



Life Sciences

USD 2461b



Pall Supor® EKV
Sterilizing Grade Filters

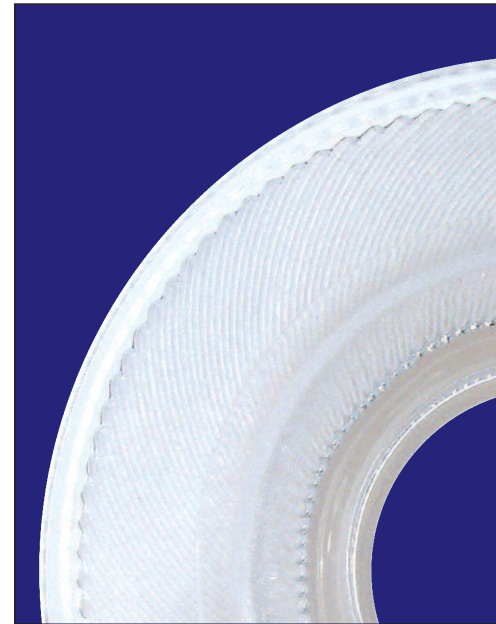
Filtration. Separation. Solution.SM

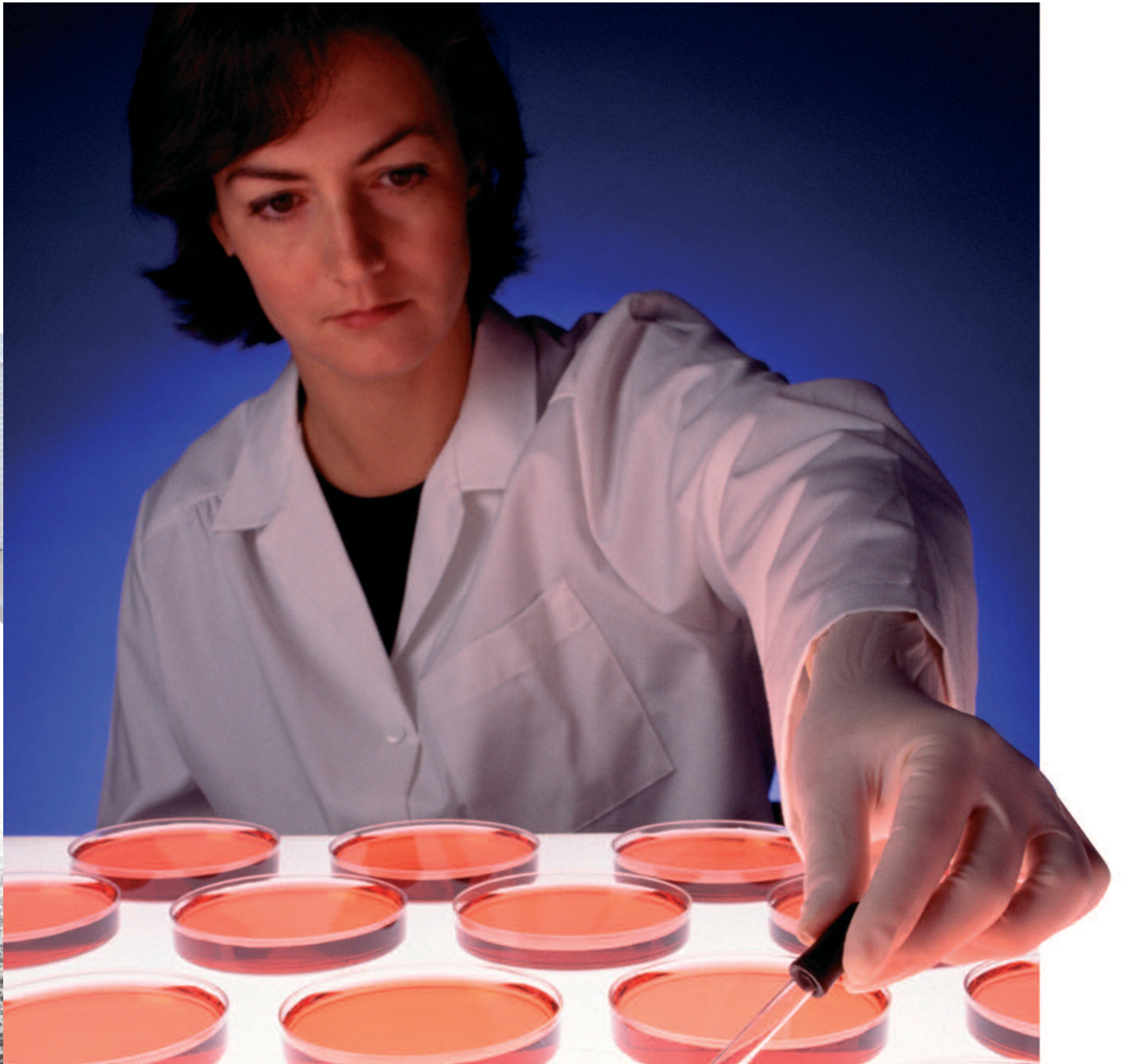
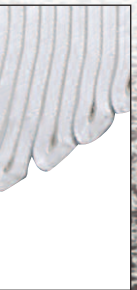
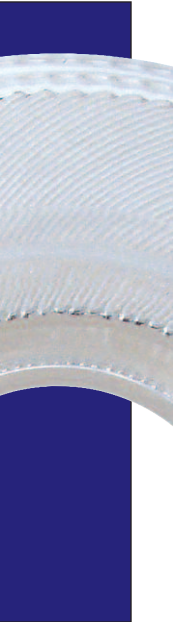
Supor EKV Sterilizing Grade Filters

