endcap) (T) / Code (Endcap) (C)

- Capsules
  - ZECS
    - Code (Length/Hosebarb) / Code (Endcap)
    - Code (Endcap) (T) / Code (Endcap) (C)

Materials of Construction

- Filtration Membrane: Polyethersulphone
- Prefilter Layer: Polyester
- Upstream Support: Polyester
- Downstream Support: Polyester
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Nylon
- End Cap Insert (if applicable): 316L Stainless Steel

Recommended Operating Conditions

- Effective Filtration Area (EFA)
  - Flow rates
  - Maximum Operating Pressure (psig)

Cleaning and Sterilization

- CIP wide range of chemicals. Capsules can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Effective Filtration Area (EFA)

- Flow rates for liquid @ 20 °C and 1 cp

Cost-Effective

- Capsules may be operated up to a temperature of 40 °C (104 °F) in line pressures up to 5.0 barg (72.51 psig) for liquids.

Retention Characteristics

- The removal efficiencies of CRYPTOCLEAR PES cartridges have been determined from tests conducted by Thames Water Utilities Limited on live Cryptosporidium oocysts.

Integrity Test Data

- All filters are flushed with purified water prior to despatch. They are integrity testable to the following limits:

Effective Filtration Area (EFA)

- Flow rates
  - Maximum Operating Pressure (psig)

Cryptosporidium parvum

- oocysts.
BEVPOR PS Filter Cartridges

- Liquid filters
- polyethersulphone

Minimizing the cost of microbiological stabilization per unit volume while maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PS is an advanced membrane filter cartridge designed for the beverage industry to meet and surpass these criteria. Specifically developed as a beverage grade cartridge, BEVPOR PS utilizes an advanced polyethersulphone membrane configured to provide high flow and cost-effective performance. The membrane has an asymmetric pore structure providing graded filtration throughout its depth, resulting in increased capacity to hold contaminants. Componentry has been selected to maximize mechanical strength and chemical compatibility enabling the filter to withstand repeated chemical cleaning and sterilization.

**Features and Benefits**
- Removal ratings from 0.2 to 1.2 micron
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitized for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical pore structure provides high capacity contaminant loading

**Performance Characteristics**

For flow in litres per minute at 20 °C and 1 cp, the graph shows the differential pressure in bar for different flow rates.

**Ordering Information**

<table>
<thead>
<tr>
<th>Code</th>
<th>Size (mm)</th>
<th>Capsule Connection</th>
<th>Inlet Connection</th>
<th>Code D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D10</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D10</td>
</tr>
<tr>
<td>C</td>
<td>10</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D15</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D15</td>
</tr>
<tr>
<td>E</td>
<td>15</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D20</td>
</tr>
<tr>
<td>F</td>
<td>15</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D20</td>
</tr>
<tr>
<td>G</td>
<td>20</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D25</td>
</tr>
<tr>
<td>H</td>
<td>20</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D25</td>
</tr>
<tr>
<td>I</td>
<td>25</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D31</td>
</tr>
<tr>
<td>J</td>
<td>25</td>
<td>NPT Female</td>
<td>NPT Male</td>
<td>D31</td>
</tr>
</tbody>
</table>

**Materials of Construction**

- Filtration Membrane: Polyethersulphone
- Upstream Support: Polyester
- Downstream Support: Polyester
- Inner Support Core: Polypropylene
- End Caps: Nylon
- End Cap Insert (if applicable): 316L Stainless Steel

**Specifically developed as a beverage grade cartridge,** BEVPOR PS is a key requirement within beverage production. It can be sanitized with hot water at up to 90 °C (194 °F) and is compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

**Cleaning and Sterilization**

BEVPOR PS filter cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 130 °C (264 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

**Retention Characteristics**

The retention characteristics of BEVPOR PS have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F938-05.

**Specifications**

### Performance

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Flow Limit L/min</th>
<th>Max. Pressure (barg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>4</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>6</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td>8</td>
<td>0.8</td>
<td>1.4</td>
</tr>
<tr>
<td>10</td>
<td>1.0</td>
<td>2.0</td>
</tr>
<tr>
<td>12</td>
<td>1.2</td>
<td>2.5</td>
</tr>
</tbody>
</table>

### Analysis

<table>
<thead>
<tr>
<th>Organism</th>
<th>LRV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacillus cereus</td>
<td>&gt;9</td>
</tr>
<tr>
<td>Brettanomyces cerevisiae</td>
<td>&gt;9</td>
</tr>
<tr>
<td>Clostridium botulinum</td>
<td>&gt;9</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>&gt;9</td>
</tr>
<tr>
<td>Lactobacillus brevis</td>
<td>&gt;9</td>
</tr>
<tr>
<td>Saccharomyces cerevisiae</td>
<td>&gt;9</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>&gt;9</td>
</tr>
</tbody>
</table>

### Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.
BEVPOR PH Filter Cartridges

• Liquid filters
• polyethersulphone

Minimizing the cost of microbiological stabilization per unit volume while maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PH is an advanced membrane filter cartridge designed for the beverage industry to meet and surpass these criteria. Specifically developed as a beverage grade cartridge, BEVPOR PH utilizes an advanced polyethersulphone membrane and an integral prefilter layer to give high flow rates, long life and improved throughput. The combination of prefilter and the asymmetrical membrane pore structure provides graded filtration through the depth of the media, resulting in increased capacity to hold contaminants. Componentry has been selected to withstand repeated chemical cleaning and steam sterilization.

Features and Benefits

• Removal ratings from 0.2 to 1.2 micron
• Integral prefilter layer and high surface area combine to maximize service life
• Repeatedly integrity testable
• Cartridge can be regenerated and sanitized for extended service life

Low adsorption of protein, colour and flavour components

Asymmetrical membrane pore structure provides high contaminant loading capacity

Dynamic Performance Characteristics

For flow rate 15 to 200 L/min @ 20°C and 1 cp

Performance Characteristics

<table>
<thead>
<tr>
<th>Flow (L/min)</th>
<th>0.45 µm</th>
<th>0.8 µm</th>
<th>1.0 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>1.0</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>2.0</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>5.0</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>10</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Effective Filtration Area (EFA)

10¨ (250 mm) Up to 0.8 m² (8.61 ft²)

Capsules may be operated up to a temperature of 60 ºC (140 ºF) at line pressures up to 5.0 barg (72.51 psig) for liquids.

Effective Filtration Area (EFA)

10¨ (250 mm) Up to 0.8 m² (8.61 ft²)

Cleaning and Sterilization

BEVPOR PH cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 130 ºC (266 ºF). They can be sanitized with hot water at up to 90 ºC (194 ºF) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 ºC (266 ºF).

Retention Characteristics

The retention characteristics of BEVPOR PH have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms.

Bacterial challenge testing is carried out to the following limits:

<table>
<thead>
<tr>
<th>Test Temperature</th>
<th>Test Pressure (barg)</th>
<th>Diffusional Flow (L/min)</th>
<th>Max. LRV</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>0.6</td>
<td>0.6</td>
<td>8.0</td>
</tr>
<tr>
<td>60</td>
<td>1.0</td>
<td>1.0</td>
<td>8.0</td>
</tr>
<tr>
<td>80</td>
<td>1.5</td>
<td>1.5</td>
<td>8.0</td>
</tr>
<tr>
<td>100</td>
<td>2.0</td>
<td>2.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Ordering Information

BEVPOR PH Filter Cartridges

<table>
<thead>
<tr>
<th>Length (Nominal)</th>
<th>Model Code</th>
<th>Endcap (Demi)</th>
<th>Format</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
<th>Capsules</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPH</td>
<td>B13</td>
<td>A</td>
<td>S</td>
<td>1/4¨ NPT Male</td>
<td>1/4¨ NPT Male</td>
<td>BPHs</td>
</tr>
<tr>
<td>BPH</td>
<td>B13</td>
<td>B</td>
<td>S</td>
<td>1/4¨ NPT Male</td>
<td>1/4¨ NPT Male</td>
<td>BPHs</td>
</tr>
<tr>
<td>BPH</td>
<td>B13</td>
<td>C</td>
<td>S</td>
<td>1/4¨ NPT Male</td>
<td>1/4¨ NPT Male</td>
<td>BPHs</td>
</tr>
<tr>
<td>BPH</td>
<td>B13</td>
<td>D</td>
<td>S</td>
<td>1/4¨ NPT Male</td>
<td>1/4¨ NPT Male</td>
<td>BPHs</td>
</tr>
</tbody>
</table>

Note: BEVPOR is a registered trademark of Parker domnick hunter

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to dispatch. They are integrity tested to the following limits:

<table>
<thead>
<tr>
<th>Test Temperature</th>
<th>Test Pressure (barg)</th>
<th>Diffusional Flow (L/min)</th>
<th>Max. LRV</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>0.6</td>
<td>0.6</td>
<td>8.0</td>
</tr>
<tr>
<td>60</td>
<td>1.0</td>
<td>1.0</td>
<td>8.0</td>
</tr>
<tr>
<td>80</td>
<td>1.5</td>
<td>1.5</td>
<td>8.0</td>
</tr>
<tr>
<td>100</td>
<td>2.0</td>
<td>2.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

DS_BV_09_01/11 Rev. 4A

© Parker domnick hunter 2011
+44 (0)191 410 5121
www.parker.com/processfiltration
Minimizing the cost of microbiological stabilization per unit volume while maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PT is an advanced membrane filter cartridge designed for the beverage industry to meet and surpass these criteria. Specifically developed as a beverage grade cartridge, BEVPOR PT utilizes an advanced polyethersulphone membrane and an integral membrane prefilter layer to give high flow rates, long life and improved throughput. Both prefilter and final membrane layers have an asymmetrical pore structure, providing graded filtration throughout their depth and resulting in increased capacity to hold contaminants. BEVPOR PT is especially suited to filtration of products that contain submicron colloidal species which may block unprotected sterilising grade membranes.

Features and Benefits

- Removal ratings from 0.2 to 0.65 micron
- Prefilter layer selected to provide removal of colloidal species providing long service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity
- Cartridge can be regenerated and sanitized for extended service life
- Cartridge is a key requirement within beverage production.
- Capsules may be operated up to a temperature of 60 °C (140 °F) at line pressures up to 5.0 bar (72.5 psi) for liquids.

Effective Filtration Area (EFA) 10" (250 mm) Up to 3.6 m² (41.65 ft²)

Cleaning and Sterilization

BEVPOR PT cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 130 °C (266 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of BEVPOR PT have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Performance Characteristics

- Diffusional Flow (barg) 1.7 1.4 1.0
- Temperature Max. Forward dP 68 52.5 40
- Inlet Connection
- Outlet Connection
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
- End Cap Insert (if applicable): 316L Stainless Steel*
BEVPOR PW Filter Cartridges

Performance Characteristics

- Optimized for the microbiological stabilization of bottled water
- Removal ratings from 0.2 to 1.2 micron
- Integral prefilter layer and high surface area combine to maximize service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitized for extended service life
- Asymmetrical membrane pore structure provides high contaminant loading capacity

Features and Benefits

Minimizing the cost of microbiological stabilization per unit volume while maintaining quality and product characteristics is a key requirement within beverage production.

BEVPOR PW is an advanced membrane filter cartridge designed to meet and surpass these criteria. Specifically developed for the microbiological stabilization of bottled water, BEVPOR utilizes an advanced polyethersulphone membrane and integral prefilter layer to give high flow rates, long life, and improved efficiency. The combination of prefilter and the asymmetrical pore structure of the membrane provides graded filtration through the depth of the media, resulting in increased capacity to hold contaminants. Componentry has been selected to withstand repeated chemical cleaning and steam sterilization.

Materials of Construction

- Filtration Membrane: Polyethersulphone
- Prefilter Layer: Polyester
- Downstream Support: Polyester
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Nylon
- Capsule Vent Seals: Silicone

Filtration Membrane: Polyethersulphone

Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperatures.

Recommended Max. Flow Rates

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Max. Flow Rate (L/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>5.0</td>
</tr>
<tr>
<td>60</td>
<td>0.5</td>
</tr>
<tr>
<td>80</td>
<td>2.0</td>
</tr>
<tr>
<td>100</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Flow and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Effective Filtration Area (EFA) of 10" (250 mm) cartridges up to 0.6 m² (6.45 ft²).

Cleaning and Sterilization

BEVPOR PW cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 130 °C (266 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of BEVPOR PW have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Effective Filtration Area (EFA)

- 0.2 µm: 0.6 m² (6.45 ft²)
- 0.45 µm: 0.6 m² (6.45 ft²)
- 0.65 µm: 0.6 m² (6.45 ft²)
- 0.8 µm: 0.6 m² (6.45 ft²)
- 1.2 µm: 0.6 m² (6.45 ft²)

Ordering Information

Cartridges

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Code</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.5¨</td>
<td>00</td>
<td>0.2  µm</td>
</tr>
<tr>
<td>B</td>
<td>1¨</td>
<td>06</td>
<td>0.65 µm</td>
</tr>
<tr>
<td>C</td>
<td>1¨</td>
<td>08</td>
<td>0.8 µm</td>
</tr>
<tr>
<td>D</td>
<td>0.5¨</td>
<td>10</td>
<td>1.2 µm</td>
</tr>
<tr>
<td>E</td>
<td>0.5¨</td>
<td>12</td>
<td>1.5 µm</td>
</tr>
<tr>
<td>F</td>
<td>0.5¨</td>
<td>14</td>
<td>2.0 µm</td>
</tr>
<tr>
<td>G</td>
<td>0.5¨</td>
<td>16</td>
<td>3.0 µm</td>
</tr>
<tr>
<td>H</td>
<td>0.5¨</td>
<td>18</td>
<td>4.0 µm</td>
</tr>
<tr>
<td>J</td>
<td>0.5¨</td>
<td>20</td>
<td>5.0 µm</td>
</tr>
</tbody>
</table>

Capsules

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Code</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.5¨</td>
<td>00</td>
<td>0.2  µm</td>
</tr>
<tr>
<td>B</td>
<td>1¨</td>
<td>06</td>
<td>0.65 µm</td>
</tr>
<tr>
<td>C</td>
<td>1¨</td>
<td>08</td>
<td>0.8 µm</td>
</tr>
<tr>
<td>D</td>
<td>0.5¨</td>
<td>10</td>
<td>1.2 µm</td>
</tr>
<tr>
<td>E</td>
<td>0.5¨</td>
<td>12</td>
<td>1.5 µm</td>
</tr>
<tr>
<td>F</td>
<td>0.5¨</td>
<td>14</td>
<td>2.0 µm</td>
</tr>
<tr>
<td>G</td>
<td>0.5¨</td>
<td>16</td>
<td>3.0 µm</td>
</tr>
<tr>
<td>H</td>
<td>0.5¨</td>
<td>18</td>
<td>4.0 µm</td>
</tr>
<tr>
<td>J</td>
<td>0.5¨</td>
<td>20</td>
<td>5.0 µm</td>
</tr>
</tbody>
</table>

Note: BEVPOR is a registered trademark of Parker domnick hunter
The BEVPOR range of membrane cartridge filters is available in a selection of retention ratings to provide protection of beverages from the effects of common spoilage organisms or to enable them to meet regulatory requirements.

However, it is possible that other smaller microorganisms may be present that, while not affecting microbiological stability, may nonetheless be undesirable from a quality viewpoint. BEVPOR PS, the basis of which is the recognized standard in the pharmaceutical industry for a 0.2 micron sterilizing grade membrane(1). Specifically developed as a beverage grade membrane, BEVPOR MS utilizes an advanced polyethersulphone membrane configured to provide high flow and cost-effective performance. The membrane has an asymmetric pore structure which provides graded filtration throughout its depth, resulting in increased capacity to hold contaminants. Componentry has been selected to maximize mechanical strength and chemical compatibility enabling the filter to withstand repeated chemical cleaning and sterilization. 1ASTM/F838-05

Features and Benefits

- Liquid filters
- Polyethersulphone

- Enhanced microbial retention based on pharmaceutical industry specifications
- Repeatedly integrity testable
- Cartridges can be regenerated and sanitized for extended service life

Performance Characteristics

![Graph](graph.png)

10" Size (250 mm) Cartridge

BEVPOR MS Filter Cartridges

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials of Construction</strong></td>
</tr>
<tr>
<td>- Filtration Membrane: Polyethersulphone</td>
</tr>
<tr>
<td>- Upstream Support: Polyester</td>
</tr>
<tr>
<td>- Downstream Support: Polyester</td>
</tr>
<tr>
<td>- Inner Support Core: Polypropylene</td>
</tr>
<tr>
<td>- Outer Protection Cage: Polypropylene</td>
</tr>
<tr>
<td>- End Caps: Nylon</td>
</tr>
<tr>
<td>- End Cap Insert (if required) 316L Stainless Steel*</td>
</tr>
<tr>
<td>- Houseable in a 1/2&quot; x 9&quot; endcap variants</td>
</tr>
<tr>
<td>- Standard o-rings/seals: Silicone / EPDM</td>
</tr>
<tr>
<td>- Capsule Body: Nylon</td>
</tr>
<tr>
<td>- Capsule Vent Seals: Silicone</td>
</tr>
</tbody>
</table>

Food and Biological Safety

Materials conform to the relevant requirements of 21 CFR Part 177, EC/93/204 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperature of 40 °C (104 °F) at line flow or pressurisation techniques.

Effective Filtration Area (EFA)

10" (250 mm) Up to 0.6 m² (6.45 ft²)

Cleaning and Sterilization

BEVPOR MS cartridges can be repeatedly steam sterilized in situ or autoclaved at up to 130 °C (266 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

Retention Characteristics

The retention characteristics of BEVPOR MS have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to dispatch. They are integrity tested to the following limits:

<table>
<thead>
<tr>
<th>Test Pressure (psig)</th>
<th>Max. Diffusional Flow (10¨) kg/min</th>
<th>Max. Diffusional Flow (K) kg/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>25.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>20.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>15.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
<tr>
<td>12.0</td>
<td>16.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Ordering Information

Cartridges

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (mm)</th>
<th>Code</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.5</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>7.5</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>15.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>30.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>60.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>100.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>150.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>225.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>350.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
</tbody>
</table>

Capsules

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (mm)</th>
<th>Code</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.5</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>7.5</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>15.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>30.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>60.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>100.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>150.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>225.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
<tr>
<td>0</td>
<td>350.0</td>
<td>10</td>
<td>0.2 µm</td>
</tr>
</tbody>
</table>

Contact: BEVPOR is a registered trademark of Parker domnick hunter
**BEVPOR MT Filter Cartridges**

- **Liquid filters**
- **polyethersulphone**

The BEVPOR range of membrane cartridge filters is available in a selection of retention ratings to provide protection of beverages from the effects of common spoilage organisms or to enable them to meet regulatory requirements. However, it is possible that other smaller microorganisms may be present that, while not affecting microbiological stability, may nonetheless be undesirable from a quality viewpoint. BEVPOR MT provides higher removal efficiency than BEVPOR PT, the basis of which is the recognized standard in the pharmaceutical industry for a 0.2 micron sterilizing grade membrane. Specifically developed as a beverage grade cartridge, BEVPOR MT utilizes an advanced polyethersulphone membrane configured to provide high flow and cost-effective performance. The membrane has an asymmetric pore structure which provides graded filtration throughout its depth, resulting in increased capacity to hold contaminants. Componentry has been selected to maximize mechanical strength and chemical compatibility enabling the filter to withstand repeated chemical cleaning and sterilization. *ASTM F838-05*

### Features and Benefits
- Enhanced microbial retention based on pharmaceutical industry specifications
- Prefilter layer selected to provide removal of colloidal species providing long service life
- Asymmetrical membrane pore structure provides high contaminant loading capacity
- Cartridge can be regenerated and sanitized for extended service life
- Low adsorption of protein, colour and flavour components
- The retention characteristics of BEVPOR MT have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

### Ordering Information

**Cartridges**

- **BMT**

**Capsules**

- **BMT**

### Performance Characteristics

- **DS_BV_013_01/11 Rev. 4A**
- **+44 (0)191 4105121**
- **dhprocess@parker.com**

### Specifications

**Materials of Construction**

- **Filtration Membrane**: Polyethersulphone
- **Prefilter Layer**: Polyethersulphone
- **Upstream Support**: Polyester
- **Downstream Support**: Polyester
- **Inner Support Core**: Polypropylene
- **Outer Protection Cage**: Polypropylene
- **End Caps**: Nylon
- **Capsule Vent Seals**: Silicone

**Effective Filtration Area**

- 10¨ (250 mm) Up to 0.6 m² (6.45 ft²)

**Recommended Operating Conditions**

- Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:
  - Temperature
  - Test Pressure (psig)
  - Max. Forward dP (psi)
  - Max. Diffusional Flow (ml/min)
  - ASTM Tests

**Organisms**

- Organism
- LRV
- LRV
- LRV

### Integrity Test Data

- All filters are flushed with pharmaceutical grade purified water prior to dispatch. They are integrity tested to the following limits.

