



Food and Beverage



SUPRApak™ Plus Depth Filter Modules

Depth filtration goes edge flow

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Efficient, economical and innovative, the SUPRApak depth filter modules are the future of depth filtration with filter sheets.

SUPRApak depth filtration enters a completely new generation with a unique flow configuration called "edge flow". This cost-effective technology will revolutionize depth filtration in the food and beverage sector.

Introduction

For over 100 years, filter sheets have been used in the food and beverage industry to filter liquids in classic plate and frame filters.

The unique filter matrix comprised of cellulose, diatomite and perlite combined with the surface, depth, and adsorptive filtration capabilities of filter sheets makes them an attractive option for a very wide range of applications.

Increased demand for environmentally compatible production processes and product quality in the food and beverage industry has intensified the need to seek out alternative filtration systems. At the same time, cost pressures demand that filter systems are simple to operate with low staffing costs.

Classic sheet filters have considerable disadvantages, such as the high cost of filter change-outs and cleaning, an open system combined with drip losses, the risk of microbiological contamination and the space required for the filter assembly.

However, it is not always possible to replace filter sheets with different filtration systems economically and efficiently due to stringent, and at times, complex filtration requirements.

In response to industry demands to replace classic sheet filters, Pall has introduced the new SUPRApak filter module. Based on proven Seitz® sheet technology, SUPRApak modules are revolutionizing the market for depth filters with sheet filtration.

Applications

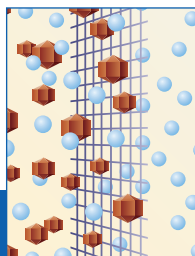
- Particle filtration
- Colloidal removal
- Polishing filtration
- Final filtration
- Small batch filtration



Sugar



Gelatin



Enzyme Solutions



Spirits



Beer



Wine



Flavors

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SUPRApak Plus module design

The SUPRApak Plus design is the second generation of SUPRApak modules, using a PP sealing technology that allows to use steam sanitization in the customer's process.

SUPRApak modules are based on classic depth filtration technology, and represent a perfect combination of the three filtration mechanisms: surface filtration, depth filtration and adsorption.

The main components are high purity cellulose, diatomite and perlite.

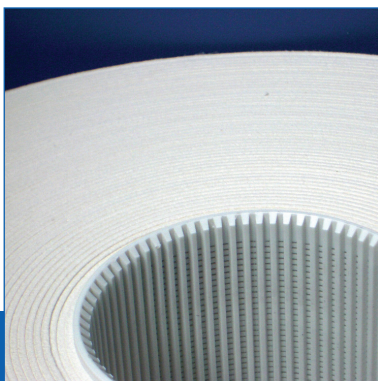
Unique to the SUPRApak module is an entirely new depth filter flow configuration based on the "edge flow" principle. The filter sheet material contains feed and filtrate channels wrapped around a permeable core (Figure 1). PP cords are used to seal the unfiltrate channels against the filtrate channels. The PP material finally is used to fix the sheet media and get a stable module (Figure 2).

This design results in a compact dense package of high-quality filter sheet material. Thus the SUPRApak module meets the highest demands in terms of purity and clarity of the filtered product (Figure 3).

User advantages

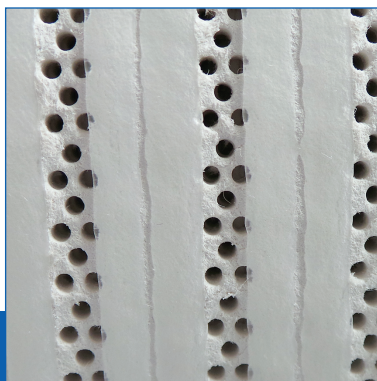
- Design allows steam sanitization
- Increased process safety and product quality due to enclosed, hygienic system
- Increased process uptimes, as the edge flow principle can allow longer throughputs and use of the full capacity of the depth filter material
- High turbidity reduction due to increased particle adsorption capacity
- High yields due to low hold-up volume, drainability of the assembly, and elimination of product drip losses
- Cost savings on filter change-outs due to modular construction, no time-consuming insertion and stacking of individual filter sheets, and less handling in between production runs
- Reduced cleaning chemical and water costs due to compact design
- Small footprint due to high packing density and resulting large filtration area per unit
- Low capital investment compared to classical plate and frame assemblies
- Secure operation without bypass due to PP seal technology
- Low maintenance costs due to absence of gaskets on modules and very limited number of housing seals
- Low total cost of ownership due to combined savings on unit filter area, yield, handling, cleaning, and maintenance, and increased production availability

Figure 1



Core wrapped in sheet material

Figure 2



PP seals actively seal the unfiltrate channels against the filtrate channels

Figure 3



Core wrapped sheet material. PP glue technology forms the final module

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SUPRApak Plus filter media

SUPRApak PW Range (standard)

Filter material in the PW range is made from high-grade cellulose, diatomite and perlite. The SUPRApak PW range offers 10 filtration grades ranging from type PW 5200 for final filtration to type PW 7300 for removing coarse particles. An additional grade in the PW range is PW 7700, made from high-grade cellulose. See table below and Figure 4.