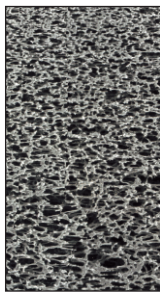
Pall Supor EKV filters are validated sterilizing grade membranes for the most cost effective filtration of a wide range of liquids such as buffers tissue, culture media, and others.

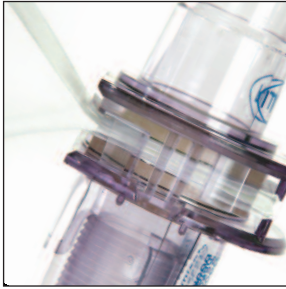
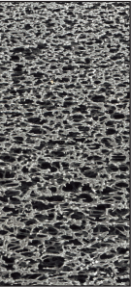
The incorporated PES membrane demonstrates very high compatibility over the whole pH range plus very low protein binding to ensure the maximum transmission of the active ingredients.

The patented Ultipleat® filter technology, combined with the optimized, built-in asymmetric prefilter for higher flow rates and throughput, allows very compact sizing for easy integration in disposable systems.







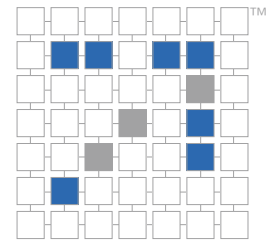


Allegro™ Systems: The Disposable Solutions

High flexibility, minimized cleaning, cleaning validation, enhanced sterility, and cost control, through the whole drug development cycle and during full manufacturing are clear industry targets.

The Allegro disposable systems, which incorporate Pall Kleenpak™ capsules, are the answer to these requirements as they completely eliminate the need for cleaning and related validation, minimizing major capital investment, and offering very high flexibility while enhancing the quality of aseptic processing.

For liquids from several milliliters up to full production scale volumes, a wide range of Supor EKV filter products are available in disposable format and can thus be integrated into Allegro disposable systems.



AllegroSystems
The Single-Use Solution



Mini
Kleenpak
Syringe
Filters
Page 7



Mini
Kleenpak 20
Capsules
Page 8



Mini
Kleenpak
Capsules
Page 9



Kleenpak
Capsules
Page 10



Novasip
Capsules
Page 11



Kleenpak
Nova
Capsules
Page 12, 13



Junior Filter
Cartridges
Page 14



Filter
Cartridges
Page 15



The Pall UpScaleSM Program

Save Time, Get Results

Supor EKV filters are available in a wide range of scalable, encapsulated formats which allow fast and easy scale-up, to bring your product to the market faster.

Same materials*

From syringe filters to production scale, all products incorporate the same membrane and the identical materials of construction.

* Except Novasip Capsules. See material of construction tables for each product for further details.

Quality

Every Supor EKV pleated filter is:

- Integrity tested during manufacture
- Identified by lot and serial number for total traceability
- Supplied with a certificate of test confirming each filter:
 - Meets USP Biological Reactivity test *in vivo*, for class VI-121°C plastics
 - Meets cleanliness per USP Particulates in Injectables
 - Is Non-Fiber-Releasing
 - Is Non-Pyrogenic per USP Endotoxins (< 0.25 EU/mL)
 - Meets Total Organic Carbon and Water Conductivity per USP Purified Water.