**For detailed information please contact your Parker Sales Representative or the Technical contact.**

*Note: BEVPOR is a registered trademark of Parker domnick hunter*
The BEVPOR range of membrane cartridge filters is available in a selection of retention ratings to provide protection of beverages from the effects of common spoilage organisms or to enable them to meet regulatory requirements. However, it is possible that other smaller microorganisms may be present that, while not affecting microbiological stability, may nonetheless be undesirable from a quality viewpoint. BEVPOR PH provides higher removal efficiency than BEVPOR MH, the basis of which is the recognized standard in the pharmaceutical industry for a 0.2 micron sterilizing grade membrane(1). Specifically developed as a beverage grade membrane(1), BEVPOR MH provides increased capacity to hold contaminants. Componentry has been designed to maximize service life and improved throughput. The combination of prefilter integrity to the following limits:

### Performance Characteristics

- Liquid filters
- Polyethersulphone

### Features and Benefits

- Enhanced microbial retention based on pharmaceutical industry specifications
- Integral prefilter layer and high surface area combine to maximize service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitized for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity

### Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993.

Recommended Operating Conditions
Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Max. Forward Flow (l/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>6.0</td>
</tr>
<tr>
<td>60</td>
<td>6.0</td>
</tr>
<tr>
<td>40</td>
<td>6.0</td>
</tr>
</tbody>
</table>

### Integrity Test Data

<table>
<thead>
<tr>
<th>Organism</th>
<th>Approx. Cell Size*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escherichia coli</td>
<td>1.1 - 1.5 x 2.0 - 6.0</td>
</tr>
<tr>
<td>Serratia marcescens</td>
<td>0.5 - 0.8 x 0.9 - 2.0</td>
</tr>
<tr>
<td>Brettanomyces cerevisiae</td>
<td>&gt;10</td>
</tr>
</tbody>
</table>

### Ordering Information

#### Cartridges

<table>
<thead>
<tr>
<th>Code</th>
<th>Code (O-ring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMH</td>
<td>G (EPDM)</td>
</tr>
</tbody>
</table>

#### Capsules

<table>
<thead>
<tr>
<th>Code</th>
<th>Code (O-ring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMH</td>
<td>G (EPDM)</td>
</tr>
</tbody>
</table>

### Specifications

#### Materials of Construction

- Filtration Membrane: Polyethersulphone
- Prefilter Layer: Polyester
- Upstream Support: Polyester
- Downstream Support: Polyester
- Outer Protection Caps: Polypropylene
- End Caps: Nylon

**Note:** BEVPOR is a registered trademark of Parker domeck hunter

### Cleaning and Sterilization

BEVPOR MH can be repeatedly steam sterilized in situ or autoclaved at up to 130 °C (266 °F). They can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).
Pharmaceutical filters

Pharmaceutical filtration

Parker domnick hunter manufacture innovative filtration solutions for critical areas of pharmaceutical production such as bulk chemicals / API, fermentation and aseptic final fill. Our validated product range is fully supported by our global network of technical support Scientists and Engineers.

The ability to scale up from small area discs to process scale systems with minimal revalidation is paramount. Parker domnick hunter provides a wide range of filter formats to ensure that the transition from pilot scale through to production is as smooth as possible.

Disposable single use systems can eliminate cleaning validation, reduce capital costs, minimize health and safety risks and lower the risk of product contamination, as well as providing a more convenient way of processing a product.

PROCLEAR filters from Parker domnick hunter represent a range of prefiltration and clarification media for particulate removal and bioburden reduction. Designed to maximize throughput in the most demanding applications.

PROPOR multi-format sterile liquid filters from Parker domnick hunter offer a PES membrane which demonstrates low preservative binding and retention of diminutive organisms, coupled with high flow and high capacity performance in critical applications.
Specifications

Materials of Construction
- Filtration Media: Glass Microfibre
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene

Filter Cartridges
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps Insert: 316L Stainless Steel

MURUS Disposable Filter Capsules
- Core: Polypropylene
- Sleeve: Polypropylene
- End Caps Insert: 316L Stainless Steel
- Standard o-ring/seals: Silicon
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone

DEMICODE Filter Capsules
- Body: Polypropylene

Recommended Operating Conditions
Filter Cartridges
Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>% Temperature</th>
<th>Max. Forward dP (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>3.0</td>
</tr>
<tr>
<td>60</td>
<td>6.0</td>
</tr>
<tr>
<td>100</td>
<td>30.0</td>
</tr>
</tbody>
</table>

MURUS Disposable Filter Capsules
Up to 25 °C | 77 °F | 0.5 barg | 7.5 psi)
Up to 60 °C | 140 °F | 2.8 barg | 40.6 psi

Quality Standards
Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water.

Gamma-Irradiation
PROCLEAR GF MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Syringe Filters
- Core: Glass Microfibre
- Sleeve: Polypropylene
- Core: Polypropylene
- Filling Bell: Polycarbonate

Syringe ø50 mm: 14.50 cm² (2.25 in²)

Effective Filtration Area (EFA)
- 10¨ (250 mm): 0.56 m² (6.0 ft²)
- K Size: 0.27 m² (2.9 ft²)
- A Size: 0.20 m² (2.2 ft²)
- B Size: 0.10 m² (1.1 ft²)
- E Size: 0.05 m² (0.6 ft²)

Syringes 50 mm: 16.00 cm² (2.52 in²)

Sterilization
- Autoclave: 134 °C (273.2 °F)
- Steam-in-Place: 121 °C (249.8 °F)

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety
Materials are biologically safe and sanitizable with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For CIP cleaning, procedure is as follows:
- Upstream Support: Polypropylene
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- End Caps: Polypropylene
- Capsules Vent Seals: Silicone
- End Caps Insert: 316L Stainless Steel

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.
Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR GF conforms to the requirements of current USP <663> (TOC) and USP <655> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR GF contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10¨ (250 mm) DEMICAP capsule are <5 mg. Total NVEs extracted in the first 5 litre flush of purified water for an A 7.9¨ (200 mm) MURUS capsule are < 10 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR GF filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.

Total Oxidizable Substances (TOC / Conductivity)
Performance Characteristics

A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR GF filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR GF contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10¨ (250 mm) DEMICAP capsule are <5 mg. Total NVEs extracted in the first 5 litre flush of purified water for an A 7.9¨ (200 mm) MURUS capsule are < 10 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR GF filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR GF contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10¨ (250 mm) DEMICAP capsule are <5 mg. Total NVEs extracted in the first 5 litre flush of purified water for an A 7.9¨ (200 mm) MURUS capsule are < 10 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR GF filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.
**PROCLEAR GP Filter Cartridges**

- Liquid filters
- Glass microfibre / polypropylene

PROCLEAR GP filters combine glass microfibre and polypropylene media to provide maximum protection to downstream filter membranes and equipment. Dirt holding capacity is maximized through use of a graded density media making PROCLEAR GP cartridge filters an economical and reliable choice for prefiltration.

PROCLEAR GP filters have low extractable levels and are suitable for bioburden reduction and fine prefiltration of pharmaceutical fluids and are ideal for high contamination applications.

Features and Benefits

- Dual layer media or increased capacity and assurance
- Maximizes retention for protection of downstream membranes
- Ideal for difficult to filter solutions
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

**Specifications**

**Materials of Construction**

- **Filtration Media:** Glass Microfibre / Polypropylene
- **Upstream Support:** Polypropylene
- **Downstream Support:** Polypropylene

**Filter Cartridges**

- **Inner Support Core:** Polypropylene
- **Outer Protection Cage:** Polypropylene
- **End Caps:** Polypropylene
- **End Caps Insert:** 316L Stainless Steel

**DEMICAP Filter Capsules**

- **Core:** Polypropylene
- **Sleeve:** Polypropylene
- **Capsule Body:** Polypropylene
- **Capsule Vent Seals:** Silicone

**Performance Characteristics**

- **Flow Rate:**
  - **Flow (gpm (US))**
    - 0.18
    - 0.36
    - 0.71
    - 1.42
    - 2.85

- **Flow (l/min) for liquid @ 20 °C and 1 cp**
  - 1.5
  - 3.0
  - 6.0
  - 12.0
  - 24.0

- **Flow (l/min) for liquid @ 25 °C and 1 cp**
  - 1.9
  - 3.8
  - 7.6
  - 15.1
  - 30.2

**Recommended Operating Conditions**

**Filter Cartridges**

- Up to 70 °C (1,052 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Max. Exposure Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

**Syringe Filters**

- Body: Polypropylene
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone

**Sterilization**

**DEMICAP Filter Capsules**

- **Cycles**
  - 10

**MURUS Disposable Filter Cartridges**

- **Cycles**
  - 5

**Quality Standards**

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water.

**Gamma-Irradiation**

PROCLEAR GP filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker Hannifin contact.

**Feed and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Effective Filtration Area (EFA)**

- **10¨ (250 mm):** 0.34 m² (3.7 ft²)
- **K Size (250 mm):** 0.16 m² (1.7 ft²)
- **A Size (250 mm):** 0.12 m² (1.3 ft²)
- **B Size (150 mm):** 0.06 m² (0.6 ft²)
- **E Size (65 mm):** 0.03 m² (0.3 ft²)

**Syringe Filters**

- **Flow (gpm (US))**
  - 0.05
  - 0.10
  - 0.20

**Materials of Construction**

- **Upstream Support:** Polypropylene
- **Downstream Support:** Polypropylene
- **Capsules Vent Seals:** Silicone

**Recommended Operating Conditions**

**Filter Cartridges**

- Up to 70 °C (1,052 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Max. Exposure Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

**Syringe Filters**

- **Flow (gpm (US))**
  - 0.05
  - 0.10

**Quality Standards**

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water.

**Gamma-Irradiation**

PROCLEAR GP filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker Hannifin contact.

**Feed and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Effective Filtration Area (EFA)**

- **10¨ (250 mm):** 0.34 m² (3.7 ft²)
- **K Size (250 mm):** 0.16 m² (1.7 ft²)
- **A Size (250 mm):** 0.12 m² (1.3 ft²)
- **B Size (150 mm):** 0.06 m² (0.6 ft²)
- **E Size (65 mm):** 0.03 m² (0.3 ft²)

**Syringe Filters**

- **Flow (gpm (US))**
  - 0.05
  - 0.10

**Materials of Construction**

- **Upstream Support:** Polypropylene
- **Downstream Support:** Polypropylene
- **Capsules Vent Seals:** Silicone

**Recommended Operating Conditions**

**Filter Cartridges**

- Up to 70 °C (1,052 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Max. Exposure Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

**Syringe Filters**

- **Flow (gpm (US))**
  - 0.05
  - 0.10

**Quality Standards**

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water.

**Gamma-Irradiation**

PROCLEAR GP filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker Hannifin contact.

**Feed and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.
Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR GP conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR GP contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Oxidizable Substances
PROCLEAR GP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Total NVEs extracted in the first 5 litre flush of purified water for a 10¨ (250 mm) cartridge are <10 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Ordering Information

Cartridges

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.5&quot; 64 mm</td>
<td>B</td>
<td>2.5&quot; 114 mm</td>
<td>C</td>
<td>2.5&quot; 144 mm</td>
<td>D</td>
<td>2.5&quot; 164 mm</td>
<td>E</td>
<td>Flat Cap 222</td>
</tr>
</tbody>
</table>
| F    | 10" 256 mm      | G    | 10" 306 mm | H    | 20" 606 mm | I    | 30" 756 mm | J    | G & H Print-
|      |                 |      |         |      |        |      |           |      | -        |

MURUS Capsules

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Code</th>
<th>Micron</th>
<th>Code</th>
<th>Transient</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5¨ (125 mm)</td>
<td>B</td>
<td>7.9¨ (200 mm)</td>
<td>C</td>
<td>10¨ (250 mm)</td>
<td>D</td>
<td>5¨ (125 mm)</td>
</tr>
</tbody>
</table>

DEMICAP Capsules

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter</th>
<th>Code</th>
<th>Micron</th>
<th>Code</th>
<th>Endcap</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10¨</td>
<td>B</td>
<td>20¨</td>
<td>C</td>
<td>30¨</td>
<td>D</td>
<td>40¨</td>
</tr>
</tbody>
</table>

Syringe Filters

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter</th>
<th>Code</th>
<th>Micron</th>
<th>Code</th>
<th>Endcap</th>
<th>Code</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10¨</td>
<td>B</td>
<td>20¨</td>
<td>C</td>
<td>30¨</td>
<td>D</td>
<td>40¨</td>
</tr>
</tbody>
</table>

Note: Ultra-fine filters have the ability to filter through intricate voids throughout the body's surface. A single drop of a mixture of these filters can be used to filter out any unwanted substances safely. These filters are designed to be used with various fluid types and can be adapted to specific applications through the use of varying concentrations of the filters.
Performance Characteristics

Features and Benefits

- Graded density polypropylene media for high capacity
- All polypropylene construction
- MURUS and DEMICAP’s can be gamma-irradiated and autoclaved
- Extremely robust to withstand aggressive conditions

Materials of Construction

- Filter Membrane: Polypropylene
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene

Filter Cartridges

- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- End Caps Insert: 316L Stainless Steel

*Not available in B & L endcap variants

Effective Filtration Area (EFA)
10¨ (250 mm) up to 0.79 m² (8.5 ft²)

Sterilization

PROCLEAR PP filter cartridges can be sanitized with hot water at up to 90 ºC (194 ºF) and are compatible with a wide range of chemicals.

Gamma-Irradiation

PROCLEAR PP MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 40 kGy.

Recommended Operating Conditions

Filter Cartridges
Up to 70 ºC (158 ºF) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature ºC</th>
<th>Max. Forward dP (mbar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2.5</td>
</tr>
<tr>
<td>60</td>
<td>2.0</td>
</tr>
<tr>
<td>80</td>
<td>2.0</td>
</tr>
<tr>
<td>100</td>
<td>1.5</td>
</tr>
</tbody>
</table>

MURUS Disposable Filter Cartridges

<table>
<thead>
<tr>
<th>Temperature ºC</th>
<th>Max. Forward dP (mbar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2.5</td>
</tr>
<tr>
<td>60</td>
<td>2.0</td>
</tr>
<tr>
<td>80</td>
<td>2.0</td>
</tr>
<tr>
<td>100</td>
<td>1.5</td>
</tr>
</tbody>
</table>

DEMICAP Filter Cartridges

<table>
<thead>
<tr>
<th>Temperature ºC</th>
<th>Max. Forward dP (mbar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2.5</td>
</tr>
<tr>
<td>60</td>
<td>6.0</td>
</tr>
<tr>
<td>80</td>
<td>6.0</td>
</tr>
<tr>
<td>100</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Syringe Filters

<table>
<thead>
<tr>
<th>Temperature ºC</th>
<th>Max. Forward dP (mbar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2.5</td>
</tr>
<tr>
<td>60</td>
<td>2.0</td>
</tr>
<tr>
<td>80</td>
<td>2.0</td>
</tr>
<tr>
<td>100</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 ºC and ISO10993 equivalents.

Quality Standards

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water.

Parker Hannifin certifies that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC, Article 3, Paragraph 2 - Sound Engineering Practice (SEP). This product is intended for use with Group A & B Stainless Steel and reinforced cages and Group 2 Stainless Steels in the operating equipment stated in this document. In compliance with PED Article 3, Paragraph 2, SEP, this product does not bear the CE mark.

For detailed operational procedures and advice on cleaning and sterilization, please consult your usual Parker domnick hunter contact.

For K size for a given flow rate multiply 10¨ size differential pressure by 2
For A size for a given flow rate divide B size differential pressure by 2

Differential Pressure (mbar)

<table>
<thead>
<tr>
<th>Flow (gpm (US))</th>
<th>Differential Pressure (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0.2</td>
</tr>
<tr>
<td>10</td>
<td>0.5</td>
</tr>
<tr>
<td>15</td>
<td>1.0</td>
</tr>
<tr>
<td>20</td>
<td>1.5</td>
</tr>
<tr>
<td>25</td>
<td>2.0</td>
</tr>
<tr>
<td>30</td>
<td>2.5</td>
</tr>
</tbody>
</table>

For Cycles and Temp: MURUS: 5 cycles at 130 ºC (266 ºF) and DEMICAP: 10 cycles at 130 ºC (266 ºF)

For MURUS and DEMICAP’s, gamma-irradiation is available in the B & L endcap variants.

End Caps: Polypropylene
Core: Polypropylene
Sleeve: Polypropylene
Capsule Body: Polypropylene
Capsule Vent Seals: Silicone
Filling Bell: Polycarbonate

PROCLEAR PP Filter Cartridges

- Liquid filters
- Polypropylene

PROCLEAR PP filters are designed for a wide range of prefiltration duties within the production of pharmaceuticals and are particularly suited to applications where chemical compatibility is an issue.

The optimum pleat configuration and graded density polypropylene media used in PROCLEAR PP filters ensure the filters have the highest possible throughput to blockage resulting in long service life.

The PROCLEAR PP range of filters are fully supported by a comprehensive validation guide to simplify its specification into new and existing processes.
Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR PP filter cartridge meets current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <0.25 EU/ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <10 mg.

200 ml flush of purified water for a 10¨ (250 mm)

Flushing of purified water for an A size 7.9¨ (200 mm)

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Additional Information

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR PP filter cartridge meets current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <0.25 EU/ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <10 mg.

200 ml flush of purified water for a 10¨ (250 mm)

Flushing of purified water for an A size 7.9¨ (200 mm)

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Additional Information

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR PP filter cartridge meets current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <0.25 EU/ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <10 mg.

200 ml flush of purified water for a 10¨ (250 mm)

Flushing of purified water for an A size 7.9¨ (200 mm)

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Additional Information

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR PP filter cartridge meets current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <0.25 EU/ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <10 mg.

200 ml flush of purified water for a 10¨ (250 mm)

Flushing of purified water for an A size 7.9¨ (200 mm)

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Additional Information

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR PP filter cartridge meets current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <0.25 EU/ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <10 mg.