PW Range	Examples of use
PW 5200	Final filtration of enzyme solutions Final filtration of sugar solutions
PW 5300	Final filtration of fructooligosaccharides Fine filtration of beer
PW 5500	Final filtration of sugar solutions Fine filtration of beer
PW 5700	Clarifying filtration of beer Final filtration of sugar solutions
PW 5800	Filtration of enzyme solutions Clarifying filtration of beer
PW 5900	Polishing filtration of thin liquor gelatine Polishing filtration of flavors Clarifying filtration of beer
PW 7000	Clarifying filtration of thin liquor gelatine
PW 7100	Clarifying filtration of thin liquor gelatine Clarifying filtration of flavors
PW 7300	Coarse particle removal
PW 7700	Coarse particle removal, removal of water from edible oils, flavors

SUPRApak PR Range (high resistance)

The filter material in the PR range contains up to 40% selected polyolefin fibers in addition to cellulose, diatomite and perlite. This composition of raw materials is specially designed to meet the demands for filtration of aggressive media, as it has high chemical and mechanical resistance compared with the SUPRApak PW range. As a result of the polyolefin fibers, the SUPRApak PR modules are highly resistant to enzymes which break down cellulose, making them the ideal choice for use in the enzyme industry. See table below.

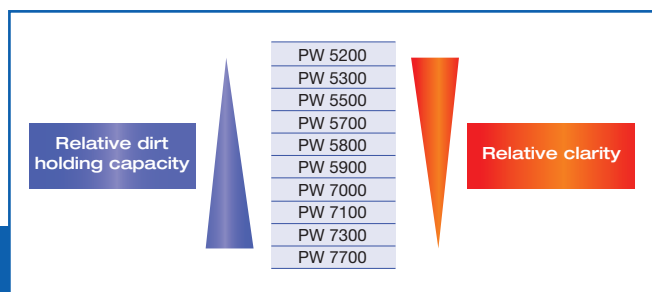
PR Range	Examples of use
PR 5100	Final filtration of enzyme solutions

SUPRApak PH Range (ion reduced)

For special applications like distilled spirits filtration, the SUPRApak PH range of modules is the preferred option. With a proprietary manufacturing process, these sheets release reduced levels of calcium and magnesium, and negligible levels of iron and copper. See table below and Figure 5.

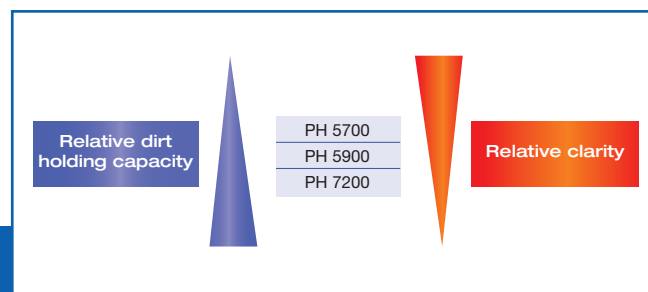
PH Range	Examples of use
PH 5700	Chill/polishing filtration of white spirits
PH 5900	Chill filtration of brown spirits or white spirits high in fatty acids
PH 7200	Particle removal

Figure 4



PW range of filtration grades

Figure 5



PH range of filtration grades



SUPRApak Plus Depth Filter Modules

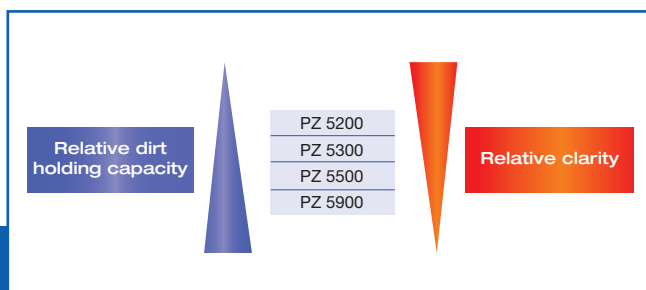
Depth filtration goes edge flow

SUPRApak PZ Range (100% cellulose sheet media, Zero DE)

For special applications like distilled spirits filtration, filtration of flavors and all applications where lowest possible quality impact is required, the SUPRApak PZ range of modules is the preferred option. As the sheet media consists of 100% cellulose, release of heavy metals and critical ions is negligible. See table below and Figure 6.