Mini Kleenpak Syringe Filters

Materials of Construction

Filter Membrane	Hydrophilic PES
Housing, Vent Plug and Support Material	Polypropylene
Sealing Technology	Insert molding

Operating Parameters⁽¹⁾

Maximum Operating Temperature and Pressure	5.4 bar (80 psi) at 20 °C 2.1 bar (30 psi) at 60 °C
--	--

⁽¹⁾ In compatible fluids which do not soften, swell or adversely affect the filter or its materials of construction



Typical Hold Up Volume

< 2.5 mL

Sterilization⁽²⁾

Pre-sterilized, subject to a minimum of 25 kGy of Gamma-irradiation

- ⁽²⁾
- Pre-sterilized Mini Kleenpak syringe filters must not be re-sterilized
 - Mini Kleenpak syringe filters must not be sterilized *in-situ* by passing steam under pressure

Ordering Information⁽³⁾

Pall Part Number:

KM2EKVP

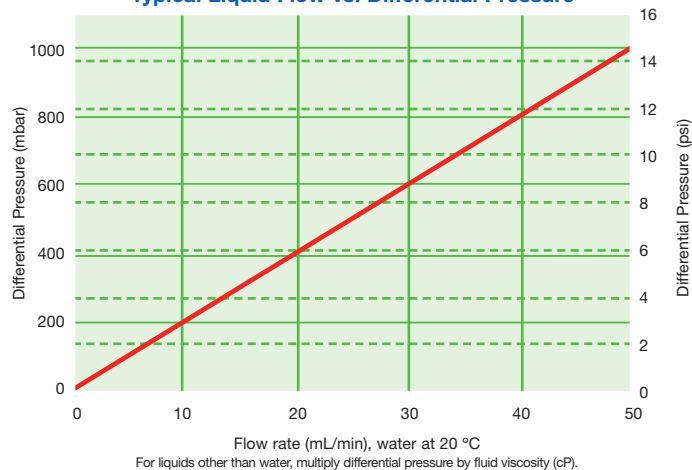
S

Shipping Format

Presterilized using gamma irradiation

⁽³⁾ 50 filters per box

Typical Liquid Flow vs. Differential Pressure



Nominal Dimensions

Capsule Length	21 mm (0.8 in.)
Capsule Diameter	29 mm (1.2 in.)

Nominal Effective Filter Area (EFA)

2.8 cm² (0.43 in²)



Mini Kleenpak 20 Capsules

Materials of Construction

Filter Membrane	Hydrophilic PES
Housing, Vent Plug and Support Material	Polypropylene
Filling Bell	Polycarbonate
Sealing Technology	Thermal bonding without adhesives

Operating Parameters⁽¹⁾

Maximum Operating Temperature and Pressure	1.4 bard at 22 °C (20 psid)
--	-----------------------------

⁽¹⁾ In compatible fluids which do not soften, swell or adversely affect the filter or its materials of construction

Typical Hold up Volume

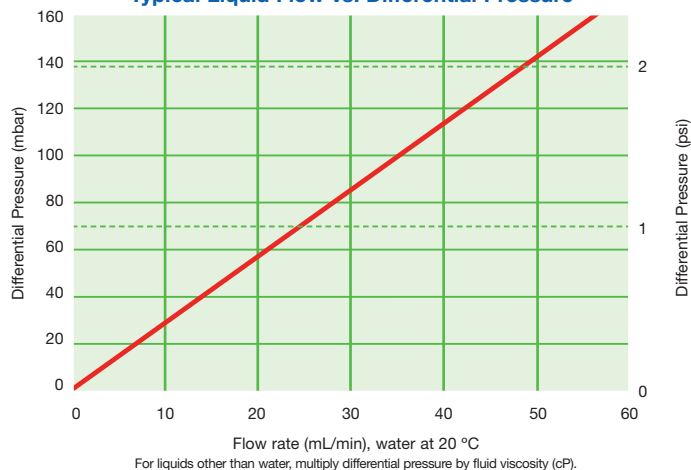
< 2.5 mL

Sterilization⁽²⁾

Autoclave	1 x 60 minutes at 125 °C
-----------	--------------------------

- ⁽²⁾
- Mini Kleenpak 20 capsules must not be sterilized *in-situ* by passing steam under pressure
 - Water wet Supor EKV capsules prior to steaming to retain full water wettability for integrity testing
 - Pre-sterilized Mini Kleenpak 20 capsules should not be re-irradiated

Typical Liquid Flow vs. Differential Pressure



Nominal Dimensions

Capsule Length	83 mm (3.3 in.)
Capsule Diameter	67 mm (2.7 in.)

