



## TETPOR AIR Filters

- 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 validated as sterilizing grade in liquid in accordance with ASTM F838-05. This ensures the removal of all airborne bacteria, viruses and bacteriophage.

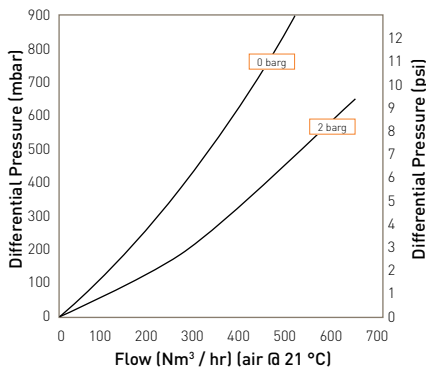
### Features and Benefits

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

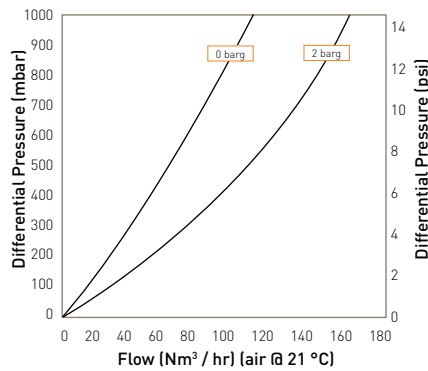


Note: TETPOR is a registered trademark of Parker Hannifin Corporation.

### Performance Characteristics



10" Size (250 mm) Cartridge



B Size (65 mm) Cartridge

## Specifications

### 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: Polypropylene
- End Caps Insert: 316L Stainless Steel
- Standard o-rings/gaskets: Silicone

#### MURUS Disposable Filter Capsules

- Core: Polypropylene
- Sleeve: Polypropylene
- Standard o-rings: Viton
- Capsule Body: Polypropylene
- Capsules Vent Seals: Silicone

#### DEMICAP Filter Capsules

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

#### Syringe Filters

- Body: Polypropylene

### 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:

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

#### MURUS Disposable Filter Capsules

Up to 25 °C ( 77 °F) @ 5.5 barg (79.7 psig)  
Up to 60 °C (140 °F) @ 2.8 barg (40.6 psig)

*Parker Hannifin certify that this product complies with the European Council Pressure Equipment Directive (PED) 97/23/EC Article 3, Paragraph 3 - Sound Engineering Practice (SEP). This product is intended for use with Group 1 & 2 Dangerous and Harmless Liquids and Group 2 Harmless Gases at the operating conditions stated in this document : In compliance with PED Article 3, Paragraph 3, SEP, this product does not bear the CE mark.*

#### DEMICAP Filter Capsules

Up to 40 °C (104 °F) at line pressures up to 5.0 barg (72 psig).

### Effective Filtration Area (EFA)

10" (250 mm):	0.77 m <sup>2</sup>	(8.28 ft <sup>2</sup> )
K Size:	0.36 m <sup>2</sup>	(3.87 ft <sup>2</sup> )
A Size:	0.25 m <sup>2</sup>	(2.69 ft <sup>2</sup> )
B Size:	0.12 m <sup>2</sup>	(1.29 ft <sup>2</sup> )
E Size:	0.06 m <sup>2</sup>	(0.64 ft <sup>2</sup> )
Syringe ø50 mm:	14.50 cm <sup>2</sup>	(2.25 in <sup>2</sup> )

### Sterilization

	Autoclave		Steam-in-Place	
	Cycles	Temp	Cycles	Temp
			(30 min.)	
Cartridges	120	142 °C (287.6 °F)	120	142 °C (287.6 °F)
MURUS	5	130 °C (266 °F)	-	-
DEMICAP	100	135 °C (275 °F)	-	-
Syringe	1	130 °C (266 °F)	-	-

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

### 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.

## Performance Characteristics

### TOC / Conductivity

The filtrate quality from a 10" (250 mm) TETPOR AIR conforms to the requirements of current USP <643> (TOC) and USP <645> (conductivity).

### Endotoxins

Aqueous extracts from the 10" (250 mm) TETPOR AIR 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 <5 mg.

### Pharmaceutical Validation

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

### Oxidizable Substances

TETPOR AIR 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 60 / 40 : IPA /water and using air as the test gas.