200 ml flush of purified water for a 10¨ (250 mm)

Flushing of purified water for an A size 7.9¨ (200 mm)

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Additional Information

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR PP filter cartridge meets current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <0.25 EU/ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <10 mg.

200 ml flush of purified water for a 10¨ (250 mm)

Flushing of purified water for an A size 7.9¨ (200 mm)

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Additional Information

Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROCLEAR PP filter cartridge meets current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <0.25 EU/ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group (LSG).

Oxidizable Substances
PROCLEAR PP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Endotoxins
Aqueous extracts from the 10¨ (250 mm) PROCLEAR PP filter cartridge contain <10 mg.

200 ml flush of purified water for a 10¨ (250 mm)

Flushing of purified water for an A size 7.9¨ (200 mm)

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.
Performance Characteristics

- Brevundimonas diminuta...
- Low binding for minimal product loss
- MURUS and DEMICAP’s can be gamma-irradiated and autoclaved

Features and Benefits

- Additional prefilter layer gives excellent throughput to blockage

Materials of Construction

- Filtration Membrane: Polyethersulphone
- Prefilter Layer: Polyester
- Upstream Support: Polyester
- Downstream Support: Polyester
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps Insert: 316L Stainless Steel
- Capsule Body: Nylon
- Capsule Vent Seals: Silicone
- Sleeve: Polypropylene
- Core: Polypropylene
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone
- Sleeve: Polypropylene
- Core: Polypropylene
- Standard o-rings/gaskets: Silicone
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone
- Sleeve: Polypropylene
- Core: Polypropylene
- End Caps Insert: 316L Stainless Steel
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- Sleeve: Polypropylene
- Core: Polypropylene
- End Caps Insert: 316L Stainless Steel
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- Sleeve: Polypropylene
- Core: Polypropylene

Effective Filtration Area (EFA)

- 10" (250 mm): 0.55 m² (5.92 ft²)
- K Size: 0.26 m² (2.79 ft²)
- A Size: 0.20 m² (2.15 ft²)
- B Size: 0.10 m² (1.07 ft²)
- E Size: 0.05 m² (0.53 ft²)
- Syringe ø50 mm: 16.50 cm² (2.52 in²)

Sterilization

- MURUS Disposable Filter Capsules
- Core: Polypropylene
- Sleeve: Polypropylene
- End Caps: Nylon
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- Filling Belt: Polycarbonate
- Syringe Filters
- Body: Polypropylene

Recommended Operating Conditions

- Filter Cartridges
- Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>1%</th>
<th>3%</th>
<th>5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>55</td>
<td>70</td>
<td>75</td>
</tr>
<tr>
<td>40</td>
<td>80</td>
<td>95</td>
<td>100</td>
</tr>
<tr>
<td>60</td>
<td>100</td>
<td>120</td>
<td>130</td>
</tr>
</tbody>
</table>

- Syringe Filters
- ø50 mm: 14.50 cm² (2.25 in²)

- MURUS Disposable Filter Capsules
- Up to 25 °C (77 °F) @ 0.5 barg (7.2 psi)
- Up to 60 °C (140 °F) @ 2.8 barg (40.6 psi)

Quality Standards

- Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water and integrity tested prior to dispatch. A sample of each lot is tested to demonstrate conformity to validated claims.

Gamma-Irradiation

- PROPOR BR MURUS & DEMICAP disposable filters can be gamma-irradiated up to a maximum dosage of 60 kGy.

Food and Biological Safety

- Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI, 121 °C and ISO10993 equivalents.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.
Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROPOR BR conforms to the requirements of current USP <442; TOC> and USP <455> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aquous extracts from the 10¨ (250 mm) PROPOR BR contain <0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for a 10¨ (250 mm) cartridge are <10 mg.

Pharmaceutical Validation
A full validation guide is available upon request from Laboratory Services Group [LSG].

Oxidizable Substances
PROPOR BR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.

Integrity Test Data
All filters are integrity testable to the following limits when wet with water and using air as the test gas.

<table>
<thead>
<tr>
<th>Micron Rating</th>
<th>0.2</th>
<th>0.1</th>
<th>0.022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter Cartridges</td>
<td>MURUS / DEMICAP</td>
<td>MURUS / DEMICAP / Syringe Filters</td>
<td>MURUS / DEMICAP / Syringe Filters</td>
</tr>
<tr>
<td>Min. Bubble Point (barg)</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Diffusional Flow (barg)</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Test Pressure (psig)</td>
<td>24.7</td>
<td>36.0</td>
<td>36.0</td>
</tr>
</tbody>
</table>

Retention Characteristics
PROPOR BR filter cartridges are validated to an LRV > 5 by bacterial challenge testing with Pseudomonas diminuta to current ASTM F383-05 methodology (10^6 organisms / cm² EPA minimum) with typical in-house challenge levels being 10^7 organisms per 10¨ (200 mm) module.

Protein Adsorption (mg / cm²)

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon PVDF</th>
<th>Competitor A</th>
<th>Competitor B</th>
<th>PROPOR BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Protein Adsorption</td>
<td>100</td>
<td>120</td>
<td>140</td>
<td>180</td>
</tr>
</tbody>
</table>

TOC / Conductivity
Performance Characteristics

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon Polypropylene</th>
<th>Polysulphone</th>
<th>PVDF</th>
<th>Pdh</th>
<th>PES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Protein Adsorption</td>
<td>100</td>
<td>120</td>
<td>140</td>
<td>180</td>
<td>200</td>
</tr>
</tbody>
</table>

Flow rate comparison for bioburden reduction filters

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon PVDF</th>
<th>Competitor A</th>
<th>Competitor B</th>
<th>PROPOR BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Flow rate (ml / min)</td>
<td>7.5</td>
<td>10</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

Protein binding on membrane materials

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon PVDF</th>
<th>Competitor A</th>
<th>Competitor B</th>
<th>PROPOR BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Protein binding</td>
<td>0</td>
<td>0.5</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon Polypropylene</th>
<th>Polysulphone</th>
<th>PVDF</th>
<th>Pdh</th>
<th>PES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Protein binding</td>
<td>0</td>
<td>0.5</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Flow rate comparison for bioburden reduction filters

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon PVDF</th>
<th>Competitor A</th>
<th>Competitor B</th>
<th>PROPOR BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Flow rate (ml / min)</td>
<td>7.5</td>
<td>10</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

Protein binding on membrane materials

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon Polypropylene</th>
<th>Polysulphone</th>
<th>PVDF</th>
<th>Pdh</th>
<th>PES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Protein binding</td>
<td>0</td>
<td>0.5</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Flow rate comparison for bioburden reduction filters

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon PVDF</th>
<th>Competitor A</th>
<th>Competitor B</th>
<th>PROPOR BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Flow rate (ml / min)</td>
<td>7.5</td>
<td>10</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

Protein binding on membrane materials

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Nylon Polypropylene</th>
<th>Polysulphone</th>
<th>PVDF</th>
<th>Pdh</th>
<th>PES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micron Rating</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Protein binding</td>
<td>0</td>
<td>0.5</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Flow rate comparison for bioburden reduction filters
The asymmetric pore structure and high voids volume of the PROPOR SG membrane allow high throughputs and exceptionally high flow rates compared with competitive PES and alternative membranes. Low protein and preservative binding properties minimize product loss due to adsorption. PROPOR SG filters are optimized for pharmaceutical processing. They have low extractable levels and broad chemical compatibility across the full pH range including organic solvents.

**Performance Characteristics**

- Up to 3.5 times higher flow rates than competitive sterilizing grade filters
- Fully validated and sterilizing grade filters
- Can be gamma-irradiated to a maximum dosage of 60 kGy

**Features and Benefits**

- Low binding for minimal product loss
- MURUS and DEMICAP’s can be gamma-irradiated and autoclaved

**Materials of Construction**

- Filtration Membrane: Polyethersulphone
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps Insert: 316L Stainless Steel
- Standard o-rings/gaskets: Silicone
- Capsule Body: Polypropylene
- Capsule Vent Seals: Silicone
- Sleeve: Polypropylene
- Core: Polypropylene
- Capsules Vent Seals: Silicone
- End Caps: Nylon
- Body: Polypropylene

**Recommended Operating Conditions**

**Filter Cartridges**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Max. Endurance (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>4.0</td>
</tr>
<tr>
<td>40</td>
<td>2.0</td>
</tr>
<tr>
<td>60</td>
<td>1.0</td>
</tr>
<tr>
<td>80</td>
<td>0.5</td>
</tr>
<tr>
<td>100</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Effective Filtration Area (EFA)**

- 10¨ Size: 0.55 m² (5.92 ft²)
- K Size: 0.26  m² (2.79 ft²)
- A Size: 0.20  m² (2.15 ft²)
- B Size: 0.10  m² (1.07 ft²)
- E Size: 0.05  m² (0.53 ft²)
- Syringe ø50 mm: 16.00 cm² (2.52 in²)

**Sterilization**

<table>
<thead>
<tr>
<th>Sterilization</th>
<th>Differential Pressure (psi)</th>
<th>Temperature (°C)</th>
<th>Endurance (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoclave</td>
<td>-</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td>Autoclave</td>
<td>140</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Autoclave</td>
<td>266</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

**Gamma-Irradiation**

PROPOR SG filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

**Quality Standards**

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

**Feed and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Quality Standards**

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

**Feed and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Recommended Operating Conditions**

**Filter Cartridges**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Max. Endurance (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>4.0</td>
</tr>
<tr>
<td>40</td>
<td>2.0</td>
</tr>
<tr>
<td>60</td>
<td>1.0</td>
</tr>
<tr>
<td>80</td>
<td>0.5</td>
</tr>
<tr>
<td>100</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Effective Filtration Area (EFA)**

- 10¨ Size: 0.55 m² (5.92 ft²)
- K Size: 0.26  m² (2.79 ft²)
- A Size: 0.20  m² (2.15 ft²)
- B Size: 0.10  m² (1.07 ft²)
- E Size: 0.05  m² (0.53 ft²)
- Syringe ø50 mm: 16.00 cm² (2.52 in²)

**Sterilization**

<table>
<thead>
<tr>
<th>Sterilization</th>
<th>Differential Pressure (psi)</th>
<th>Temperature (°C)</th>
<th>Endurance (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoclave</td>
<td>-</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td>Autoclave</td>
<td>140</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Autoclave</td>
<td>266</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

**Gamma-Irradiation**

PROPOR SG filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

**Feed and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

**Recommended Operating Conditions**

**Filter Cartridges**

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Max. Endurance (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>4.0</td>
</tr>
<tr>
<td>40</td>
<td>2.0</td>
</tr>
<tr>
<td>60</td>
<td>1.0</td>
</tr>
<tr>
<td>80</td>
<td>0.5</td>
</tr>
<tr>
<td>100</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Effective Filtration Area (EFA)**

- 10¨ Size: 0.55 m² (5.92 ft²)
- K Size: 0.26  m² (2.79 ft²)
- A Size: 0.20  m² (2.15 ft²)
- B Size: 0.10  m² (1.07 ft²)
- E Size: 0.05  m² (0.53 ft²)
- Syringe ø50 mm: 16.00 cm² (2.52 in²)

**Sterilization**

<table>
<thead>
<tr>
<th>Sterilization</th>
<th>Differential Pressure (psi)</th>
<th>Temperature (°C)</th>
<th>Endurance (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoclave</td>
<td>-</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td>Autoclave</td>
<td>140</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Autoclave</td>
<td>266</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

**Gamma-Irradiation**

PROPOR SG filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

**Feed and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.
Performance Characteristics

TOC / Conductivity
The filtrate quality from a 10¨ (250 mm) PROPOR SG conforms to the requirements of current USP <443> (TOC) and USP <445> (conductivity) within the first 200 ml flush of purified water.

Endotoxins
Aquous extracts from the 10¨ (250 mm) PROPOR SG contain < 0.25 EU / ml when tested in accordance with the Limulus Ameobocyte Lysate test.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) cartridge are <5 mg.

Pharmaceutical Validation
Total NVEs extracted in the first 5 litre flush of purified water for a 10¨ (250 mm) cartridge are <10 mg.

Non-Volatile Extractables (NVE)
Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are <5 mg.

Retention Characteristics
PROPOR SG filter cartridges are validated by endotoxin challenge testing with Pseudomonas diminuta to current ASTM F388-05 methodology (10^5 organisms / cm^2 ETA minimum) with typical in-house challenge levels being 10^6 organisms per 10¨ (250 mm) filter cartridge.

Oxidizable Substances
PROPOR SG filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Integrity Test Data
All filters are integrity testable to the following limits when wet with water and using air as the test gas.

- Bubble point for 0.1 µm product is in 60/40 v/v IPA/Water.
- All filters are integrity testable to the following limits when wet with water and following a <1 litre water flush.

- Min. Bubble Point* (barg) 2.36 3.38 2.48
- Diffusional Flow (barg) 4.8 2.8 1.7
- Conductance @ 10 L / min (mbar) 150 200 250
- Protein Adsorption (mg / cm2) 0 20 40 80 100
- Retention Characteristics

- Demi Stub
- φ, R BF / 222
- φ, E Flat Top / 222
- φ, D Fin / 222
- φ, Grommel / QC
- φ, Walther QC
- Grade γ (25 kGy)

- Micron Rating 0.1 0.2 0.45
- Min. Bubble Point* (barg) 2.36 3.38 2.48
- Diffusional Flow (barg) 4.8 2.8 1.7
- Conductance @ 10 L / min (mbar) 150 200 250
- Protein Adsorption (mg / cm2) 0 20 40 80 100

- Cartilage & Collagen, Pharmaceutical, Polyamide
- Differential Pressure Comparison of 10¨ (250 mm) sterilizing grade filters

- Protein binding on membrane materials

Ordering Information

Cartridges

--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
A | 7.9¨ (200 mm) | 100 | 2.5 | BF, PVC Bevel | Pharmaceutical | A | All polypropylene componentry |
B | 7.9¨ (200 mm) | 200 | 0.5 | BF, PTFE | Pharmaceutical | B | All polypropylene componentry |
C | 7.9¨ (200 mm) | 400 | 2.0 | BF, Kynar | Pharmaceutical | C | All polypropylene componentry |
D | 7.9¨ (200 mm) | 600 | 5.0 | BF, Kynar | Pharmaceutical | D | All polypropylene componentry |

MURUS Capsules

Code | Length (Nominal) | Code | Micron | Code | Endconnection | Code | Variant | Code | Grade |
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
A | 5¨ (125 mm) | 25 | 0.10 | L | In-Line | N | Non-sterile |
B | 2.5¨ (65 mm) | 25 | 0.10 | L | In-Line | S | Pre-sterilized |

DEMICAP Capsules

Code | Length (Nominal) | Code | Micron | Code | Endconnection | Code | Variant | Code | Grade |
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
A | 5¨ (125 mm) | 25 | 0.10 | L | In-Line | N | Non-sterile |
B | 2.5¨ (65 mm) | 25 | 0.10 | L | In-Line | S | Pre-sterilized |

Syringe Filters

Code | Diameter | Code | Micron | Code | Connection | Code | Variant | Code | Grade |
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
A | 30¨ (750 mm) | 4100 | 0.20 | | | | | | |
Propor HC Filter Cartridges

**Specifications**

- **Integral prefILTER layer** significantly extends throughput and prevents the problems associated with premature filter blockage with complex solutions.
- The optimised Propor HC PES membrane configuration features a highly asymmetric membrane prefILTER layer, which is difficult to filter solutions. Designed for the effective and economical processing of low extractable levels and broad chemical compatibility. The optimised PROPOR HC PES membrane configuration is inherently low binding, which minimizes product loss due to protein or preservative adsorption. The filters have been validated and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

**Features and Benefits**

- Optimized membrane configuration allows up to ten times the throughputs compared to single layer membrane products.
- Integral prefILTER layer can condense filter trains for greater processing economy.
- Incorporates a fully validated and integrity testable 0.2 micron membrane for assurance of sterility.
- Low binding for minimal product loss.

**Materials of Construction**

- **Filtration Membrane**: Polyethersulphone
- **Prefilter Membrane**: Polyethersulphone
- **Upstream Support**: Polyester
- **Downstream Support**: Polyester
- **Inner Support Core**: Polypropylene
- **End Caps Insert**: 316L Stainless Steel

**Effective Filtration Area (EFA)**

- **10¨ (250 mm)**: 0.55 m² (5.92 ft²)
- **K Size**: 0.26 m² (2.79 ft²)
- **A Size**: 0.20 m² (2.15 ft²)
- **B Size**: 0.10 m² (1.07 ft²)
- **E Size**: 0.05 m² (0.53 ft²)

**Sterilization**

<table>
<thead>
<tr>
<th>Sterilization Method</th>
<th>Temperature °C</th>
<th>Pressure (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoclave</td>
<td>130 (266 °F)</td>
<td>5.0 (72 psig)</td>
</tr>
<tr>
<td>MURUS 10¨</td>
<td>130 (266 °F)</td>
<td>-</td>
</tr>
<tr>
<td>DEMICAP</td>
<td>130 (266 °F)</td>
<td>-</td>
</tr>
</tbody>
</table>

**Flow - Pressure Graphs**

- **Cartridge flow rates**
- **MURUS flow rates (10¨ Size [250 mm])**
- **DEMICAP flow rates**

**Quality Standards**

- **Pharmaceutical grade products**: manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.
- For detailed operational procedures and advice on cleaning and sterilization, please contact your usual Parker Domnick Hunter contact.

**Recommended Operating Conditions**

- **Filter Cartridges**
  - Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:
    | Temperature °C | Max. Forward dP (bar) |
    |----------------|-----------------------|
    | 20             | 0.5                   |
    | 40             | 0.8                   |
    | 60             | 1.0                   |
    | 80             | 1.5                   |
    | 90             | 1.7                   |

- **MURUS Disposable Filter Capsules**
  - Up to 25 °C (77 °F) @ 5.5 bar (79.7 psi)
  - Up to 60 °C (140 °F) @ 2.8 bar (40.6 psi)

- **DEMICAP Filter Capsules**
  - Up to 60 °C (140 °F) @ 2.8 bar (40.6 psi)

**Notes:**

- **PROPOR and DEMICAP are registered trademarks of Parker domnick hunter.**
- **ISO10993 equivalents.**
- **USP Plastics Class VI - 121 °C and 194 °F.**
- **-quality standards conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class.**
- **Harmless Liquids and Group 2 Harmless Gases at the temperature and higher short-term temperatures during CIP to the following limits:**
- **Recommended Autoclave Cycles  Temp °C Cycles Temp °C**
- **MURUS 10¨ 5 130 °C (266 °F) - -**
- **Cartridges 10¨ 130 °C (266 °F) 30 130 °C (266 °F)**
- **Syringe 1 130 °C (266 °F) - -**
- **DEMICAP 10¨ 130 °C (266 °F) - -**

- **Syringe Filters**
  - **Body**: Polypropylene
  - **Capsule Body**: Polypropylene
  - **Capsules Vent Seals**: Silicone
  - **Capsule Body**: Nylon
  - **Capsules Vent Seals**: Silicone
  - **Sleeve**: Polypropylene
  - **Core**: Polypropylene
  - **End Caps**: 316L Stainless Steel

- **Syringe Filters**
  - **Body**: Polypropylene
  - **Capsule Body**: Nylon
  - **Capsules Vent Seals**: Silicone
  - **Sleeve**: Polypropylene
  - **Core**: Polypropylene
  - **End Caps**: 316L Stainless Steel

- **CORE FILTER CARTRIDGES**
  - **Effective Filtration Area (EFA)**
    - **10¨ (250 mm)**: 0.55 m² (5.92 ft²)
    - **K Size**: 0.26 m² (2.79 ft²)
    - **A Size**: 0.20 m² (2.15 ft²)
    - **B Size**: 0.10 m² (1.07 ft²)
    - **E Size**: 0.05 m² (0.53 ft²)

- **Flow rates**
  - **Flow (gpm (US))**
  - **Flow (L/min for liquid @ 20 °C and 1 cp)**
  - **Differential Pressure (mbar)**
  - **Differential Pressure (psi)**

- **Recommended Operating Conditions**
  - **Temperature Max. Forward dP**
    - **°C °F (bar) (psi)**
    - **20 68 5.0 72.5**
    - **40 104 4.0 58.0**
    - **60 140 3.0 43.5**
    - **80 176 2.0 29.0**
    - **90 194 1.7 24.6**
Performance Characteristics

TOC / Conductivity

The filtrate quality from a 10¨ (250 mm) PROPOR HC conforms to the requirements of current USP <443> (TOC) and USP <445> [conductivity] within the first 200 ml flush of purified water.