Nominal Effective Filter Area (EFA)

20 cm² (3.1 in.²)

Ordering Information

Pall Part Number:

⁽³⁾ 3 filters per box

⁽⁴⁾ 100 filters per box

KM5EKVP	2	□
Connection	Code	Shipping Format
¼ – ½ in. (6 – 13 mm) stepped hose barb with inner bore to accept female slip luer interior and outer diameter to accept filling bell outlet	G ⁽⁴⁾	Non-sterile Gamma irradiatable/ autoclavable
	S ⁽³⁾	Pre-sterilized using gamma irradiation (maximum 25 kGy)



Mini Kleenpak Capsules

Materials of Construction

Filter Membrane	Hydrophilic PES
Support/Drainage	Polypropylene
Capsule Shell	Polypropylene
Filling Bell	Polycarbonate
Sealing Technology	Thermal bonding without adhesives

Operating Parameters⁽¹⁾

Maximum Temperature	40 °C
Maximum Operating Pressure	4.1 bar (60 psi) at 40 °C
Maximum Differential Pressure	4.1 bar (60 psi) at 40 °C

⁽¹⁾ In compatible fluids which do not soften, swell or adversely affect the filter or its materials of construction

Sterilization⁽²⁾

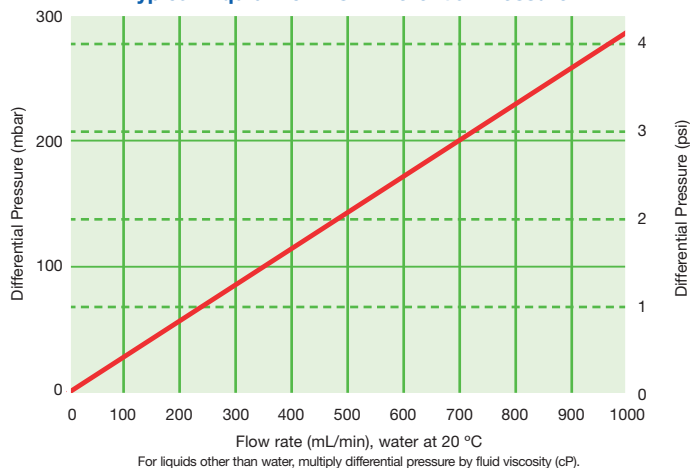
Autoclave	3 x 60 minutes at 140 °C
Gamma Irradiation	Maximum of 50 kGy

- ⁽²⁾
- Pre-sterilized Mini Kleenpak capsules must not be re-sterilized.
 - Mini Kleenpak capsules must not be sterilized *in-situ* by passing steam under pressure
 - Water wet Supor EKV capsules prior to steaming to retain full water wettability for integrity testing

Typical Extractables in Water at 20 °C

< 5.0 mg per capsule

Typical Liquid Flow vs. Differential Pressure



Nominal Dimensions

Maximum diameter including valves	53 mm (2.1 in.)
Length - Code 2	105 mm (4.1 in.)
Length - Code 8	73 mm (2.9 in.)

Nominal Effective Filter Area (EFA)

220 cm² (0.24 ft²)

Ordering Information⁽³⁾

Pall Part Number:

KA02EKVP

Code	Connection Options	Code	Shipping Format
2	¼ – ½ in. (6 – 13 mm) hose barb	G	Non-sterile Gamma irradiatable/ autoclavable
8	½ – ¾ in. (13 – 19 mm) sanitary flange	S ⁽⁴⁾	Pre-sterilized using gamma irradiation (maximum 25 kGy)

⁽³⁾ 3 filters per box

⁽⁴⁾ S grade with P2 connection is provided with filling bell on outlet. It is removable for in-line use



Kleenpak Capsules

Materials of Construction

Filter Membrane	Hydrophilic PES
Support/Drainage	Polypropylene
End Cap, Core and Cage	Polypropylene
Capsule Shell	Polypropylene
Sealing Technology	Thermal bonding without adhesives

Operating Parameters⁽¹⁾

Maximum Temperature	40 °C
Maximum Operating Pressure	5.2 bar (75 psi) at 20 °C 4.0 bar (58 psi) at 40 °C
Maximum Differential Pressure	4.0 bar (58 psi) at 40 °C

⁽¹⁾ In compatible fluids which do not soften, swell or adversely affect the filter or its materials of construction