Cartridge	Test Pressure		Diffusional Flow (ml / min)	Water Intrusion Test Pressure		Water Intrusion (ml / 10 min)	Water Flow (µl / 10 min)
	(barg)	(psig)		(barg)	(psig)		
E	0.8	11.6	1.5	2.5	36.3	1.3	371
B	0.8	11.6	3.0	2.5	36.3	2.6	742
A	0.8	11.6	6.0	2.5	36.3	5.3	1514
K	0.8	11.6	8.5	2.5	36.3	7.5	2142
10"	0.8	11.6	18.0	2.5	36.3	16.0	4571

### Retention Characteristics

TETPOR AIR filter cartridges are validated by bacterial challenge testing with *Brevundimonas diminuta* to current ASTM F838-05 methodology (10<sup>7</sup> organisms / cm<sup>2</sup> EFA minimum) with typical in-house challenge levels being 10<sup>11</sup> organisms per 10" (250 mm) filter cartridge.

## Ordering Information

### Cartridges

**ZCMT**  /   -

Code   Length (Nominal)	Code   Micron	Code   Endcap (10")	Code   Variant	Code   O-rings	
B* 2.5" (65 mm)	020 0.2 µm	B* dh DOE	A Air / Gas	E EPDM	
A* 5" (125 mm)		C BF / 226 Bayonet		P PTFE Encapsulated Silicone	
K 5" (125 mm)		D Fin / 222		S* Silicone	
1 10" (250 mm)		E Flat Top / 222		V Viton	
2 20" (500 mm)		F BF / 216/218		<i>*Silicone o-ring supplied as standard without having to specify the 'S' code.</i>	
3 30" (750 mm)		G Recess / 222			
		H UF Retrofit			
		R BF / 222 Bayonet			

*\* Supplied in packs of 3.*

*\*EPDM gaskets supplied as standard.*

Code   Endcap (Demi)
SK Retrofit
T TRUESEAL
X 116
Y Demi Stub
Z Demi A & B Std

### MURUS Capsules

**ZLMT**  -    -    -

Code   Length (Nominal)	Code   Micron	Code   Inlet Connection	Code   Outlet Connection	Code   Variant	Code   Grade	Code   Design	Code   O-rings	
K 5" (125 mm)	020 0.2 µm	A 3/4" Tri-Clamp	A 3/4" Tri-Clamp	A Air / Gas	N Non-sterile	L In-Line	E EPDM	
1 10" (250 mm)		B 1/2" Tri-Clamp	B 1/2" Tri-Clamp			T* T-Port	S* Silicone	
2 20" (500 mm)		D 1" Hosebarb	D 1" Hosebarb			<i>*Only available with a 1" Tri-Clamp.</i>		V Viton
3 30" (750 mm)		T 1" Tri-Clamp	T 1" Tri-Clamp			<i>*Silicone o-ring supplied as standard without having to specify the 'S' code.</i>		

### DEMICAP Capsules

**ZEMT**  -    -

Code   Length (Nominal)	Code   Micron	Code   Inlet Connection	Code   Outlet Connection	Code   Variant	Code   Grade	Code   Pack N°
E 4.4" (113 mm)	020 0.2 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	A Air / Gas	N Non-Sterile	3 Pack of 3
B 5.5" (140 mm)		N 1/2" NPT Male	N 1/2" NPT Male			
A 7.9" (200 mm)		H 1/2" Hosebarb	H 1/2" Hosebarb			
		G Stepped Hosebarb	G Stepped Hosebarb			
		M 1/4" NPT Male	M 1/4" NPT Male			
		Q Walther QC	Q Walther QC			
		R Grommel / QC	R Grommel / QC			
		V 3/8" NPT Female	V 3/8" NPT Female			

### Syringe Filters

**ZSMT**  -    -

Code   Diameter	Code   Micron	Code   Inlet Connection	Code   Outlet Connection	Code   Variant	Code   Grade	Code   Options	Code   Pack N°
050 50 mm	020 0.2 µm	G Stepped Hosebarb	G Stepped Hosebarb	P Pharmaceutical	N Non-sterile	S Standard	025 25 per box
		L 1/8" NPT Male	L 1/8" NPT Male				