Endotoxins

Aquous extracts from the 10¨ (250 mm) PROPOR HC contain < 0.25 EU / ml when tested in accordance with the Limulus Amoebocyte Lysate test.

Non-Volatile Extractables (NVE)

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are < 5 mg.

Pharmaceutical Validation

A full validation guide is available upon request from Laboratory Services Group [LSG].

Oxidizable Substances

PROPOR HC filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

Integrity Test Data

All filters are integrity testable to the following limits when wet with water and using air as the test gas.

\[
\begin{align*}
\text{Min. Bubble Point (barg)} & \quad 3.4 \\
\text{Filter Cartridges / MURUS / DEMICAP / Syringe Filters} & \\
\text{Diffusional Flow (barg)} & \quad 2.8 \\
\text{(psig)} & \quad 40.6 \\
\text{Filter Cartridges / MURUS / DEMICAP / Syringe Filters} & \\
\text{Test Pressure (psig)} & \quad 49.0 \\
\text{(E)} & \quad 1.4 \\
\text{(B)} & \quad 3.2 \\
\text{(A)} & \quad 6.7
\end{align*}
\]

Retention Characteristics

PROPOR HC filter cartridges are validated by bacterial challenge testing with (Pseudomonas diminuta) to current ASTM F838-05 methodology (100 organisms / cm² EPA minimum) with typical in-house challenge levels being 10³ organisms per 10¨ (250 mm) filter cartridge.

PROPOR HC contain < 0.25 EU / ml when using air as the test gas.

Non-Volatile Extractables (NVE)

Total NVEs extracted in the first 5 litre flush of purified water for an A size 7.9¨ (200 mm) DEMICAP capsule are < 5 mg.

Endotoxins

Endotoxins from the 10¨ (250 mm) PROPOR HC contain < 10 mg.

A full validation guide is available upon request from Laboratory Services Group [LSG].

Q. Are the PROPOR HC filter cartridges validated by bacterial challenge testing with Pseudomonas diminuta to current ASTM F838-05 methodology (100 organisms/cm² EPA minimum) with typical in-house challenge levels being 10³ organisms per 10¨ (250 mm) filter cartridge?

A. Yes, PROPOR HC filter cartridges are validated by bacterial challenge testing with Pseudomonas diminuta to current ASTM F838-05 methodology (100 organisms/cm² EPA minimum) with typical in-house challenge levels being 10³ organisms per 10¨ (250 mm) filter cartridge.

Q. What are the limits for the endotoxins from the 10¨ (250 mm) PROPOR HC filter cartridges?

A. The endotoxins from the 10¨ (250 mm) PROPOR HC filter cartridges contain < 10 mg.

Q. Are the PROPOR HC filter cartridges integrity testable?

A. Yes, all filters are integrity testable to the following limits when wet with water and using air as the test gas:

- Min. Bubble Point (barg): 3.4
- Diffusional Flow (barg): 2.8
- Test Pressure (psig): 40.6
- Min. Bubble Point (barg): 3.4
- Test Pressure (psig): 49.0
- E: 1.4
- B: 3.2
- A: 6.7
PROPOR LR filters have been specifically designed for high flow and effective removal of *Ralstonia pickettii* and other diminutive organisms.

A number of studies have concluded that not all microorganisms are removed by 0.2 micron rated membranes under all conditions. PROPOR LR filters use a 0.1 micron rated membrane, which can remove diminutive organisms, while maintaining flow rates typical of a 0.2 micron filtration system. *Ralstonia pickettii* is one organism that has frequently been shown to penetrate a 0.2 micron rated membrane and is a common contaminant in purified water systems. PROPOR LR shown to penetrate a 0.2 micron rated membrane and is a common contaminant in purified water systems.

**Features and Benefits**

- Fully correlated against *Ralstonia pickettii* and integrity testable
- Increases retention efficiency whilst maintaining existing 0.2 micron rated system size
- Up to 2.5 times higher flow rate than competitive 0.1 micron rated filters
- MURUS and DEMICAP's can be gamma-irradiated and autoclaved

**Performance Characteristics**

- **Liquid filters**
- **polyethersulphone**

**Specifications**

**Materials of Construction**

- **Filtration Membrane**: Polyethersulphone
- **Upstream Support**: Polyester
- **Downstream Support**: Polyester
- **End Caps**: Polypropylene
- **End Caps Insert**: 316L Stainless Steel

**MURUS Disposable Filter Capsules**

- **Core**: Polypropylene
- **Sleeves**: Polypropylene
- **End Caps Insert**: 316L Stainless Steel
- **Standard O-rings/gaskets**: Silicone
- **Capsule Body**: Polypropylene
- **Capsule Vent Seals**: Silicone
- **Syringe Filters**
  - **Body**: Polypropylene

**Recommend Operating Conditions**

**Filter Cartridges**

-Revised 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Max. Endurance</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>45</td>
<td>77.9</td>
</tr>
<tr>
<td>60</td>
<td>5%</td>
<td>20.0</td>
</tr>
<tr>
<td>60</td>
<td>1%</td>
<td>20.0</td>
</tr>
<tr>
<td>60</td>
<td>1%</td>
<td>20.0</td>
</tr>
</tbody>
</table>

**Gamma-Irradiation**

- PROPOR LR filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.
- For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support group through your usual Parker domnick hunter contact.

**Food and Biological Safety**

Materials conform to the relevant requirements of 21CFR Part 177 and current USP Plastics Class I - 121 °C and ISO10993 equivalents.

**Quality Standards**

Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical grade purified water and integrity tested prior to despatch. A sample of each lot is tested to demonstrate conformity to validated claims.

**Effective Filtration Area (EFA)**

- **A Size**: 0.26 m² (2.89 ft²)
- **B Size**: 0.10 m² (1.07 ft²)
- **E Size**: 0.05 m² (0.53 ft²)

**Proprio LR Filters**

- **Syringe ø50 mm**: 14.50 cm² (2.25 in²)
- **K Size**: 0.26 m² (2.89 ft²)
- **E Size**: 0.05 m² (0.53 ft²)

**Sterilization**

- **RECOMMENDED CYCLES**
- **Temperature (°C)**
- **MURUS**
  - 130 °C (266 °F) - -
- **DEMICAP**
  - 130 °C (266 °F) - -
- **Cartridges**
  - 130 °C (266 °F) 30 130 °C (266 °F)

**Gamma Irradiation**

- **Maximum dosage of 40 kGy.
- Filters can be gamma-irradiated up to a maximum dosage of 60 kGy.**
**Performance Characteristics**

**TOC / Conductivity**
The filtrate quality from a 10¨ (250 mm) PROPOR LR filter cartridges meets current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.

**Endotoxins**
Aqueous extracts from the 10¨ (250 mm) PROPOR LR filter cartridges contain < 0.25 EU / ml when tested in accordance with the Limulus Amoeboocyte Lysate test.

**Non-Volatile Extractables (NVE)**
Total NVEs extracted in the first 5 litre flush of purified water for a 10¨ (250 mm) cartridge are <5 mg.

**Pharmaceutical Validation**
A full validation guide is available upon request.

**Oxidizable Substances**
PROPOR LR filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.

**Retention Characteristics**
PROPOR LR filters are validated by bacterial challenge testing with Ralstonia pickettii and Pseudomonas diminuta to current ASTM F838-05 methodology (10⁶ organisms / cm² TOC / Conductivity) within the first 200 ml flush of purified water.

**Performance Characteristics**

**Retention Characteristics**
PROPOR LR filters are validated by bacterial challenge testing with Ralstonia pickettii and Pseudomonas diminuta to current ASTM F838-05 methodology (10⁶ organisms / cm² TOC / Conductivity) within the first 200 ml flush of purified water.

**Performance Characteristics**

**Retention Characteristics**
PROPOR LR filters are validated by bacterial challenge testing with Ralstonia pickettii and Pseudomonas diminuta to current ASTM F838-05 methodology (10⁶ organisms / cm² TOC / Conductivity) within the first 200 ml flush of purified water.

**Performance Characteristics**

**Retention Characteristics**
PROPOR LR filters are validated by bacterial challenge testing with Ralstonia pickettii and Pseudomonas diminuta to current ASTM F838-05 methodology (10⁶ organisms / cm² TOC / Conductivity) within the first 200 ml flush of purified water.

**Performance Characteristics**

**Retention Characteristics**
PROPOR LR filters are validated by bacterial challenge testing with Ralstonia pickettii and Pseudomonas diminuta to current ASTM F838-05 methodology (10⁶ organisms / cm² TOC / Conductivity) within the first 200 ml flush of purified water.
TETPOR HP filter cartridges have been specially designed to minimize protein and preservative binding in the sterilization of pharmaceutical and multi-dose ophthalmic solutions.

Adsorption of proteins or preservatives from a pharmaceutical preparation onto the filter membrane can complicate the manufacturing process and lead to costly product wastage. The unique hydrophilic PTFE membrane featured in the TETPOR HP exhibits lower levels of binding than other commonly used filtration membranes such as PES and PVDF which can prevent product loss during processing.

The TETPOR HP exhibits low extractable levels and the sterilizing grade membrane has comparative flow rates to PES and PVDF membranes for a 0.001% solution of benzalkonium chloride (BAK).

### Features and Benefits
- Exceptionally low binding membrane to prevent costly product loss and process down time
- Incorporates a fully validated and integrity testable 0.2 micron membrane for assurance of sterility
- Fast flowing membrane for increased process efficiency

### Performance Characteristics
- **Cartridge flow rates:**
  - 10¨ (250 mm) module:
    - 1.81 m² (19.6 ft²)
    - Effective filtration area (EFA) minimum
    - Flow rate: up to 21 L/min at 1 bar
  - 30¨ (750 mm) module:
    - 5.43 m² (58.4 ft²)
    - Flow rate: up to 100 L/min at 1 bar

### Effective Filtration Area (EFA)
- 10¨ (250 mm):
  - 0.88 m² (9.47 ft²)
- 20¨ (500 mm):
  - 1.76 m² (18.4 ft²)
- 30¨ (750 mm):
  - 2.64 m² (28.4 ft²)

### Sterilization
- TETPOR HP filter cartridges are validated to withstand 10 steam-in-place cycles at 135 °C (275 °F).
- TETPOR HP filter cartridges can be sanitized with hot water at up to 95 °C (194 °F) and are compatible with a wide range of chemicals.

### Integrity Test Data
- All filters are Integrity tested to the following limits when wet with water and using air as the test gas (a minimum 20 minute purified water flush is recommended prior to integrity testing in water).

### Quality Standards
- Pharmaceutical grade products are manufactured in accordance with cGMP, 100% flushed with pharmaceutical purified water and integrity tested prior to dispatch. A sample of each lot is tested to demonstrate conformity to validated claims.

### TOC / Conductivity
- The filtrate quality from a 10¨ (250 mm) TETPOR HP conforms to the requirements of current USP <443> (TOC) and USP <361> (conductivity) within the first 200 ml flush of purified water.

### Endotoxins
- Aqueous extracts from a 10¨ (250 mm) TETPOR HP contain < 0.25 EU / ml when tested in accordance with the Limulus Ameobocyte Lysate test.

### Non-Volatile Extractables (NVE)
- The quantity of NVE’s obtained from a TETPOR HP cartridge during a 24 hour static soak was undetectable compared to a control sample.

### Oxidizable Substances
- TETPOR HP filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a <1 litre water flush.

### Integrity Test Methodology
- Maximum allowed diffusional flow for a 10¨ (250 mm) TETPOR HP is 40 / 60 / 80 bar/ psi/sec.

### Retention Characteristics
- TETPOR HP filter cartridges are validated by bacterial challenge testing with Bacillus diminus to current ASTM F838-05 methodology (10¹ organisms / cm² EFA minimum) with typical in-house challenge levels being 10³ organisms per 10¨ (250 mm) module.

### Pharmaceutical Validation
- A full validation guide is available upon request from Laboratory Services Group (LSG).

### Materials of Construction

<table>
<thead>
<tr>
<th>Membrane Material</th>
<th>Endcap Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrophilic PTFE</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>Silicone</td>
<td>Silicone</td>
</tr>
<tr>
<td>PTFE</td>
<td>PTFE</td>
</tr>
<tr>
<td>PVDF</td>
<td>PVDF</td>
</tr>
<tr>
<td>Hydrophilic PES</td>
<td>Polypropylene</td>
</tr>
<tr>
<td>PVDF</td>
<td>Polypropylene</td>
</tr>
</tbody>
</table>

### Recommended Operating Conditions

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Differential Pressure (psig)</th>
<th>Max. Flow Rate (gpm (US))</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
<td>2.6</td>
</tr>
<tr>
<td>60</td>
<td>20</td>
<td>2.7</td>
</tr>
<tr>
<td>80</td>
<td>40</td>
<td>2.8</td>
</tr>
<tr>
<td>100</td>
<td>60</td>
<td>2.9</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Length (Nominal)</th>
<th>Micron</th>
<th>Endcap</th>
<th>Code Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCMT</td>
<td>10¨ (250 mm)</td>
<td>0.2</td>
<td>PP</td>
<td>ZCMT</td>
</tr>
<tr>
<td></td>
<td>20¨ (500 mm)</td>
<td>0.2</td>
<td>PP</td>
<td>ZCMT</td>
</tr>
<tr>
<td></td>
<td>30¨ (750 mm)</td>
<td>0.2</td>
<td>PP</td>
<td>ZCMT</td>
</tr>
</tbody>
</table>

### Ordering Information

- For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domein hunter contact.
- For validation advice on cleaning and validation, please contact the Technical Support Group through your usual Parker domein hunter contact.
TETPOR LIQUID filters are particularly suitable for sterilization and particulate removal from aggressive chemicals (including acids, bases and solvents) within a wide range of critical processing industries. The superior performance, strength and durability of TETPOR LIQUID filters stems from the use of a single layer, high security PTFE membrane, which has a high dirt holding capacity due to its high voids volume. This results in low pressure drops and long service life. High flow rates are achieved due to the optimized pleat pack density and the superior design construction of TETPOR LIQUID filters.

Features and Benefits
- Superior chemical resistance of PTFE membrane combined with polypropylene hardware
- Integrity tested prior to despatch
- Validated to ASTM F838-05 methodology
- Comprehensive range of end cap configurations for retrofitting

Performance Characteristics

TETPOR LIQUID Filter Cartridges

Specifications

Materials of Construction
- Filtration Membrane: PTFE
- Upstream Support: Polypropylene
- Downstream Support: Polypropylene

Filter Cartridges
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Polypropylene
- End Cap Insert: 316L Stainless Steel
- Standard o-rings/gaskets: Viton

Features and Benefits
- Comprehensive range of chemical resistance
- Valved to ASTM F838-05 methodology
- Superior design construction

Validation
- Demicap Filter Capsules: Validated to ISO 10993-10
- MURUS Disposable Filter Capsules: Validated to ISO 10993-7
- Syringe Filters: ISO10993 equivalents
- Sterilization: All products are validated to USP Plastics Class VI - 121 °C and ISO10993 equivalents

Recommended Operating Conditions
- Filter Cartridges: Continuous operating temperature and higher short-term temperatures during CIP to the following limits:
  - Temperature: °C
  - Max. Flow (L/min)
  - Max. Pressure (bar)
- A Size: 0.25 µm (1.29 ft²)
- B Size: 0.12 µm (0.64 ft²)
- K Size: 0.36 µm (0.64 ft²)
- E Size: 0.06 µm (0.02 ft²)

Effective Filtration Area (EFA)
- 10¨ (250 mm): 0.77 m² (8.28 ft²)
- K Size: 0.36 m² (0.02 ft²)
- A Size: 0.25 m² (0.26 ft²)
- B Size: 0.12 m² (0.13 ft²)
- E Size: 0.06 m² (0.02 ft²)

Differential Pressure (psi)
- MIN: 0 - MAX: 60

Flow (L/min) for liquid @ 20 °C and 1 cp
- A Size: 0.45 µm
- B Size: 1.0 µm
- K Size: 0.2 µm
- E Size: 0.1 µm

Differential Pressure (mbar)
- MIN: 0 - MAX: 350

Recommended Flow (L/min) for liquid @ 20 °C and 1 cp

Recommended Flow (L/min) for liquid @ 20 °C and 1 cp

TETPOR LIQUID filter cartridges can be sanitized with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals.

For detailed operational procedures and advice on cleaning and sterilization, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Food and Biological Safety
Materials conform to the relevant requirements of 21 CFR Part 177 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.
**TETPOR LIQUID Filter Cartridges**

### Performance Characteristics

**TOC / Conductivity**
The filtrate quality from a 10" (250 mm) TETPOR LIQUID conforms to the requirements of current USP (TOC) and USP (ρT).

**Endotoxins**
Aqueous extracts from the 10" (250 mm) TETPOR LIQUID contain < 0.25 EU/ml when tested in accordance with the Limulus Amebocyte Lysate test.

**Non-Volatile Extractables (NVE)**
Total NVEs extracted in the first 5 litre flush of purified water for oxidizable substances following a 1 litre water flush.

**Pharmaceutical Validation**
A full validation guide is available upon request from Laboratory Services Group [LSG].

**Retention Characteristics**
TETPOR LIQUID filter cartridges are validated by bacterial challenge testing with *Pseudomonas diminuta* to current ASTM F838-05 methodology (10^7 organisms / cm² / EPA minimum) with typical in-house challenge levels being 10^8 organisms per 10" (250 mm) filter cartridge.

**Challenge Levels**
- Total NVEs extracted in the First 5 litre flush of sterilized water for oxidizable substances following a 1 litre water flush.