Sterilization⁽²⁾

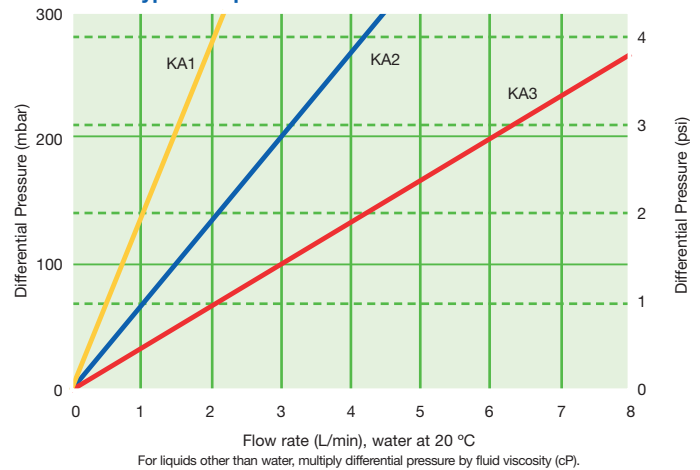
Autoclave	5 x 60 minutes at 125 °C, slow exhaust
Gamma Irradiation	Maximum of 50 kGy

- ⁽²⁾
- Pre-sterilized Kleenpak capsules must not be re-sterilized
 - Kleenpak capsules must not be sterilized *in-situ* by passing steam under pressure
 - Water wet Supor EKV capsules prior to steaming to retain full water wettability for integrity testing

Typical Extractables in Water at 20 °C

KA1 / KA2	< 5 mg per capsule
KA3	< 10 mg per capsule

Typical Liquid Flow vs. Differential Pressure



Nominal Dimensions

	KA1	KA2	KA3
Diameter incl. Valves	94 mm (3.7 in.)	94 mm (3.7 in.)	105 mm (4.1 in.)
Length - Code 1	117 mm (4.6 in.)	157 mm (6.2 in.)	174 mm (6.8 in.)
Length - Code 6	157 mm (6.2 in.)	197 mm (7.7 in.)	210 mm (8.3 in.)
Length - Code 16	137 mm (5.4 in.)	177 mm (7.0 in.)	192 mm (7.6 in.)

Nominal Effective Filter Area (EFA)

KA1	375 cm ² (0.4 ft ²)
KA2	750 cm ² (0.8 ft ²)
KA3	1500 cm ² (1.6 ft ²)

Ordering Information

Pall Part Number:

Code	Code	Inlet/Outlet Connections	Code	Shipping Format
1	1	1½ in. sanitary flange	G	Non-sterile Gamma irradiatable/ autoclavable
2	6	½ in. (13 mm) single hose barb	S	Pre-sterilized using gamma irradiation (maximum 25 kGy)
3	16	1½ in. sanitary flange inlet and ½ in. (13 mm) single hose barb outlet		



Novasip Capsule

Materials of Construction

Filter Membrane	Hydrophilic PES
Support/Drainage	Polypropylene
End Cap, Core and Cage	Polypropylene
Capsule Bowl	Polyetherimide
Sealing Technology	Thermal bonding without adhesives
Housing Head	Polyetherimide with TiO ₂

Operating Parameters⁽¹⁾

Maximum Temperature	60 °C
Maximum Operating Pressure	6.5 bar (94 psi) at 40 °C 2.0 bar (29 psi) at 60 °C
Maximum Differential Pressure	4.1 bar (60 psi) at 60 °C

⁽¹⁾ In compatible fluids which do not soften, swell or adversely affect the filter or its materials of construction

Sterilization⁽²⁾

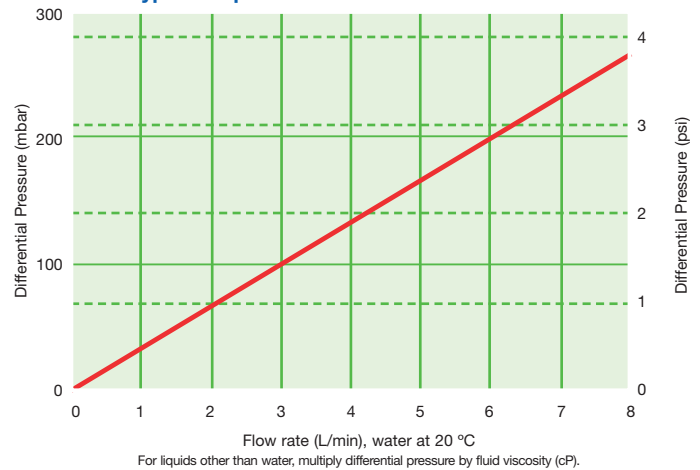
Autoclave	5 x 60 minutes at 125 °C, slow exhaust
In-Line	5 x 60 minutes at 125 °C

⁽²⁾ Water wet Supor EKV capsules prior to steaming to retain full water wettability for integrity testing

Typical Extractables in Water at 20 °C

< 10 mg per capsule

Typical Liquid Flow vs. Differential Pressure



Nominal Dimensions

Diameter incl. Valves	123 mm (4.8 in.)
Overall Length	157 mm (6.2 in.)

Nominal Effective Filter Area (EFA)

1500 cm² (1.6 ft²)

Ordering Information

Pall Part Number:

C3EKVP

1

Inlet/Outlet Connections

1½ in. sanitary flange

Code

Blank

A

B

Vent/Drain Connections

Vent: Quick connect and disconnect coupling (compatible with Stäubli* fitting) Valve drain: Hose barb for ¼ in. – ½ in. (4 – 6 mm) i.D. tube, with valve

Vent and drain: Quick connect and disconnect coupling (Stäubli* compatible) with valve

Vent and drain: ½ in. (13 mm) sanitary flange, no valve sanitary clamp



Kleenpak Nova Capsules

Materials of Construction

Filter Membrane	Hydrophilic PES
Support/Drainage	Polypropylene
Core/End Caps	Polypropylene
Cage	Polypropylene with TiO ₂ (white colored)
O-rings	Silicone elastomer
Sealing Technology	Thermal bonding without adhesives
Housing Bowl	Polypropylene
Housing Head*	Polypropylene

*Formulated with TiO₂ whitener which does not contribute to organic extractables

Operating Parameters⁽¹⁾

Maximum Temperature	40 °C
Maximum Operating Pressure	3 bar (44 psi) at 40 °C
Maximum Differential Pressure	3 bar (44 psi) at 40 °C

⁽¹⁾ In compatible fluids which do not soften, swell or adversely affect the filter or its materials of construction

Sterilization⁽²⁾

Autoclave:	1 x 60 minutes at 135 °C
Gamma irradiation:	Maximum of 50 kGy

- ⁽²⁾
- Pre-sterilized Kleenpak Nova capsules must not be re-sterilized
 - Kleenpak Nova capsules must not be sterilized *in-situ* by passing steam under pressure
 - Water wet Supor EKV capsules prior to steaming to retain full water wettability for integrity testing

Typical Extractables in Water at 20 °C

< 25 mg after 4 hours extraction (per 254 mm module)

*Tested on elements without pre-flushing

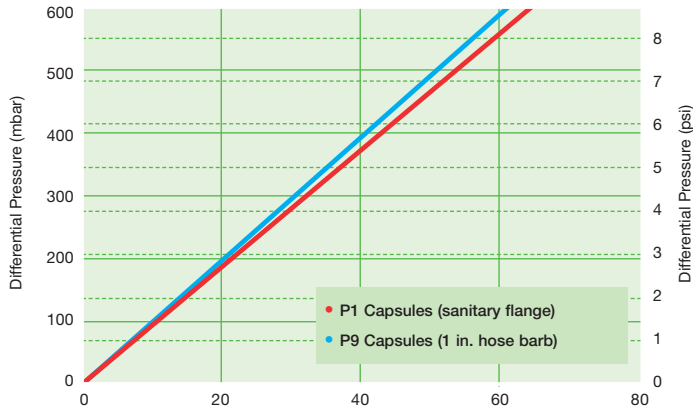
Nominal Dimensions

	In-line		
	NP6	NP7	NP8
Maximum Diameter including valves	154 mm (6.1 in.)	154 mm (6.1 in.)	154 mm (6.1 in.)
Length with hose barb inlet/outlet	397 mm (15.6 in.)	644 mm (25.4 in.)	895 mm (35.2 in.)
Length with sanitary inlet/outlet	335 mm (13.2 in.)	584 mm (23.0 in.)	834 mm (32.8 in.)
	T-style		
	NT6	NT7	NT8
Maximum Diameter including valves	240 mm (9.5 in.)	240 mm (9.5 in.)	240 mm (9.5 in.)
Length	349 mm (13.7 in.)	598 mm (23.5 in.)	848 mm (33.4 in.)