### Integrity Test Data

<table>
<thead>
<tr>
<th>Filter Cartridges</th>
<th>Micron Rating</th>
<th>Maximum Pressure (psig)</th>
<th>Max. Diffusional Flow (barg)</th>
<th>Test Pressure (psig)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1</td>
<td>14.5</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.2</td>
<td>11.6</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.45</td>
<td>5.8</td>
<td>0.4</td>
<td></td>
</tr>
</tbody>
</table>

### Ordering Information

**Cartridges**

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Micron</th>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCMT</td>
<td>1&quot; Tri-Clamp</td>
<td>0.1 µm</td>
<td>GCMT</td>
<td>1&quot; Tri-Clamp</td>
<td>0.1 µm</td>
</tr>
<tr>
<td></td>
<td>2&quot; Tri-Clamp</td>
<td>0.2 µm</td>
<td></td>
<td>2&quot; Tri-Clamp</td>
<td>0.2 µm</td>
</tr>
<tr>
<td></td>
<td>3&quot; Tri-Clamp</td>
<td>0.45 µm</td>
<td></td>
<td>3&quot; Tri-Clamp</td>
<td>0.45 µm</td>
</tr>
<tr>
<td></td>
<td>4&quot; Tri-Clamp</td>
<td>1.0 µm</td>
<td></td>
<td>4&quot; Tri-Clamp</td>
<td>1.0 µm</td>
</tr>
</tbody>
</table>

**MURUS Capsules**

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZLMT</td>
<td>1/2&quot; NPT Male</td>
<td>G &amp; H connections only</td>
<td>G &amp; H connections only</td>
<td>D 1/2&quot; Hosebarb</td>
<td>R Grommel / QC</td>
<td>N 1/2&quot; NPT Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G 1/4&quot; NPT Male</td>
<td>Q Walther QC</td>
<td>T 1&quot; Tri-Clamp</td>
<td></td>
</tr>
</tbody>
</table>

**DEMICAP Capsules**

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZEMT</td>
<td>1/2&quot; NPT Male</td>
<td>G &amp; H connections only</td>
<td>G &amp; H connections only</td>
<td>D 1/2&quot; Hosebarb</td>
<td>R Grommel / QC</td>
<td>N 1/2&quot; NPT Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G 1/4&quot; NPT Male</td>
<td>Q Walther QC</td>
<td>T 1&quot; Tri-Clamp</td>
<td></td>
</tr>
</tbody>
</table>

**Syringe Filters**

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
<th>Code</th>
<th>Diameter</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSMT</td>
<td>1/4&quot;</td>
<td>G &amp; H connections only</td>
<td>G &amp; H connections only</td>
<td>D 1/4&quot; Hosebarb</td>
<td>R Grommel / QC</td>
<td>N 1/4&quot; NPT Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G 1/8&quot; NPT Male</td>
<td>Q Walther QC</td>
<td>T 1/4&quot; Coillock</td>
<td></td>
</tr>
</tbody>
</table>

### Performance Characteristics

**Oxidizable Substances**
TETPOR LIQUID filter cartridges meet current USP and EP quality standards for sterile purified water for oxidizable substances following a 1 litre water flush.

**TOC / Conductivity**
Current TOC / Conductivity requirements of current USP (TOC) and USP (ρT).

### Integrity Test Data

<table>
<thead>
<tr>
<th>Filter Cartridges</th>
<th>Micron Rating</th>
<th>Test Pressure (psig)</th>
<th>Diffusional Flow (barg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1</td>
<td>14.5</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>0.2</td>
<td>11.6</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>0.45</td>
<td>5.8</td>
<td>0.4</td>
</tr>
</tbody>
</table>

### Ordering Information

**Cartridges**

<table>
<thead>
<tr>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Micron</th>
<th>Code</th>
<th>Length (Nominal)</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZCMT</td>
<td>1&quot; Tri-Clamp</td>
<td>0.1 µm</td>
<td>GCMT</td>
<td>1&quot; Tri-Clamp</td>
<td>0.1 µm</td>
</tr>
<tr>
<td></td>
<td>2&quot; Tri-Clamp</td>
<td>0.2 µm</td>
<td></td>
<td>2&quot; Tri-Clamp</td>
<td>0.2 µm</td>
</tr>
<tr>
<td></td>
<td>3&quot; Tri-Clamp</td>
<td>0.45 µm</td>
<td></td>
<td>3&quot; Tri-Clamp</td>
<td>0.45 µm</td>
</tr>
<tr>
<td></td>
<td>4&quot; Tri-Clamp</td>
<td>1.0 µm</td>
<td></td>
<td>4&quot; Tri-Clamp</td>
<td>1.0 µm</td>
</tr>
</tbody>
</table>

**MURUS Capsules**

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZLMT</td>
<td>1/2&quot; NPT Male</td>
<td>G &amp; H connections only</td>
<td>G &amp; H connections only</td>
<td>D 1/2&quot; Hosebarb</td>
<td>R Grommel / QC</td>
<td>N 1/2&quot; NPT Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G 1/4&quot; NPT Male</td>
<td>Q Walther QC</td>
<td>T 1&quot; Tri-Clamp</td>
<td></td>
</tr>
</tbody>
</table>

**DEMICAP Capsules**

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
<th>Code</th>
<th>Diameter (Nominal)</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZEMT</td>
<td>1/2&quot; NPT Male</td>
<td>G &amp; H connections only</td>
<td>G &amp; H connections only</td>
<td>D 1/2&quot; Hosebarb</td>
<td>R Grommel / QC</td>
<td>N 1/2&quot; NPT Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G 1/4&quot; NPT Male</td>
<td>Q Walther QC</td>
<td>T 1&quot; Tri-Clamp</td>
<td></td>
</tr>
</tbody>
</table>

**Syringe Filters**

<table>
<thead>
<tr>
<th>Code</th>
<th>Diameter</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
<th>Code</th>
<th>Diameter</th>
<th>Inlet Connection</th>
<th>Outlet Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSMT</td>
<td>1/4&quot;</td>
<td>G &amp; H connections only</td>
<td>G &amp; H connections only</td>
<td>D 1/4&quot; Hosebarb</td>
<td>R Grommel / QC</td>
<td>N 1/4&quot; NPT Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G 1/8&quot; NPT Male</td>
<td>Q Walther QC</td>
<td>T 1/4&quot; Coillock</td>
<td></td>
</tr>
</tbody>
</table>
A dedicated housing range
That can be customized to meet the demands of your application

Parker domnick hunter manufacture stainless and carbon steel pressure vessels that are designed to meet International industry standards as well as specific customer application requirements.

A combination of highly skilled employees, dedicated manufacturing facility and nearly 50 years experience of supplying process industries around the world, Parker domnick hunter provide solutions that match your requirements for performance, quality and value.

Our fabrication facility manufactures a standard range of stainless steel housings to support our range of filters, which can be modified and adapted to meet any process requirements. Our strength is in providing a range of products that meet industry requirements and a flexibility to meet your own requirements.

Manufacturing best practice
- ISO9001
- ISO13485
- ISO14001

Vessels built to industry standards
- PED (CE)
- EN / 8445
- EN / 286
- EN / 1210
- ATEX
- PD5500
- ASMEU
- ASME BPE

Stamp of approval
- Certificate of Authorization (U stamp)
- National Board Certificate of Authorization
- American Society of Mechanical Engineers

- Air, gas and liquid housings
- Single and multi rounds
- Multi housing skid systems
- Dedicated industry specific range
- Custom options to meet application needs
- Silicone rubber heating jackets
- Single cartridge polypropylene / nylon housings
A dedicated housing range

- Flow efficient sanitary 316L demi air and gas housing for smaller scale applications in the Food & Beverage and Pharmaceutical industry.
- Sanitary tri-clamp connections, gauge port, drain and body closure as standard. Many other options available in the PLUS range.
- Sanitary ‘C’ style or demi TRUESEAL filter cartridge locations.

- Flow efficient sanitary 316L demi air and gas housing for applications such as in the Food & Beverage industry.
- Screwed (G) BSP or NPT connections, vent and drain as standard. Many other options available in the PLUS range.
- Sanitary tri-clamp connections, gauge port, drain and body closure as standard. Many other options available in the PLUS range.
- Sanitary ‘C’ style or demi TRUESEAL filter cartridge locations.

- Flow efficient 316L sanitary air and gas housing typically for tank venting applications.
- Sanitary tri-clamp connections and body closure as standard. Other options available in the PLUS range, including electro-polished finish and integrity test sockets.
- Sanitary ‘C’ style or demi TRUESEAL filter cartridge locations.

- Flow efficient 316L sanitary liquid housing for applications in the Food & Beverage and Pharmaceutical industry.
- Sanitary tri-clamp connections, gauge port and body closure as standard. Many other options available in the PLUS range.
- Sanitary ‘C’ style or demi TRUESEAL filter cartridge locations.

- Liquid 316L housing for proliferation and industrial applications.
- Screwed (G) BSP or NPT connections, vent and drain as standard. Many other options available in the PLUS range.
- B (DOE) or D [222] style filter cartridge locations.

- Enhanced PLUS flow efficient Alloy 22 (non-wetted parts 316L) air and gas housing for aggressive applications such as chemical synthesis in the Pharmaceutical industry.
- Flanged connections with screwed (G), BSP or NPT vent and drain and tri-clamp body closure as standard. Other options available.
- Sanitary ‘C’ style filter cartridge locations.

- Enhanced PLUS higher pressure 316L air and gas housing for applications such as in the Food & Beverage industry.
- 26 barg (383 psig) and 40 barg (580 psig) variants available.
- ANSI, ISA, IG [BSP or NPT] connections, vent and drain as standard. Other options available.
- Sanitary ‘C’ style filter cartridge locations.

- Sanitary tri-clamp connections, gauge port, drain and body closure as standard. Many other options available.
- Sanitary J (Jumbo) style filter cartridge locations.

- Single and 3 round flow efficient 316L steam housing for applications such as in the Industrial Biotech and Food & Beverage industry.
- Weld end or flanged connection, screwed (G), BSP or NPT, vent and drain as standard. Many other options available.
- Sanitary J (Jumbo) style filter cartridge locations.

- Sanitary tri-clamp gauge port and drain connections, vent and drain as standard. Many other options available.
- Sanitary ‘C’ style filter cartridge locations.

- Multi-round flow efficient 316L air and gas housing for applications such as in the Industrial Biotech and Food & Beverage industry.
- Many connection options as standard. Sanitary tri-clamp gauge port and drain connections (or no drains). Many other options available.
- Sanitary ‘C’ style filter cartridge locations.

- Multi liquid 316L housing for prefiltration and industrial applications.
- Screwed (G) BSP or NPT connections, vent and drain as standard. Many other options available in the PLUS range.
- B (DOE) or D [222] style filter cartridge locations.

- Housing heating jacket system mainly for vent applications.
- Silicone or PTFE Glass Silk heating jacket with integrated control unit and inter-connection wiring.
- Accurate temperature control using PT100 temperature sensor with additional thermal cut out at 150 °C (302 °F).

For more information on Parker domnick hunter’s complete housing range, please contact your local Parker domnick hunter representative for a copy of the latest technical literature.
Integrity testing equipment

Whatever your industry, integrity testing plays a vital role in ensuring the performance and sterility of your process filters. The ability to integrity test a filter provides a valuable tool to gauge, not only performance of your process, but also the quality and safety of your final product. A properly conducted integrity test provides assurances that the filter will fulfill the role it was designed for ensuring your production process runs to its maximum potential.

Integrity testing of sterile grade filters is a fundamental requirement of critical process applications. FDA guidelines require integrity testing of filters used in the processing of sterile solutions. It is vital producers ensure the quality and biological safety of the product that reaches the customer. Increased shelf-life, reputation and customer well being are of paramount importance.

Parker domnick hunter, have a range of instruments that have been specifically designed to meet the demands of your industry. All instrumentation is supported by our global team of dedicated instrument service Engineers on hand to provide validation, installation and performance guarantees.

Aerosol challenge
This methodology uses a high concentration of aerosol in the most penetrating particle size (MPPS) of 0.2 - 0.3 µm. The MPPS is a function of the particle challenge for air filters.

During the test the filter system is challenged with 10^9 aerosol particles. The latest in laser particle detection technology measures the percentage penetration through the test system. The test is directly correlated to aerosol challenges with live Breundomonas diminuta and E-coli phage. A positive result shows that the test filter is providing bacterial and viral removal when used in gas. The integrity test method of VALAIRDATA II is unique to Parker domnick hunter and is the only integrity test method for gas filters to simulate actual filter use.

Bubble point testing
The bubble point test measures the pressure that is required to expel a wetting fluid from the largest pore in a wetted membrane. Historically this was a visual assessment indicated by bubbling on the downstream side of the membrane, hence the term ‘bubble point’. The test is typically applied to smaller filters and to remove subjectivity is now conducted using automated integrity testers.

Water intrusion
Water intrusion testing is based on the measure of the intrusion or flow of water into the pore structure of a hydrophobic filter membrane, under an applied test pressure. The flow is measured, with the test result / limit being directly correlated to the ASTM standard for a sterilizing grade filter.

Diffusional flow
The diffusional flow test measures the volume of a diffusive gas flow across a wetted membrane, under an applied test pressure. This method can be utilized to test both hydrophilic and hydrophobic membrane filters.

During the test the filter system is challenged with 10^9 aerosol particles. The latest in laser particle detection technology measures the percentage penetration through the test system. The test is directly correlated to live bacterial challenges using industry standard organisms. For a 0.2 micron sterilizing grade filter this challenge procedure is defined in ASTM F838-05.
The most efficient test for sterile gas filters

Since 1990 and the launch of the unique VALAIRDATA aerosol integrity test system, the aerosol test method has become widely accepted in a variety of applications and industries as a routine method for integrity testing air filtration systems. The VALAIRDATA II integrity test instrument is a second generation design offering further practicality in air filter testing.

The VALAIRDATA II combines the sound principles of aerosol testing, as recommended in the ‘PDA’s Sterilizing Air Technical Report #40’, with a compact, portable and ergonomic design reducing test times and improving multi cartridge system sensitivity.

The VALAIRDATA II aerosol test is correlated to an aerosolised Brevundomonas diminuta and bacteriophage (such as Enterobacteria phage M2) challenge. Aerosol methods are rapid, can identify filter non-integrity on very large systems, allow immediate use of filter systems after testing as drying is not required and provides direct measurement of filter performance for gas filters.

Since 1990 and the launch of the unique VALAIRDATA aerosol integrity test system, the aerosol test method has become widely accepted in a variety of applications and industries as a routine method for integrity testing air filtration systems. The VALAIRDATA II integrity test instrument is a second generation design offering further practicality in air filter testing.

The VALAIRDATA II combines the sound principles of aerosol testing, as recommended in the ‘PDA’s Sterilizing Air Technical Report #40’, with a compact, portable and ergonomic design reducing test times and improving multi cartridge system sensitivity.

The VALAIRDATA II aerosol test is correlated to an aerosolised Brevundomonas diminuta and bacteriophage (such as Enterobacteria phage M2) challenge. Aerosol methods are rapid, can identify filter non-integrity on very large systems, allow immediate use of filter systems after testing as drying is not required and provides direct measurement of filter performance for gas filters.

### Instrument Options

<table>
<thead>
<tr>
<th>Instrument Material</th>
<th>Instrument Size</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moulded/Ribbed Polyurethane Case &amp; Non-Slip Feet</td>
<td>363 mm x 135 mm x 308 mm / 14.3” x 5.3” x 12.1”</td>
<td>8 Kg / 18 lb</td>
</tr>
<tr>
<td>IFDS</td>
<td>Re-chargeable Battery (12V / 3 Ah &amp; Mains 90 - 230 VAC / 10 / 14 Vac)</td>
<td></td>
</tr>
<tr>
<td>16 Tactile Keys with Alphanumeric Input</td>
<td>5 - 37°C (40 - 95.6°F)</td>
<td></td>
</tr>
<tr>
<td>Rectus 21 KA Series</td>
<td>10 - 95% RH (non-condensing)</td>
<td></td>
</tr>
<tr>
<td>English, French, German, Spanish, Italian, Danish, Portuguese &amp; Swedish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Physical Parameters

- **Operating Temperature:** 5 - 37°C (40 - 95.6°F)
- **Inlet Pressure Required:** 3.5 - 7.0 barg (50 - 100 psig) (60 Al / min)
- **Operating Humidity:** 10 - 95% RH (non-condensing)
- **Power Supply:** Re-chargeable Battery (12V / 3.8 Ah) & Mains (90 - 230 VAC : 50 / 60 Hz)
- **Ingress Protection Class:** IP45
- **Weight:** 8 Kg : 18 lb
- **Dimensions:** 363 mm x 155 mm x 308 mm : 14.3¨ x 6.1¨ x 12.1¨
- **Material:** Moulded Robust Polyurethane Case & Non-Slip Feet
- **Screening Parameters:** Fully validated secure option design to GAMP 4 Guidelines and meets the FDA’s 21CFR11 requirements
- **Store up to 200 test results and supported with software for PC download**
- **PDA recommended for use where filtered gas not in direct contact with exposed sterile product or surfaces**
- **30 second test time for a single 10” (250 mm) cartridge challenge**
- **Results correlated to aerosol bacterial and viral challenge**
- **Increased sensitivity compared to liquid based tests especially on multi-cartridge systems**
- **Built-in test instrument system integrity check**
- **Well established with over 200 current VALAIRDATA II users**

### Instrument Options

<table>
<thead>
<tr>
<th>PC Manager Software</th>
<th>Secure Environment</th>
<th>Electronic Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Secure</td>
<td>Electronic</td>
</tr>
<tr>
<td>Standard</td>
<td>Secure</td>
<td>Electronic</td>
</tr>
<tr>
<td>NT &amp; XP</td>
<td>GAMP Hardware &amp; Software Development</td>
<td>GAMP Hardware &amp; Software Development</td>
</tr>
<tr>
<td>GAMP Hardware &amp; Software Development</td>
<td>21 CFR 11 Compliant</td>
<td>GAMP Hardware &amp; Software Development</td>
</tr>
<tr>
<td>21 CFR 11 Compliant</td>
<td>21 CFR 11 Compliant</td>
<td>21 CFR 11 Compliant</td>
</tr>
<tr>
<td>Open Access</td>
<td>Access Password &amp; PIN</td>
<td>Access Password &amp; PIN</td>
</tr>
<tr>
<td>Open Access</td>
<td>Access Password &amp; PIN</td>
<td>Access Password &amp; PIN</td>
</tr>
<tr>
<td>RS232 Transfer</td>
<td>RS232 Transfer</td>
<td>RS232 Transfer</td>
</tr>
<tr>
<td>RS232 Transfer</td>
<td>RS232 Transfer</td>
<td>RS232 Transfer</td>
</tr>
</tbody>
</table>

**Support:**
- **Telephone:** +44 (0)191 410 5121
- **Email:** dhprocess@parker.com
- **Website:** www.parker.com/processfiltration
PORECHECK IV
The perfect choice for the pharmaceutical industry

Parker domnick hunter, in conjunction with the pharmaceutical industry has reviewed the limitations and benefits of current integrity test equipment. This review has led to the development of the PORECHECK IV integrity test system which has specifically been designed with the needs of routine production users in mind.

The PORECHECK IV is configured for water intrusion testing, pressure decay and bubble point testing.

The PORECHECK IV comes in two versions:

‘P’ Pharmaceutical (CFR)
- allows traceability and audit tracking capability

‘C’ Certified
- comes with password level protection

This market leading system incorporates a range of design features unique to the PORECHECK IV bringing true portability, enhanced ease of use, flexibility and reliability in challenging environments. All this within an instrument fully compliant with 21 CFR Part 11.

• Designed to 21 CFR Part II and Annex II compliant environments
• Automatic compensation when used on housings located 10 metres above instrument
• Maintains resolution and accuracy regardless of filter system size 0.1 to 150 litres
• Highly portable and mains independent
• Configurable to automatically flush and drain filters
• Robust waterproof stainless steel casing
• Direct attachment to test disposable capsules
• 100 storable test programs defined in blocks

Physical Parameters

<table>
<thead>
<tr>
<th>Instrument Material</th>
<th>Instrument Size</th>
<th>Weight</th>
<th>Ingress Protection Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless Steel 1.4301 (AISI 304)</td>
<td>200 mm x 300 mm x 115 mm x 7.9&quot; x 11.8&quot; x 4.7&quot;</td>
<td>8 &amp; Kg</td>
<td>2018</td>
</tr>
<tr>
<td>B76c</td>
<td>Re-chargable Battery (12V / 3.0 Ah &amp; Module 200 - 30 ARC / 40 Ahr)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote Printer - Alpha Numeric &amp; Instrument Keypad - Numeric</td>
<td>4.5 - 8.0 APP (Rs - 1 hr pin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stäubli RBE 3 Style, Stainless Steel 1.4404 (AISI 316L)</td>
<td>2 - 55 °C (055 - 122 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 60% RH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LCD - 20 Character x Lines - Back Lit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internally Heated Impact Dot Matrix, 20 Characters per Line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English, French, German, Spanish, Italian &amp; Danish</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accuracy......................................................................................................