Nominal Effective Filter Area (EFA)

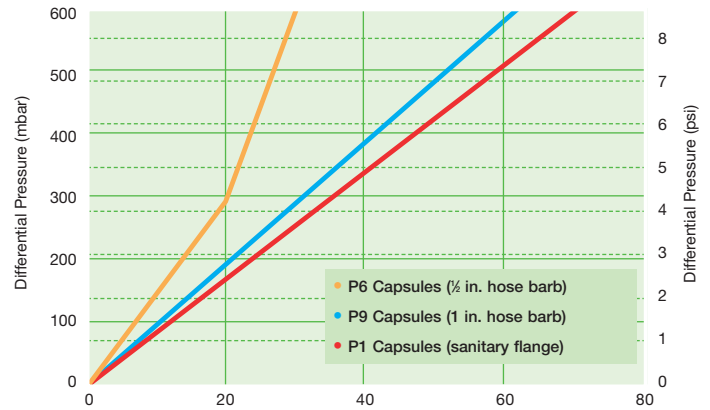
0.6 m² per 254 mm module (6.5 ft² per 10 in. module)

Kleopak Nova (NP)
Typical Liquid Flow vs. Differential Pressure



Flow rate (L/min), water at 20 °C
For liquids other than water, multiply differential pressure by fluid viscosity (cP).

Kleopak Nova (NT)
Typical Liquid Flow vs. Differential Pressure



Flow rate (L/min), water at 20 °C
For liquids other than water, multiply differential pressure by fluid viscosity (cP).

Ordering Information

Pall Part Number: N EKVP

Code	Style	Code	Filter Size	Code	Shipping Format	Code	Vent/Drain
P	In-line	6	254 mm (10 in.)	G	Non-sterile Gamma irradiatable/autoclavable	Blank	Stäubli* vent and stepped hose barb drain
T	T-style	7	508 mm (20 in.)	S	Pre-sterilized using gamma irradiation (minimum 25 kGy)	A	Stäubli* vent and drain
		8	762 mm (30 in.)				

Code	Connection Options
1	1 – 1½ in. sanitary flange inlet and outlet
9	1 in. (25 mm) single barb hose barb inlet and outlet
19	1 – 1½ in. sanitary flange inlet and 1 in. (25 mm) single barb hose barb outlet
6 ⁽¹⁾	½ in. (13 mm) single barb hose barb inlet and outlet
16 ⁽¹⁾	1 – 1½ in. sanitary flange inlet and ½ in. (13 mm) single barb hose barb outlet
1H ⁽²⁾	1 – 1½ in. sanitary flange inlet and outlet, with ½ in. sanitary port on inlet
1H9 ⁽²⁾	1 – 1½ in. sanitary flange inlet and 1 in. (25 mm) single barb hose barb outlet, with ½ in. sanitary port on inlet

⁽¹⁾ For P-style only
⁽²⁾ For T-style only



Junior Filter Cartridges

Materials of Construction

Filter Membrane	Hydrophilic PES
Support/Drainage	Polypropylene
End Cap, Core and Cage	Polypropylene
Sealing Technology	Thermal bonding without adhesives
O-rings	Silicone Elastomer

Operating Parameters⁽¹⁾

Maximum Differential Pressure	5.2 bar (75 psi) at 40 °C
-------------------------------	---------------------------

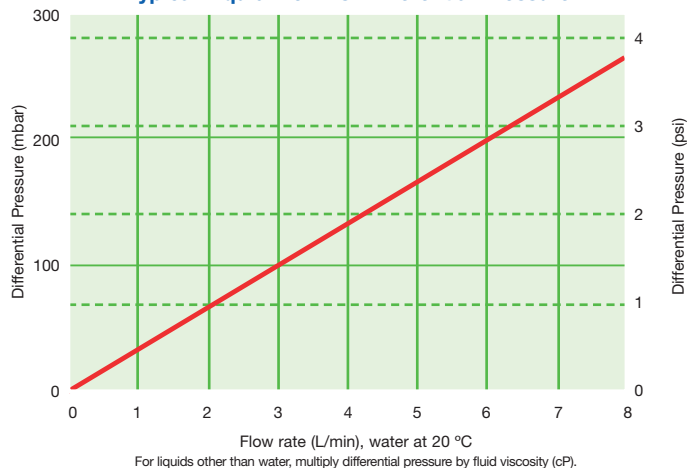
⁽¹⁾ In compatible fluids which do not soften, swell or adversely affect the filter or its materials of construction

Sterilization⁽²⁾

Autoclave	5 x 60 minutes at 125 °C, slow exhaust
<i>In Situ</i> Steam	30 x 60 minutes at 125 °C

⁽²⁾ Water wet Supor EKV capsules prior to steaming to retain full water wettability for integrity testing

Typical Liquid Flow vs. Differential Pressure



Typical Extractables in Water at 20 °C

< 10 mg per filter

Nominal Effective Filter Area (EFA)

1500 cm² (1.6 ft²)

Ordering Information

Pall Part Number:

MCY4440EKVP

H4

O-ring material

Silicone elastomer
(Other material available on request)



Filter Cartridges

Materials of Construction

Filter Membrane	Hydrophilic PES
Support/Drainage	Polypropylene
Core/End Caps	Polypropylene
Cage	Polypropylene with TiO ₂ (white colored)
O-rings	Silicone elastomer
Sealing Technology	Thermal bonding without adhesives

Operating Parameters⁽¹⁾

Maximum Differential Pressure (Forward Direction)	5.5 bar (80 psi) at 40 °C 4.0 bar (58 psi) at 80 °C
Maximum Differential Pressure (Reverse Direction)	2.0 bar (30 psi) at 40 °C

⁽¹⁾ In compatible fluids which do not soften, swell, or adversely affect the filter or its materials of construction

Sterilization⁽²⁾

Autoclave	30 x 60 minutes at 125°C, slow exhaust
In Situ Steam	30 x 60 minutes at 125 °C 5 x 60 minutes at 142 °C

⁽²⁾ • Water wet Supor EKV capsules prior to steaming to retain full water wettability for integrity testing

Typical Extractables in Water at 20 °C⁽³⁾

< 25 mg after 4 hours extraction (per 254 mm module)

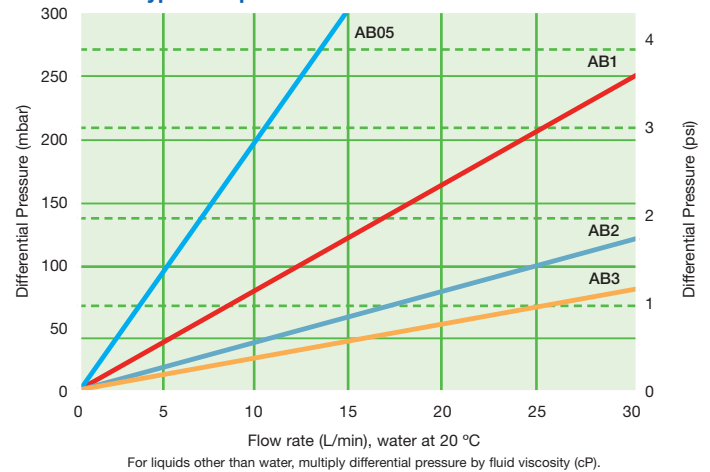
⁽³⁾ Tested on elements without pre-flushing

Ordering Information

Pall Part Number:

Code	Nominal Length	Code	Adapter Style	O-ring material
05	125 mm (5 in.)	7	Pall code 7 double O-ring bayonet lock and fin	Silicone elastomer (Other materials available on request)
1	254 mm (10 in.)			
2	508 mm (20 in.)	2	Pall code 2 double O-ring bayonet lock, no fin (Code 05 only)	
3	762 mm (30 in.)			

Typical Liquid Flow vs. Differential Pressure



Integrity Test Values:

Values for 254 mm (10 inch) filter at 20°C

Max. allowable Forward Flow (air test gas) Water wet 17 mL/min at 2760 mbar (40 psi)

Contact Pall for multi-element integrity test values and recommended test procedures

Nominal Effective Filter Area (EFA)⁽⁴⁾

0.6 m² per 254 mm module (6.5 ft² per 10 in. module)

0.26 m² per 125 mm module (2.8 ft² per 5 in. module)

⁽⁴⁾ 5 in. filters are standard pleated.



Life Sciences

New York - USA

+1 516 484 5400 phone

+1 516 801 9548 fax

biotech@pall.com e-mail

Portsmouth - Europe

+44 (0)23 9230 3303 phone

+44 (0)23 9230 2506 fax

BioPharmUK@europe.pall.com e-mail

Filtration. Separation. Solution.SM




UpScale
ScaleUp

Visit us on the web at www.pall.com/biopharmaceutical

Pall Corporation has offices and plants throughout the world in locations including: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, France, Germany, India, Indonesia, Ireland, Italy, Japan, Korea, Malaysia, Mexico, New Zealand, Norway, Poland, Puerto Rico, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom, the United States and Venezuela. Distributors are located in all major industrial areas of the world.

Because of developments in technology these data or procedures may be subject to change.

 Pall, Allegro, Kleenpak, Novasip and the Allegro design are trademarks of Pall Corporation.

Filtration, Separation, Solution, and the UpScale logo are service marks of Pall Corporation.

Stäubli is a trademark of Stäubli. Part Numbers quoted above are protected by the Copyright of Pall Corporation.

® indicates a trademark registered in the USA. © 2008, Pall Corporation.