<table>
<thead>
<tr>
<th>Instrument Options</th>
<th>Standard</th>
<th>High Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Intrusion Measurement Range (ml / min)</td>
<td>100 - 9999</td>
<td>1 - 9999</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Test Pressure (mbar)</td>
<td>355 - 4085</td>
<td>355 - 4080</td>
</tr>
<tr>
<td>Stabilisation Time</td>
<td>40 - 999 sec</td>
<td>40 - 999 sec</td>
</tr>
<tr>
<td>Test Time (s)</td>
<td>30 - 999 sec</td>
<td>30 - 999 sec</td>
</tr>
<tr>
<td>Hardware Volume (ml)</td>
<td>1 - 10000</td>
<td></td>
</tr>
<tr>
<td>Bubble Point Measurement Range (mbar)</td>
<td>20 - 980</td>
<td>20 - 980</td>
</tr>
<tr>
<td>Resolution (µl / min)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Instrument Options

<table>
<thead>
<tr>
<th>Storable Test Records</th>
<th>USER Accounts</th>
<th>Access USER</th>
<th>Access PROGRAMMER</th>
<th>Access ADMINISTRATOR</th>
<th>Record Output</th>
<th>Audit Trail Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>Flash - EPROM</td>
</tr>
</tbody>
</table>

Test Accuracy

<table>
<thead>
<tr>
<th>Test Accuracy</th>
<th>Standard</th>
<th>High Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Intrusion Measurement Range (ml / min)</td>
<td>100 - 10000</td>
<td>1 - 10000</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Test Pressure (mbar)</td>
<td>355 - 4085</td>
<td>355 - 4080</td>
</tr>
<tr>
<td>Stabilisation Time</td>
<td>40 - 999 sec</td>
<td>40 - 999 sec</td>
</tr>
<tr>
<td>Test Time (s)</td>
<td>30 - 999 sec</td>
<td>30 - 999 sec</td>
</tr>
<tr>
<td>Hardware Volume (ml)</td>
<td>1 - 10000</td>
<td></td>
</tr>
<tr>
<td>Bubble Point Measurement Range (mbar)</td>
<td>20 - 980</td>
<td>20 - 980</td>
</tr>
<tr>
<td>Resolution (µl / min)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Accuracy</th>
<th>Standard</th>
<th>High Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Intrusion Measurement Range (ml / min)</td>
<td>100 - 10000</td>
<td>1 - 10000</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Test Pressure (mbar)</td>
<td>355 - 4085</td>
<td>355 - 4080</td>
</tr>
<tr>
<td>Stabilisation Time</td>
<td>40 - 999 sec</td>
<td>40 - 999 sec</td>
</tr>
<tr>
<td>Test Time (s)</td>
<td>30 - 999 sec</td>
<td>30 - 999 sec</td>
</tr>
<tr>
<td>Hardware Volume (ml)</td>
<td>1 - 10000</td>
<td></td>
</tr>
<tr>
<td>Bubble Point Measurement Range (mbar)</td>
<td>20 - 980</td>
<td>20 - 980</td>
</tr>
<tr>
<td>Resolution (µl / min)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Maintained resolution and accuracy regardless of filter system size 0.1 to 150 litres

Highly portable and mains independent

Testing Accuracy

<table>
<thead>
<tr>
<th>Test Accuracy</th>
<th>Standard</th>
<th>High Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Intrusion Measurement Range (ml / min)</td>
<td>100 - 10000</td>
<td>1 - 10000</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Test Pressure (mbar)</td>
<td>355 - 4085</td>
<td>355 - 4080</td>
</tr>
<tr>
<td>Stabilisation Time</td>
<td>40 - 999 sec</td>
<td>40 - 999 sec</td>
</tr>
<tr>
<td>Test Time (s)</td>
<td>30 - 999 sec</td>
<td>30 - 999 sec</td>
</tr>
<tr>
<td>Hardware Volume (ml)</td>
<td>1 - 10000</td>
<td></td>
</tr>
<tr>
<td>Bubble Point Measurement Range (mbar)</td>
<td>20 - 980</td>
<td>20 - 980</td>
</tr>
<tr>
<td>Resolution (µl / min)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Instrument Options

<table>
<thead>
<tr>
<th>Storable Test Records</th>
<th>USER Accounts</th>
<th>Access USER</th>
<th>Access PROGRAMMER</th>
<th>Access ADMINISTRATOR</th>
<th>Record Output</th>
<th>Audit Trail Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>Flash - EPROM</td>
</tr>
</tbody>
</table>

Test Accuracy

<table>
<thead>
<tr>
<th>Test Accuracy</th>
<th>Standard</th>
<th>High Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Intrusion Measurement Range (ml / min)</td>
<td>100 - 10000</td>
<td>1 - 10000</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Test Pressure (mbar)</td>
<td>355 - 4085</td>
<td>355 - 4080</td>
</tr>
<tr>
<td>Stabilisation Time</td>
<td>40 - 999 sec</td>
<td>40 - 999 sec</td>
</tr>
<tr>
<td>Test Time (s)</td>
<td>30 - 999 sec</td>
<td>30 - 999 sec</td>
</tr>
<tr>
<td>Hardware Volume (ml)</td>
<td>1 - 10000</td>
<td></td>
</tr>
<tr>
<td>Bubble Point Measurement Range (mbar)</td>
<td>20 - 980</td>
<td>20 - 980</td>
</tr>
<tr>
<td>Resolution (µl / min)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Instrument Options

<table>
<thead>
<tr>
<th>Storable Test Records</th>
<th>USER Accounts</th>
<th>Access USER</th>
<th>Access PROGRAMMER</th>
<th>Access ADMINISTRATOR</th>
<th>Record Output</th>
<th>Audit Trail Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>Flash - EPROM</td>
</tr>
</tbody>
</table>

Test Accuracy

<table>
<thead>
<tr>
<th>Test Accuracy</th>
<th>Standard</th>
<th>High Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Intrusion Measurement Range (ml / min)</td>
<td>100 - 10000</td>
<td>1 - 10000</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Test Pressure (mbar)</td>
<td>355 - 4085</td>
<td>355 - 4080</td>
</tr>
<tr>
<td>Stabilisation Time</td>
<td>40 - 999 sec</td>
<td>40 - 999 sec</td>
</tr>
<tr>
<td>Test Time (s)</td>
<td>30 - 999 sec</td>
<td>30 - 999 sec</td>
</tr>
<tr>
<td>Hardware Volume (ml)</td>
<td>1 - 10000</td>
<td></td>
</tr>
<tr>
<td>Bubble Point Measurement Range (mbar)</td>
<td>20 - 980</td>
<td>20 - 980</td>
</tr>
<tr>
<td>Resolution (µl / min)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Accuracy (µl)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>
**BEVCHECK & BEVCHECK PLUS**

Monitoring performance and product quality

**BEVCHECK**

Simple routine integrity testing for the beverage industry BEVCHECK is an easy to use, portable unit that allows you to test the integrity of your membrane filters using the pressure decay method. Test data can be reported as pressure decay or diffusional flow. BEVCHECK is a small hand held unit, or is light enough to be mounted directly on to a connection on the filter housing. Software included with the unit enables it to be connected to a pc for enhanced programming and data handling flexibility.

**BEVCHECK PLUS**

Provides an automated method for testing membrane filter cartridges used in beverage applications. Using the pressure decay method, the unit controls the whole test from increase of pressure, through stabilization and pressure decay measurement, to release of pressure. Test data can be reported as pressure decay or diffusional flow and is provided in a printed summary. The unit is small enough to be portable around the production facility, or can be positioned centrally for remote connection to the filter housings.

- Large memory stores up to 19 programs and 100 test reports
- Flexible - suitable for use with compressed air or nitrogen
- Accommodates a wide range of filter retention ratings and housing sizes
- Clear liquid crystal display and wipe clean keypad
- Self test function automatically checks the function of the unit
- PC interface and software provides additional programming and data handling flexibility
- IP53 protection class
- Hand held portability with rechargeable battery operation
- Convenient built-in printer provides printed test report (PLUS)

**Physical Parameters**

<table>
<thead>
<tr>
<th>BEVCHECK</th>
<th>BEVCHECK PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Material</td>
<td>PA66 G10</td>
</tr>
<tr>
<td>Instrument Size (WxDxH)</td>
<td>105 mm x 210 mm x 45 mm (4¨ x 8.25¨ x 1.75¨)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.5 Kg (1 lb)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>9V Batteries (4 x)</td>
</tr>
<tr>
<td>Battery Life (From Full Charge)</td>
<td>7 hours Typ.</td>
</tr>
<tr>
<td>Key Type</td>
<td>1x Key - Polycarbonate</td>
</tr>
<tr>
<td>Keyboard</td>
<td>0 - 4800 mbar</td>
</tr>
<tr>
<td>Inlet Pressure</td>
<td>2 - 32°C (57°F - 90°F)</td>
</tr>
<tr>
<td>Operation Temperature</td>
<td>Compressed Air (1 Bar)</td>
</tr>
<tr>
<td>Pressure Measurement</td>
<td>10 - 999999 ml</td>
</tr>
<tr>
<td>Diffusional Flow Range</td>
<td>0 - 4000 mbar</td>
</tr>
<tr>
<td>Test Pressure</td>
<td>5 - 95% Rel.</td>
</tr>
<tr>
<td>Test Pressure Control</td>
<td>LCD - 16 Character x 2 Lines</td>
</tr>
<tr>
<td>Storable Test Records</td>
<td>100</td>
</tr>
<tr>
<td>Storable Test Programs</td>
<td>Fully Automatic</td>
</tr>
<tr>
<td>Hand Held Portability</td>
<td>Yes</td>
</tr>
<tr>
<td>PC Interface and Software</td>
<td>Provided</td>
</tr>
<tr>
<td>Printers</td>
<td>None</td>
</tr>
<tr>
<td>Language</td>
<td>English, German, Italian, French, Spanish &amp; Portuguese</td>
</tr>
<tr>
<td>Power Supply</td>
<td>100 - 240V (50 - 60Hz) / 24V DC</td>
</tr>
<tr>
<td>Ingress Protection Class</td>
<td>IP53</td>
</tr>
<tr>
<td>Weight</td>
<td>1.33 Kg (2.9 lb)</td>
</tr>
<tr>
<td>Housing Material</td>
<td>ABS Polystyrol</td>
</tr>
<tr>
<td>Ambient Humidity</td>
<td>5 - 95% Rel.</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>3 - 33 °C (37.4°F - 91.4°F)</td>
</tr>
<tr>
<td>Operation Temperature</td>
<td>3 - 35 °C (37.4°F - 95 °F)</td>
</tr>
<tr>
<td>Keyboard</td>
<td>Built-in</td>
</tr>
<tr>
<td>Battery Life (From Full Charge)</td>
<td>9V Batteries (4 x)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>100 - 230V AC / 47 - 63 Hz / 7.5V 1.33A (230V AC:18V DC, 1.7A / 230V AC:15V DC, 1.5A)</td>
</tr>
<tr>
<td>Ingress Protection Class</td>
<td>IP53</td>
</tr>
</tbody>
</table>

For detailed technical data and specifications, please refer to the Parker Domnick Hunter website or contact our Process Filtration Sales Department for more information.

**Documentation / Ancillaries**

- Interfaces
- Test Time Range
- Stabilisation Time Range
- Diffusional Flow Range
- Housing Volume Range
- Test Pressure Range
- Test Pressure Control
- Test Program
- Housing Material
- Language
- Battery Life
- Ingress Protection Class
- Weight

For more information on our products, please visit www.parker.com/processfiltration or contact our Process Filtration Sales Department.

**Calibration Certificates**

- CE Declaration of Conformity
- Declaration of Conformity
- Calibration Certificate
- Calibration Certificate
- Technical File
- Warranties
- Power Supply
- Charger

**Installation, Operation & Maintenance Instructions (IOMI)**

- Installation, Operation & Maintenance Instructions (IOMI)
- Installation, Operation & Maintenance Instructions (IOMI)
- Installation, Operation & Maintenance Instructions (IOMI)
- Installation, Operation & Maintenance Instructions (IOMI)
- Installation, Operation & Maintenance Instructions (IOMI)
Process and analytical filter discs from Parker domnick hunter are available in a range of pore size and a choice of five materials.

Membrane discs:
- Cellulose mixed esters
- Polyethersulphone
- Nylon

Fibrous media discs:
- Glass microfibre
- Polypropylene

The discs are supplied interleaved between two protecting layers with the feed surface oriented upwards in the box.

Features and Benefits
- High throughput rates
- Superior flow characteristics
- Easy to handle
- Reduced filtration time
- Low protein binding

### Liquid Filters

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZD</td>
<td>-</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT</td>
<td>FILTER SP</td>
<td>1.2 µm</td>
<td>002</td>
</tr>
<tr>
<td>GP</td>
<td>FILTER SP</td>
<td>1.5 µm</td>
<td>003</td>
</tr>
<tr>
<td>PS</td>
<td>FILTER SP</td>
<td>3.0 µm</td>
<td>004</td>
</tr>
<tr>
<td>B0</td>
<td>FILTER SP</td>
<td>5.0 µm</td>
<td>005</td>
</tr>
<tr>
<td>B10</td>
<td>FILTER SP</td>
<td>10.0 µm</td>
<td>006</td>
</tr>
<tr>
<td>D10</td>
<td>FILTER SP</td>
<td>16.0 µm</td>
<td>007</td>
</tr>
<tr>
<td>D20</td>
<td>FILTER SP</td>
<td>26.0 µm</td>
<td>008</td>
</tr>
<tr>
<td>D30</td>
<td>FILTER SP</td>
<td>40.0 µm</td>
<td>009</td>
</tr>
<tr>
<td>B50</td>
<td>FILTER SP</td>
<td>58.0 µm</td>
<td>010</td>
</tr>
<tr>
<td>D75</td>
<td>FILTER SP</td>
<td>78.0 µm</td>
<td>011</td>
</tr>
</tbody>
</table>

### Beverage Prefilters

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.2 µm</td>
<td>002</td>
</tr>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.45 µm</td>
<td>003</td>
</tr>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.65 µm</td>
<td>004</td>
</tr>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.80 µm</td>
<td>005</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>B0</td>
<td>FILTER SP</td>
<td>0.2 µm</td>
<td>002</td>
</tr>
<tr>
<td>B10</td>
<td>FILTER SP</td>
<td>0.5 µm</td>
<td>003</td>
</tr>
<tr>
<td>D10</td>
<td>FILTER SP</td>
<td>1.0 µm</td>
<td>004</td>
</tr>
<tr>
<td>D20</td>
<td>FILTER SP</td>
<td>1.5 µm</td>
<td>005</td>
</tr>
<tr>
<td>D30</td>
<td>FILTER SP</td>
<td>2.0 µm</td>
<td>006</td>
</tr>
<tr>
<td>B50</td>
<td>FILTER SP</td>
<td>2.5 µm</td>
<td>007</td>
</tr>
<tr>
<td>D75</td>
<td>FILTER SP</td>
<td>3.0 µm</td>
<td>008</td>
</tr>
<tr>
<td>D100</td>
<td>FILTER SP</td>
<td>4.0 µm</td>
<td>009</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>X25</td>
<td>FILTER SP</td>
<td>0.6 µm</td>
<td>002</td>
</tr>
<tr>
<td>X25</td>
<td>FILTER SP</td>
<td>0.8 µm</td>
<td>003</td>
</tr>
<tr>
<td>X25</td>
<td>FILTER SP</td>
<td>1.0 µm</td>
<td>004</td>
</tr>
<tr>
<td>X25</td>
<td>FILTER SP</td>
<td>1.5 µm</td>
<td>005</td>
</tr>
<tr>
<td>X25</td>
<td>FILTER SP</td>
<td>2.0 µm</td>
<td>006</td>
</tr>
<tr>
<td>X25</td>
<td>FILTER SP</td>
<td>2.5 µm</td>
<td>007</td>
</tr>
</tbody>
</table>

### Pharmaceutical Filters

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZD</td>
<td>-</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.2 µm</td>
<td>002</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.45 µm</td>
<td>003</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.65 µm</td>
<td>004</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.80 µm</td>
<td>005</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>1.2 µm</td>
<td>006</td>
</tr>
</tbody>
</table>

### Ordering Information

For full ordering information, variants, quantities and availability, please contact Parker domnick hunter.

For more details, please visit our website at [www.parker.com/processfiltration](http://www.parker.com/processfiltration)

Ordering Information

#### Beverage Prefilters

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>0.6 µm</td>
<td>002</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>1.0 µm</td>
<td>003</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>1.5 µm</td>
<td>004</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>3.0 µm</td>
<td>005</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>5.0 µm</td>
<td>006</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>7.0 µm</td>
<td>007</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>10.0 µm</td>
<td>008</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>15.0 µm</td>
<td>009</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>20.0 µm</td>
<td>010</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>25.0 µm</td>
<td>011</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>40.0 µm</td>
<td>012</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>55.0 µm</td>
<td>013</td>
</tr>
<tr>
<td>Y50</td>
<td>PEPLYN PLUS</td>
<td>75.0 µm</td>
<td>014</td>
</tr>
</tbody>
</table>

### Pharmaceutical Filters

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.2 µm</td>
<td>002</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.45 µm</td>
<td>003</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.65 µm</td>
<td>004</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>0.80 µm</td>
<td>005</td>
</tr>
<tr>
<td>BR</td>
<td>PROPOR BR</td>
<td>1.2 µm</td>
<td>006</td>
</tr>
</tbody>
</table>

### Beverage Final Filters

<table>
<thead>
<tr>
<th>Code</th>
<th>Product</th>
<th>Diameter</th>
<th>Micron</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.2 µm</td>
<td>002</td>
</tr>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.45 µm</td>
<td>003</td>
</tr>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.65 µm</td>
<td>004</td>
</tr>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>0.80 µm</td>
<td>005</td>
</tr>
<tr>
<td>PHA</td>
<td>PEPLYN HA</td>
<td>1.0 µm</td>
<td>006</td>
</tr>
</tbody>
</table>

### Standard diameters 047 mm.
Diameters 025mm, 090 mm & 142 mm are also available.

For full ordering information, variants, quantities and availability, please contact Parker domnick hunter.

Parker domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, the information provided is correct at the time of publication. The products described are protected by patents or patent applications. For further details, please contact our Process Filtration Sales Department for detailed information and advice on a product’s suitability for specific applications. All products are sold subject to the company’s Standard conditions of sale.

**Contact Information**

+44 (0) 191 4105121

**Email**
dhprocess@parker.com

**Website**
www.parker.com/processfiltration
Endcap styles

Cartridge endcaps

- A Style 223 o-rings
- B, L Style Flat Gaskets
- C Style 226 o-rings
- D Style 220 o-rings
- E Style 222 o-rings
- F Style 216 / 218 o-rings
- G Style 222 o-rings
- H Style 54 mm ID x 4 mm o-rings
- J Style S.O.E.
- K Style 216 o-rings (internal)
- N Style 213 o-rings (internal)
- P Style 227 o-rings
- R Style 222 o-rings
- S Style Flat Gaskets
- SK Style (demi only)
- T Style 126 o-rings (demi only)
- U Style 222 o-rings
- W Style 113 o-rings (demi only)
- X Style 116 o-rings (demi only)
- Y Style 116 o-rings (internal) (demi only)
- Z Style 116 o-rings (internal) (demi only)
- Demi H Style 217 o-rings (demi only)

Vent autoclave filter endcaps and dimensions

- X Style 1/4” NPTM Thread & Gasket
- V Style BSPP Thread & Gasket

Endcap cross reference chart

<table>
<thead>
<tr>
<th>Parker donnick hunter</th>
<th>PA</th>
<th>MI</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>C (11/16” Size)</td>
<td>7</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>C (K Size)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td></td>
<td>26</td>
</tr>
<tr>
<td>E / G</td>
<td></td>
<td>8</td>
<td>27</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cartridge dimensions
DEMICAP styles

- Stepped Hosebarb (Code G)
- 1/4" Hosebarb (Code H)
- 1/4" NPT (Code N)
- Gromelle (Code R)
- 1/2" NPT (Code M)
- Walther Male (Code Q)
- 1/2" Hosebarb (Code H)
- 1/2" Male (Code Q)
- 1" Tri-clamp (Code T)
- Gromelle (Code R)
MURUS and syringe styles

Large scale disposable inlet / outlet connection styles

Syringe filters

Installation and operating guidelines

For liquid and gas filter cartridges

Introduction

These guidelines give the correct methods for using liquid and gas filter cartridges manufactured by Parker domnick hunter. If you have any queries, our process filtration specialists will be pleased to discuss your particular filtration requirements or answer any questions you may have. We may also be contacted at any of the addresses given on the reverse of this document or through our worldwide network of subsidiary companies and distributors.

1. Storage

1.1 Store cartridges in a clean and dry environment and avoid placing heavy objects on the top of the cartridge tube or packaging. The cartridges should not be exposed to temperatures below 5 °C (41 °F) or above 40 °C (104 °F) or to direct sunlight.

1.2 Keep the cartridge in its sealed polyethylene bag until it is time to install it.

1.3 The shelf-life for cartridge filters is as follows:

- APV/TP - 2 years
- Liquid membrane cartridges - 3 years
- Liquid depth cartridges - 3 years
- TPX/TP - 3 years
- Gas membrane cartridges - 3 years
- Gas depth cartridges - 2 years

Gamma sterilized cartridges - Contact Certificate of Conformance

2. Installation

The various cartridge formats and end caps are shown on the end of this sheet, please refer to this if you are unsure which cartridge format you have.

2.1 New housings should be flushed out with clean water / air (dependent on the application) prior to installation of the cartridge to remove any debris. Ensure tie rods / support plates are removed prior to flushing as vibration (especially in air) can cause components to loosen.

2.2 Before changing or installing a liquid or gas cartridge filter ensure that the filter vessel is depressurized and any liquid has been drained off. (Most filter housing bolts are unscrewed by hand, but if the filter is installed or connected to a pressure line then ensure that the filter vessel is depressurized and any liquid has been drained off.)(Filter housing bolts are usually loose and can be turned by hand. It is important to ensure that the filter vessel is depressurized and any liquid has been drained off.)

2.3 Remove the filter bowl. For plastic housings the bowl is unscrewed and for stainless steel housings the bowl is held in place using a band clamp or a bolted flange.

2.4 Cut open the polyethylene bag at the cartridge open end and check that the o-ring seals or gaskets are clean, intact, correctly located in their grooves and not damaged.

2.5 Lubricate o-ring seals with a lubricant that is compatible with the process fluid (e.g. clean water) or use process liquid itself. Note: No lubricant should be used for oxygen applications.

2.6 Using the bag as protection and holding the cartridge as near as possible to the open end as opposed to the main body of the cartridge or the top end cap, press the cartridge firmly into or onto the housing locations. Keep the cartridge vertical to prevent damage to the o-rings.

a) If the vessel has a bayonet type cartridge location (A & B), slightly turn the cartridge clockwise to locate the retaining lugs.

b) For double ended cartridge (B), take care to ensure that the cartridge gaskets on both the housing and cartridge are centered over the housing knife edge seals at both ends before closing the vessel.

c) Cartridges with a threaded end cap (V) should be screwed in until the gasket is compressed.

d) Threaded vent filters should be screwed into position until the flat gasket is compressed (BSPP) or the thread locks (NPT).

2.7 Remove the polyethylene bag from the cartridge(s) before the vessel is closed.

2.8 Some filter housings take more than one cartridge (multi-round and they will have a support plate that locates on top of the cartridge and prevents movement and damage. Refer to the vessel instructions for the way that this plate is secured and ensure that it is always installed before the vessel bowl is located.

3. Operation (liquid cartridges)

Filter cartridges should not be subjected to excessive hydraulic shock and should never be pressure pre- or retro-rushed from the downstream to the upstream side (inside out).

3.1 Slowly open the upstream valve and allow liquid into the filter vessel.

3.2 The vent valve located at the top of the vessel should be cracked open to allow air to escape and to ensure that the filter vessel is full of liquid. The vent valve should be closed when liquid starts to exit the valve.

3.3 Slowly open the downstream valve and allow the filtered liquid to flow. It is recommended that newly installed cartridges are initially flushed briefly to drain and remove any debris that may have been inadvertently generated during cartridge installation or removed trace levels of surfactant that may be present in some filter media.

4. Operation (gas / vent cartridges)

Vent / Gas filter cartridges are hydrophobic and they will not operate effectively if they are covered in water or steam condensate. This can lead to tank collapse or cartridge deformation so please ensure that if vent filters do come into contact with water they are replaced.

Gas cartridges are blocked when the differential pressure across the filter is high and / or the flow of gas through them is significantly reduced. In normal operation they should be changed at least annually.

5. Integrity testing

Some liquid and gas cartridges may be integrity tested by a number of manual or automatic methods. Please contact Parker domnick hunter or it's representative for further information on which method is most suitable for your application or refer to the appropriate product datasheet.

6. Hot water sanitization

(Liquid hydrophilic cartridges)

Recirculate prefiltred water through the filter for 1 hour at 80 °C (176 °F), the maximum differential pressure across the filter should not exceed no more than 0.3 bar (5 psi). Open all system outlet valves to sanitise the system thoroughly.

7. Steam sterilization

Please refer to the datasheets to find out if your cartridge filter and housing can be autoclaved or steam in place (SIP) and the allowed maximum temperature. To minimise the risk of contamination to a sterile system the filter should be autoclaved or SIP'd immediately prior to use.

N.B. Plastic housings cannot be steam sterilized or autoclaved.

Steam-in-place (SIP)

It is important that both liquid and gas filter cartridges do not have bulk steam flowed through them during SIP because excessive differential pressure can cause damage to the cartridge at high temperatures. It is also usual to filter the steam so that any dirt it carries does not block or damage the filter.

Vacuum autoclave sterilization

The cartridge should be installed in the housing, the vent / drain valves left open and the housing bowl left slightly open. Do not allow the cartridge to support the vessel base or allow the bowl to rest on the cartridge during autoclaving. The assembly should be autoclaved on a cycle with a slow exhaust. Where possible liquid cartridges should be flushed with clean water prior to autoclaving.

Parker domnick hunter has detailed guidelines for the sanitization and steam sterilization of liquid and gas filters so if you are unsure of the procedures please contact Parker domnick hunter or it’s representative for further information.

Disposal

All cartridge filters should be disposed of in a safe manner and in line with Health & Safety Guidelines.
### Conversion tables

#### Volume rate of flow

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>litre/sec</td>
<td>litre/hr</td>
<td>3600</td>
<td>127.33</td>
</tr>
<tr>
<td>m³/sec</td>
<td>litre/sec</td>
<td>1</td>
<td>3606</td>
</tr>
<tr>
<td>m³/hr</td>
<td>litre/sec</td>
<td>0.002878</td>
<td>3.6</td>
</tr>
<tr>
<td>litre/sec</td>
<td>m³/hr</td>
<td>1085</td>
<td>3.6</td>
</tr>
<tr>
<td>m³/sec</td>
<td>litre/hr</td>
<td>1085</td>
<td>3.6</td>
</tr>
<tr>
<td>litre/hr</td>
<td>m³/sec</td>
<td>0.002878</td>
<td>3.6</td>
</tr>
<tr>
<td>m³/hr</td>
<td>litre/hr</td>
<td>1085</td>
<td>3.6</td>
</tr>
</tbody>
</table>

### Pressure (liquid column, atmospheric, etc.)

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>bar</td>
<td>kgf/cm²</td>
<td>1000</td>
<td>0.1</td>
</tr>
<tr>
<td>mbar</td>
<td>kgf/cm²</td>
<td>1000</td>
<td>0.1</td>
</tr>
</tbody>
</table>

### Mass

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>lb</td>
<td>kg</td>
<td>0.14594</td>
<td>1</td>
</tr>
<tr>
<td>oz</td>
<td>lb</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>oz</td>
<td>kg</td>
<td>28.3495</td>
<td>0.004536</td>
</tr>
<tr>
<td>oz</td>
<td>lb</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

### Volume and capacity

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ft³</td>
<td>m³</td>
<td>0.028317</td>
<td>1</td>
</tr>
<tr>
<td>m³</td>
<td>ft³</td>
<td>35.3147</td>
<td>1</td>
</tr>
</tbody>
</table>

### Conversion tables

#### Mass

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>lb</td>
<td>kg</td>
<td>0.453592</td>
<td>1</td>
</tr>
<tr>
<td>lb</td>
<td>oz</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Volume and capacity

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>gal</td>
<td>litre</td>
<td>3.785412</td>
<td>1</td>
</tr>
<tr>
<td>litre</td>
<td>gal</td>
<td>0.264172</td>
<td>1</td>
</tr>
</tbody>
</table>

### Pressure (liquid column, atmospheric, etc.)

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>cmH₂O</td>
<td>ftH₂O</td>
<td>0.014504</td>
<td>1</td>
</tr>
<tr>
<td>ftH₂O</td>
<td>cmH₂O</td>
<td>68.9475</td>
<td>1</td>
</tr>
</tbody>
</table>

### Mass

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>lb</td>
<td>kg</td>
<td>0.453592</td>
<td>1</td>
</tr>
<tr>
<td>lb</td>
<td>oz</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Volume and capacity

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>Multiplier Factors</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>gal</td>
<td>litre</td>
<td>3.785412</td>
<td>1</td>
</tr>
<tr>
<td>litre</td>
<td>gal</td>
<td>0.264172</td>
<td>1</td>
</tr>
</tbody>
</table>
## Chemical compatibility

<table>
<thead>
<tr>
<th>Component</th>
<th>Compatibility Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid 3N</td>
<td>NC = Not Compatible, LC = Limited Compatibility, C = Compatible, - = No Data</td>
</tr>
<tr>
<td>Acetic acid 8.5N</td>
<td>NC</td>
</tr>
<tr>
<td>Acetone</td>
<td>NC</td>
</tr>
<tr>
<td>Acetonitrile</td>
<td>NC</td>
</tr>
<tr>
<td>Acidbrite 4 (Diversey) 3.0% v/v</td>
<td>NC</td>
</tr>
<tr>
<td>Ammonium Hydroxide 8N</td>
<td>NC</td>
</tr>
<tr>
<td>Ammonium Oxalate 0.07N</td>
<td>NC</td>
</tr>
<tr>
<td>Amyl Acetate</td>
<td>NC</td>
</tr>
<tr>
<td>Aqueous Ammonia 15.5N</td>
<td>NC</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>NC</td>
</tr>
<tr>
<td>Benzyalkonium Chloride 0.1%</td>
<td>NC</td>
</tr>
<tr>
<td>Boric acid, saturated</td>
<td>NC</td>
</tr>
<tr>
<td>Butan-1-ol</td>
<td>NC</td>
</tr>
<tr>
<td>Butan-2-ol</td>
<td>NC</td>
</tr>
<tr>
<td>Carbon Tetrachloride</td>
<td>NC</td>
</tr>
<tr>
<td>Chloroform</td>
<td>NC</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>NC</td>
</tr>
<tr>
<td>Diverflow (Diversey) 3% v/v</td>
<td>NC</td>
</tr>
<tr>
<td>Divosan Forte 0.5% v/v</td>
<td>NC</td>
</tr>
<tr>
<td>Divosan XT 1% v/v</td>
<td>NC</td>
</tr>
<tr>
<td>Ethanol</td>
<td>NC</td>
</tr>
<tr>
<td>Ethanol 45%</td>
<td>NC</td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>NC</td>
</tr>
<tr>
<td>Formaldehyde 0.3%</td>
<td>NC</td>
</tr>
<tr>
<td>Formaldehyde 37%</td>
<td>NC</td>
</tr>
<tr>
<td>Formic acid conc.</td>
<td>NC</td>
</tr>
<tr>
<td>Glycerol</td>
<td>NC</td>
</tr>
<tr>
<td>Hexane</td>
<td>NC</td>
</tr>
<tr>
<td>Hydrochloric acid 1N</td>
<td>NC</td>
</tr>
<tr>
<td>Hydrochloric acid 10%</td>
<td>NC</td>
</tr>
<tr>
<td>Hydrochloric acid conc.</td>
<td>NC</td>
</tr>
<tr>
<td>Hydrochloric acid conc. 13%</td>
<td>NC</td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td>NC</td>
</tr>
<tr>
<td>Hydrogen Peroxide 10 Vol</td>
<td>NC</td>
</tr>
<tr>
<td>Hydrogen Peroxide 100 Vol</td>
<td>NC</td>
</tr>
<tr>
<td>Methanol</td>
<td>NC</td>
</tr>
<tr>
<td>Methyl-Iso-Butylketone</td>
<td>NC</td>
</tr>
<tr>
<td>Methylene Chloride @ 40 °C (104 °F)</td>
<td>NC</td>
</tr>
<tr>
<td>Nitric Acid 2N 14.4%</td>
<td>NC</td>
</tr>
<tr>
<td>PEPLYN AIR / NE / PLUS / HA / HD / PREPOR PP</td>
<td>NC</td>
</tr>
<tr>
<td>PREPOR GF / GP</td>
<td>NC</td>
</tr>
<tr>
<td>PREPOR PES</td>
<td>NC</td>
</tr>
<tr>
<td>PROCLEAR PP</td>
<td>NC</td>
</tr>
<tr>
<td>PROCLEAR GF</td>
<td>NC</td>
</tr>
<tr>
<td>PROFLEAT</td>
<td>NC</td>
</tr>
<tr>
<td>PROPOR BR / HC / LR</td>
<td>NC</td>
</tr>
<tr>
<td>PROPOR SG</td>
<td>NC</td>
</tr>
<tr>
<td>PROSPUN</td>
<td>NC</td>
</tr>
<tr>
<td>PROSTEEL A / N</td>
<td>NC</td>
</tr>
<tr>
<td>STEAM FILTERS</td>
<td>NC</td>
</tr>
<tr>
<td>TETPOR AIR / LIQUID</td>
<td>NC</td>
</tr>
<tr>
<td>TETPOR PLUS</td>
<td>NC</td>
</tr>
<tr>
<td>EPDM</td>
<td>NC</td>
</tr>
<tr>
<td>VITON</td>
<td>NC</td>
</tr>
<tr>
<td>SILICONE</td>
<td>NC</td>
</tr>
</tbody>
</table>
### Chemical compatibility

**NC** = Not Compatible  
**LC** = Limited Compatibility  
**C** = Compatible  
- = No Data

| Chemical | Nutriose | Peracetic acid | Pentane | Phenol | Phosphoric acid | Polyethylene glycol 600  
|----------|----------|----------------|---------|---------|-----------------|----------------
| Bio-X II | C        | -              | C       | C       | -               | C                
| CRYTOCLEAR PES | C       | -              | C       | -       | NC              | C                
| CRYTOCLEAR PLUS | C       | -              | C       | -       | NC              | C                
| HIGH FLOW BIO-X | C       | -              | C       | -       | NC              | C                
| HIGH FLOW BIO-VENT AUTOCLAVE | C       | -              | C       | -       | NC              | C                
| HIGH FLOW PREPOR GFA | C       | -              | C       | -       | NC              | C                
| HIGH FLOW TETPOR II | C       | -              | C       | -       | NC              | C                
| HIGH FLOW TETPOR H.T. | C       | -              | C       | -       | NC              | C                
| HIGH FLOW TETPOR VENT AUTOCLAVE | C       | -              | C       | -       | NC              | C                
| PROCLEAR PP | C       | -              | C       | -       | NC              | C                
| PREPOR GF | C       | -              | C       | -       | NC              | C                
| PREPOR PES | C       | -              | C       | -       | NC              | C                
| PROCLEAR PP | C       | -              | C       | -       | NC              | C                
| PROCLEAR GFA | C       | -              | C       | -       | NC              | C                
| PROBEAT | C       | -              | C       | -       | NC              | C                
| PROPORT BR / HC / LR | C       | -              | C       | -       | NC              | C                
| PROPORT GFA | C       | -              | C       | -       | NC              | C                
| PROSUM | C       | -              | C       | -       | NC              | C                
| PROSTEEL A / N | C       | -              | C       | -       | NC              | C                
| SILICONE | C       | -              | C       | -       | NC              | C                
| EPDM | C       | -              | C       | -       | NC              | C                
| VITON | C       | -              | C       | -       | NC              | C                
| SILICONE | C       | -              | C       | -       | NC              | C                

**Phenol**

| Chemical | Sodium Chloride | Sodium Hydroxide 7N,28% | Sodium Hypochlorite | Sodium Hypochlorite (14% Free Cl2) | Sodium thiosulphate | Sulphuric acid conc. | Sulphurous acid | Toluene | 1,1,1 Trichloroethane | 1,1,2 Trichloroethane | Trichloroacetic Acid 5N | Trichloroacetic Acid 80% | 95% Acetic Acid | 15% Acetic Acid | 39% Acetic Acid | Acetone | 95% Alcohol | 70% Alcohol | 45% Alcohol | 10% Alcohol | Water  
|----------|-----------------|-------------------------|--------------------|-------------------------------|---------------------|----------------------|----------------|--------|----------------------|----------------------|------------------------|----------------------|---------------|--------------|--------------|---------|-------------|-----------|-------------|-------------|------
| NC       | C               | C                       | C                  | NC                            | C                   | C                    | C              | NC     | C                    | C                    | C                      | C                  | C             | NC            | NC          | C           | C           | C          | C          | C          | C      
| LC       | C               | C                       | C                  | NC                            | C                   | C                    | C              | NC     | C                    | C                    | C                      | C                  | C             | NC            | NC          | C           | C           | C          | C          | C          | C      
| C        | C               | C                       | C                  | NC                            | C                   | C                    | C              | NC     | C                    | C                    | C                      | C                  | C             | NC            | NC          | C           | C           | C          | C          | C          | C      
| -        | C               | C                       | C                  | NC                            | C                   | C                    | C              | NC     | C                    | C                    | C                      | C                  | C             | NC            | NC          | C           | C           | C          | C          | C          | C      

#### Notes:
- The chemicals are arranged alphabetically using their most common or trade names. If a chemical in question does not appear to be listed, it may be found elsewhere in the table under a pseudonym, in particular its IUPAC name.
- With regard to compatibility:
  - Any product labeled Limited Compatibility (LC) at ambient temperature should not be used at a higher temperature.
  - The list of compatibilities does not take into account any synergistic effects of more than one chemical present in the solution to be filtered.
  - Test Conditions - 72 hours at ambient temperature and pressure, unless otherwise stated.
  - Contact Parker domnick hunter for confirmation of compatibility with specific operating conditions.
Generally a Beta ratio at ISO is accepted by the industry as being an ‘absolute’ rating for media prefiltration.

Cross flow filtration
A filter characterized by the feed stream travelling parallel to instead of directly through the filter medium. Cross flow filtration provides the advantage of maximizing the blockage of the membrane as the system is to some extent ‘self cleaning’.

Dead log
A term used in the aerospace industry where there is potentially no bio or therefore stagnant conditions exist. It is extremely important to eliminate if certain contamination issues are to be minimized.

Depth filter
A depth filter is characterized by the thickness of the filtration media as well as its structure. A depth filter is normally fibrous in nature and contaminant retention is through the depth of the filtration media rather than just the surface.

Diffusional interception
A filter is determined by measuring a parameter which is stated in CFU.

Filter efficiency
Filter efficiency is a measure of the percentage of particles (or bacteria) that are removed from the fluid by the filter. Typically these are given in terms of the % removal for a certain size of particle. A filter efficiency may also be given as a range of particle sizes. For a number of gases applications the efficiency of a filter may be quoted in relation to the filter being able to remove particles at all the most penetrating particle sizes (MPPS) of 0.2-0.3 micron. Always ensure the range of test sizes is matched to the process requirements.

Filterability indices (F and IMFs)
This is an indication of a filter’s capacity to process certain fluids. It generally gives a measure of the range of blockage of a filter as well as the theoretical maximum throughput. The time required to flow two consecutive 200 ml fluid samples is recorded and the filterability indices are calculated from the results. The two formulae used are as follows:

\[
\text{F} = \frac{1}{T} \times 1000
\]

\[
\text{IMF} = \frac{1}{T} \times 1000
\]

Kinematic viscosity
This is the rate at which fluid flows (in liquid) or gas (in gas) under the influence of an external force.

L
Log reduction value (LRV)
This is a measurement of a filters removal efficiency for a specific contaminant. It is normally associated with the bacterial retention of a filter. The LRV is...

M
Medium (Media)
This is the component of the filter that removes the contaminants. Filters are classified according to the ‘commonly referred to’ type, in its more generic sense a filter medium / media can refer to either depth or membrane filtration type materials.

Microfiltration
Microfiltration is the process of removing particles from a liquid or gas by passing it through a porous medium. It generally removes removable particles between the sizes of 0.1 and 50.0 microns in liquids, and down to 0.1 micron in gases.

Micron (Micrometer)
A micron (micrometer) is defined as 1/µm, or 10^-6 meters. One micron is equivalent to the thickness of a human hair.

Nanofiltration
Nanofiltration filters that remove both particles and small dissolved molecules and ions. These are of the size of millions of parts per million throughput. Following this process the fluid is filtered again.

Nanometer
A nanometer is 10^-9 meters.

Nominal filter rating
This is a measurement of how many particles are captured by the filter in the gas phase. The particles follow the streamlines of gas between the filter fibres and membrane pores. Due to the mass inertia of the particle the particle will ‘bounce out’ of the streamlines and attach itself to a fibre or pore wall. The effect of this capture mechanism increases with particle size / mass.

Filter sterilization
Sterilization is the act of making an organism barrier or infeasible (unable to reproduce). The sterilization of a filter can be achieved by a number of methods.[2] The most popular methods include steam, heat, ethylene oxide, hydrogen peroxide or irradiation. The method chosen depends on the process and the materials of construction of the filter but for the majority widely used in that either an autoclave or via steam in a steam-in-place (SIP).

Effective filtration area (EFA)
This is the area of filtration material available for filtration.

Flux
The rate of fluid flow (gas or liquid) when expressed in terms of flow per unit area of the filter that removes the contaminants from the fluid stream. It can apply to both depth and membrane media.

G
Gauge pressure
The pressure of a system measured by a gauge, which excludes atmospheric pressure, for example 1 bar atmosphere for 1 bar absolute = 0 barg.

H
Hydrophobic
An enclosure for a filter element, typically rated for pressure, that directs the fluid through the filter.

Hydrophilic
Hydrophilicity is the ability of a filtration media to wet out, that is, for the porous structure to be completely filled with the liquid being filtered. This is often quoted as a percentage of the surface that is wetted of the structure can lead to a reduction in flow capacity and problems with integrity testing. All liquid filters are ‘hydrophilic’ apart from those that may have been selected for use with aggressive solvents. These filters are typically based on a fluoropolymer and their structure needs to be wetted with a low surface tension liquid such as isopropyl alcohol. Once the structure has been wet, the filter will process aqueous solutions without a problem.

Inertial impact
This is a removal mechanism for particles captured by a filter in the gas phase. The particles follow the streamlines of gas between the filter fibres and membrane pores. Due to the mass inertia of the particle the particle will ‘bounce out’ of the streamlines and attach itself to a fibre or pore wall. The effect of this capture mechanism increases with particle size / mass.

Log reduction value (LRV)
This is a measurement of a filters removal efficiency for a specific contaminant. It is normally associated with the bacterial retention of a filter. The LRV is...

Media (Medium)
This is the component of the filter that removes the contaminants. Filters are classified according to the ‘commonly referred to’ type, in its more generic sense a filter medium / media can refer to either depth or membrane filtration type materials.

Microfiltration
Microfiltration is the process of removing particles from a liquid or gas by passing it through a porous medium. It generally removes removable particles between the sizes of 0.1 and 50.0 microns in liquids, and down to 0.1 micron in gases.

Micron (Micrometer)
A micron (micrometer) is defined as 1/µm, or 10^-6 meters. One micron is equivalent to the thickness of a human hair.

Nanofiltration
Nanofiltration filters that remove both particles and small dissolved molecules and ions. These are of the size of millions of parts per million throughput. Following this process the fluid is filtered again.

Nanometer
A nanometer is 10^-9 meters.

Nominal filter rating
This is a measurement of how many particles are captured by the filter in the gas phase. The particles follow the streamlines of gas between the filter fibres and membrane pores. Due to the mass inertia of the particle the particle will ‘bounce out’ of the streamlines and attach itself to a fibre or pore wall. The effect of this capture mechanism increases with particle size / mass.

Filter sterilization
Sterilization is the act of making an organism barrier or infeasible (unable to reproduce). The sterilization of a filter can be achieved by a number of methods.[2] The most popular methods include steam, heat, ethylene oxide, hydrogen peroxide or irradiation. The method chosen depends on the process and the materials of construction of the filter but for the majority widely used in that either an autoclave or via steam in a steam-in-place (SIP).

Effective filtration area (EFA)
This is the area of filtration material available for filtration.

Flux
The rate of fluid flow (gas or liquid) when expressed in terms of flow per unit area of the filter that removes the contaminants from the fluid stream. It can apply to both depth and membrane media.

G
Gauge pressure
The pressure of a system measured by a gauge, which excludes atmospheric pressure, for example 1 bar atmosphere for 1 bar absolute = 0 barg.

H
Hydrophobic
An enclosure for a filter element, typically rated for pressure, that directs the fluid through the filter.

Hydrophilic
Hydrophilicity is the ability of a filtration media to wet out, that is, for the porous structure to be completely filled with the liquid being filtered. This is often quoted as a percentage of the surface that is wetted of the structure can lead to a reduction in flow capacity and problems with integrity testing. All liquid filters are ‘hydrophilic’ apart from those that may have been selected for use with aggressive solvents. These filters are typically based on a fluoropolymer and their structure needs to be wetted with a low surface tension liquid such as isopropyl alcohol. Once the structure has been wet, the filter will process aqueous solutions without a problem.

Inertial impact
This is a removal mechanism for particles captured by a filter in the gas phase. The particles follow the streamlines of gas between the filter fibres and membrane pores. Due to the mass inertia of the particle the particle will ‘bounce out’ of the streamlines and attach itself to a fibre or pore wall. The effect of this capture mechanism increases with particle size / mass.

Log reduction value (LRV)
This is a measurement of a filters removal efficiency for a specific contaminant. It is normally associated with the bacterial retention of a filter. The LRV is...

Medium (Media)
This is the component of the filter that removes the contaminants. Filters are classified according to the ‘commonly referred to’ type, in its more generic sense a filter medium / media can refer to either depth or membrane filtration type materials.

Microfiltration
Microfiltration is the process of removing particles from a liquid or gas by passing it through a porous medium. It generally removes removable particles between the sizes of 0.1 and 50.0 microns in liquids, and down to 0.1 micron in gases.

Micron (Micrometer)
A micron (micrometer) is defined as 1/µm, or 10^-6 meters. One micron is equivalent to the thickness of a human hair.

Nanofiltration
Nanofiltration filters that remove both particles and small dissolved molecules and ions. These are of the size of millions of parts per million throughput. Following this process the fluid is filtered again.

Nanometer
A nanometer is 10^-9 meters.

Nominal filter rating
This is a measurement of how many particles are captured by the filter in the gas phase. The particles follow the streamlines of gas between the filter fibres and membrane pores. Due to the mass inertia of the particle the particle will ‘bounce out’ of the streamlines and attach itself to a fibre or pore wall. The effect of this capture mechanism increases with particle size / mass.
Glossary of terms used in filtration

**U**
- **Unloading**
  - The release of contaminants which had initially been captured by a filter. This is most likely to occur in filtration systems with are subjected to high pressure pulses such as high capacity filtering lines.

**V**
- **Vapour pressure**
  - The pressure that a liquid exerts above the liquid is known as its vapour pressure. Vapour pressure is a property of a liquid substance present in its liquid phase, measured as a pressure exerted by the molecules in the liquid moving into the vapour phase.

**W**
- **Water flow**
  - Measure of the amount of water that flows through a filter. Related to the degree of contamination, differential pressure, total porosity, and filter area (ASTM F317-70). Expressed in the membrane industry in units of millilitres / minute / square centimetre.

**X**
- **X-ray**
  - A technique used to visualize the internal structure of materials. X-rays can pass through the material to produce an image, allowing internal structures to be observed.

---

**Glossary of terms used in filtration**

**Permeate**
- Synonymous with filtrate.

**R**
- **Regeneration**
  - When a filter becomes blocked with protein-based material it may be possible to regenerate, or clean, the filter, so improving overall lifetime.

**S**
- **Sanitization**
  - Reduction not elimination of a microbial population to render a fluid/system free from spoilage organisms and increase shelf-life of products.

**O**
- **Oleophobic**
  - Oleophobic membranes and depth media have the capability to repel fluids such as oil and lubricants. This phenomena is used in some of the new generation oil coalescing filters.

**P**
- **Plugging**
  - Filtration media can be plugged or clogged to maximize the filtration area. By plugging filtration media it is possible to fit a large EPA in a relatively small cartridge volume.

**Sedimentation**
- The process by which suspended solid particles in a liquid phase gravity disengage downwards. Eventually they will settle on the bottom of the holding tank, pumpwork etc. The rate of sedimentation is governed by particle mass and fluid velocity.

**Separation**
- The process of dividing a fluid stream (either liquid or gas) into separate components. This can include separation of two phases (liquid from gas), separation of soluble impurities (known as purification) or solids from a fluid (filtration). The products of a separation can themselves be separated further in many cases.

**Silt density index (SDI)**
- This is another measure of the rate of blockade and is typically used when the system is relatively clean and the difference between T_{up} and T_{down} (see Filtability Index) is so small that large inaccuracies can occur. The SDI uses time taken for two 500 ml samples of fluid to pass through a 0.7 mm diameter 0.45 µm disc. There is typically a 15 minute gap between the two samples being taken.

**Size exclusion**
- This is a removal mechanism for particles captured by a filter in either the liquid or gas phase. It applies to particles that are physically too large to pass through the filter structure. The mechanism is not affected by flow rate unless pressure drop cause deformation of the particle.

---

**Glossary of terms used in filtration**

**U**
- **Unloading**
  - The release of contaminants which had initially been captured by a filter. This is most likely to occur in filtration systems with are subjected to high pressure pulses such as high capacity filtering lines.

**V**
- **Vapour pressure**
  - The pressure that a liquid exerts above the liquid is known as its vapour pressure. Vapour pressure is a property of a liquid substance present in its liquid phase, measured as a pressure exerted by the molecules in the liquid moving into the vapour phase.

**W**
- **Water flow**
  - Measure of the amount of water that flows through a filter. Related to the degree of contamination, differential pressure, total porosity, and filter area (ASTM F317-70). Expressed in the membrane industry in units of millilitres / minute / square centimetre.

**X**
- **X-ray**
  - A technique used to visualize the internal structure of materials. X-rays can pass through the material to produce an image, allowing internal structures to be observed.

---

**Glossary of terms used in filtration**

**Permeate**
- Synonymous with filtrate.

**Regeneration**
- When a filter becomes blocked with protein-based material it may be possible to regenerate, or clean, the filter, so improving overall lifetime.

**Sanitization**
- Reduction not elimination of a microbial population to render a fluid/system free from spoilage organisms and increase shelf-life of products.

**Oleophobic**
- Oleophobic membranes and depth media have the capability to repel fluids such as oil and lubricants. This phenomena is used in some of the new generation oil coalescing filters.

**Plugging**
- Filtration media can be plugged or clogged to maximize the filtration area. By plugging filtration media it is possible to fit a large EPA in a relatively small cartridge volume.

**Sedimentation**
- The process by which suspended solid particles in a liquid phase gravity disengage downwards. Eventually they will settle on the bottom of the holding tank, pumpwork etc. The rate of sedimentation is governed by particle mass and fluid velocity.

**Separation**
- The process of dividing a fluid stream (either liquid or gas) into separate components. This can include separation of two phases (liquid from gas), separation of soluble impurities (known as purification) or solids from a fluid (filtration). The products of a separation can themselves be separated further in many cases.

**Silt density index (SDI)**
- This is another measure of the rate of blockade and is typically used when the system is relatively clean and the difference between T_{up} and T_{down} (see Filtability Index) is so small that large inaccuracies can occur. The SDI uses time taken for two 500 ml samples of fluid to pass through a 0.7 mm diameter 0.45 µm disc. There is typically a 15 minute gap between the two samples being taken.

**Size exclusion**
- This is a removal mechanism for particles captured by a filter in either the liquid or gas phase. It applies to particles that are physically too large to pass through the filter structure. The mechanism is not affected by flow rate unless pressure drop cause deformation of the particle.
At Parker, we’re guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at commercial applications from many angles to find new ways to create value. Whatever the motion or control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further information call 0800 27 27 5374.

**AEROSPACE**
- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based aerospace systems
- Military aircraft
- Marine & subsea vehicles
- Regional transports
- Unmanned aerial vehicles

**CLIMATE CONTROL**
- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Thawing

**ELECTROMECHANICAL**
- Key Markets
  - Electromechanical systems
  - Industrial systems
- Key Products
  - DC control systems
  - Filter drops
  - Hand held tester
  - Hose & fittings
  - Pressure regulating valves
  - Pressure transmitters & components
  - Temperature controllers
  - Thermocouple transmitters
  - Temperature transmitters

**FITRATION**
- Key Markets
  - Chemical & process
  - Food & beverage
  - Industrial gases
- Key Products
  - Liquid filters
  - Membrane filters
  - Pressure vessels
  - Vacuum pumps

**FILTRATION**
- Key Markets
  - Air systems
  - Oil systems
- Key Products
  - Air filters
  - Liquid filters
  - Microfiltration filters
  - Pressure relief valves

**FLUID & GAS HANDLING**
- Key Markets
  - Aerospace
  - Agriculture
  - Bulk chemical handling
- Key Products
  - Air compressors
  - Compressed air systems
  - Pneumatic systems & components
  - Pneumatic valves & controls
  - Vacuum systems

**HYDRAULICS**
- Key Markets
  - Aerospace
  - Agriculture
  - Aviation
  - Construction machinery
- Key Products
  - Manifolds
  - Pneumatic cylinders
  - Pressure regulators
  - Pressure transmitters
  - Safety valves

**KEY PRODUCTS**
- Aerospace
- Agriculture & food production
- Construction & infrastructure
- Aerospace & defence
- Industrial & commercial
- Marine & subsea systems
- Plumbing & HVAC
- Rail & transit
- Transportation & defence

**PROCESS CONTROL**
- Key Markets
  - Energy systems
  - Industrial & commercial
  - Medical & food systems
- Key Products
  - Flow & level sensors
  - Flow & level transmitters
  - Pneumatic systems & components

**SEALING & SHIELDING**
- Key Markets
  - Aerospace
  - Chemical & process
  - Oil & gas
- Key Products
  - Seals
  - Sealing systems
  - Sealing systems & technology

**WEBSITES**
- www.parker.com
- www.parker.com/support
- www.parker.com/applications

**INDUSTRIAL TOOLS**
- Key Markets
  - Aerospace & Defence
  - Construction & Infrastructure
- Key Products
  - Aviation & defence tools
  - Construction tools
  - Marine tools

**OIL & GAS**
- Key Markets
  - Energy & renewables
  - Offshore & renewables
- Key Products
  - Energy systems
  - Offshore & renewables

**PNEUMATICS**
- Key Markets
  - Aerospace
  - Construction
- Key Products
  - Hand tools
  - Pneumatic components & systems
  - Pneumatic tubing

**PARKER DOMINIC HUNTER**
- Key Markets
  - Aerospace & defence
  - Construction & infrastructure
- Key Products
  - Air compressors
  - Compressed air systems
  - Industrial & commercial

**USB DISK**
- Key Markets
  - Aerospace & defence
  - Construction & infrastructure
- Key Products
  - Air compressors
  - Compressed air systems
  - Industrial & commercial

**WEBSITES**
- www.parker.com
- www.parker.com/support
- www.parker.com/applications
Europe, Middle East, Africa

AE – United Arab Emirates, Dubai
Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener Neustadt
Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BY – Belarus, Minsk
Tel: +375 17 209 9399
parker.belarus@parker.com

CH – Switzerland, Etoy
Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 330 001
parker/spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker/finland@parker.com

FR – France, Contamine s’Arve
Tel: +33 (0)4 50 25 80 25
parker/france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budapest
Tel: +36 1 220 4155
parker/hungary@parker.com

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370
parker/ireland@parker.com

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty
Tel: +7 7272 505 800
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Asker
Tel: +47 66 75 34 00
parker.norway@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650
parker.slovenia@parker.com

TW – Taiwan, Taipei
Tel: +886 2 2298 8987

North America

CA – Canada, Milton, Ontario
Tel: +1 905 693 3000

US – USA, Cleveland
Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill
Tel: +61 (0)2-9634 7777

CN – China, Shanghai
Tel: +86 21 2899 5000

HK – Hong Kong
Tel: +852 2428 8008

IN – India, Mumbai
Tel: +91 22 6513 7081-85

JP – Japan, Tokyo
Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul
Tel: +82 2 559 0400

MY – Malaysia, Shah Alam
Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

SG – Singapore
Tel: +65 6887 6300

TH – Thailand, Bangkok
Tel: +66 2 717 8140

TW – Taiwan, Taipei
Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos
Tel: +55 12 4009 3500

CL – Chile, Santiago
Tel: +56 2 623 1216

MX – Mexico, Apodaca
Tel: +52 81 8156 5000

VE – Venezuela, Caracas
Tel: +58 212 238 5422