PZ Range	Examples of use
PZ 5200	All liquids of high value and high quality, where lowest possible impact on color and flavor is key target
PZ 5300	
PZ 5500	
PZ 5900	

Figure 6



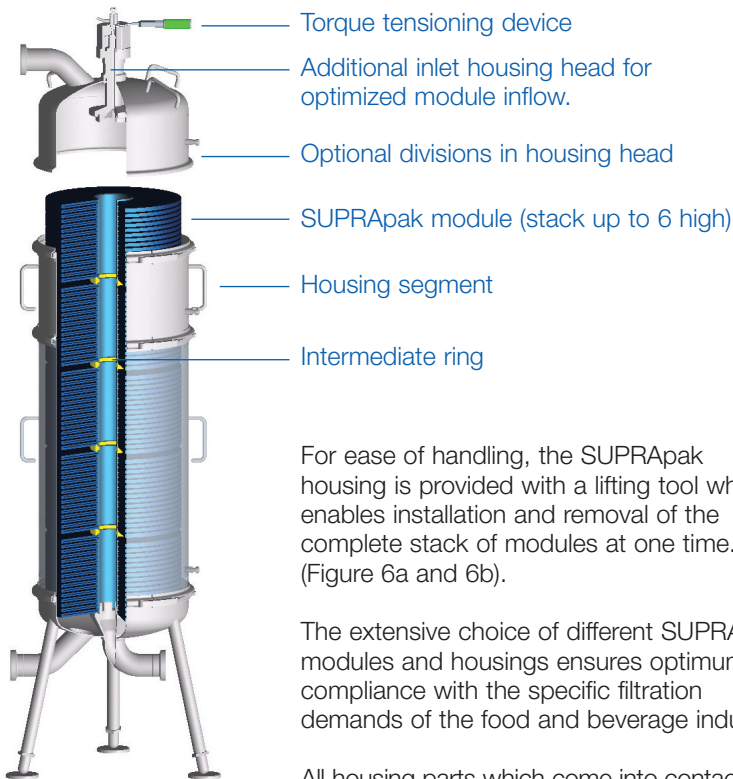
PZ range of filtration grades

SUPRApak Plus Depth Filter Modules

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SUPRApak housing

The new SUPRApak filter housings are designed for use with the SUPRApak depth filter modules.



For ease of handling, the SUPRApak housing is provided with a lifting tool which enables installation and removal of the complete stack of modules at one time. (Figure 6a and 6b).

The extensive choice of different SUPRApak modules and housings ensures optimum compliance with the specific filtration demands of the food and beverage industry.

All housing parts which come into contact with the product are manufactured from 316L stainless steel. The electropolished wetted surfaces ensure optimal hygienic conditions.

Features and Benefits

- Enclosed filter system limits environmental exposure and microbial contamination
- Large, hydrodynamically designed inlet and outlet connections ensure high flow rates with low pressure differential
- Polished wetted surfaces enhance cleanability
- External torque control device enables optimal operational security during filtration through controlled tensioning of the module, and simplifies internal housing design
- Indirect flow control eliminates the need for flow guide plates
- Inlet connections at both the housing head and base facilitate ideal flow distribution and optimum utilization of the SUPRApak module filter area
- Quick release vee band housing clamp simplifies handling
- Housing domes available with single or multiple divisions allows flexibility

The SUPRApak housing range is available in single-round S (small, Figure 8), M (medium) and L (large) sizes. Additionally, there are MS (multi-stack) options. Please refer to separate SUPRApak housing data sheets for further details.

The modular SUPRApak housing range allows the use of multiple module combinations:

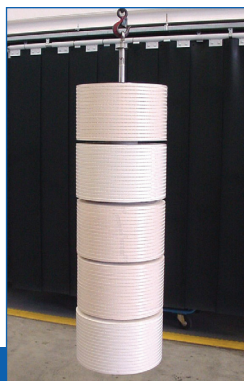
- 1 module in S housings
- 1 to 4 modules in M housings
- 1 to 6 modules in L housings
- 16, 20 or 24 modules in MS housings

Figure 6a



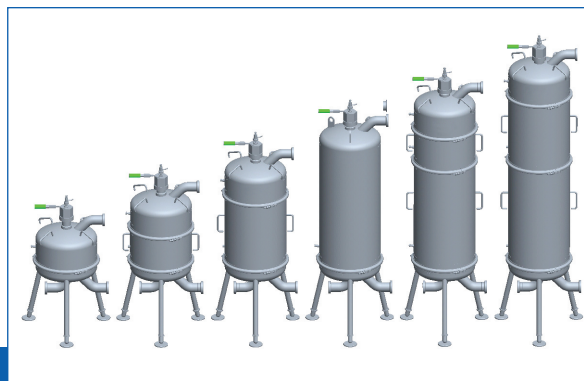
SUPRApak module lifting device

Figure 6b



Complete stack insertion and removal

Figure 7



Single or split dome housings with intermediate sections available

Figure 8



SUPRApak S housing for filterability work and small batch filtration

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Ordering Information

This is a guide to the part numbering structure only. For specific options, please contact Pall.

Part Number:

SUPRApak    W

Table 1: Module Type

Code	Range
PW	Standard
PR	High Resistance
PH	Ion Reduced
PZ	Pure Cellulose Media

Table 2: Media Range

Code	Range	Available Sizes			
		L	M	S	
5200	PW Range	X	X	X	
5300		X	X	x	
5500		X	X	X	
5700		X	X	X	
5800			X	X	
5900		X	X	X	
7000			X	X	
7100		X	X	X	
7300			X	X	
7700			X	X	
5100		PR Range	X	X	X
5700		PH Range (L-size: go for SH version)		X	X
5900				X	X
7200				X	X
5200			X	X	
5300	PZ Range (L-size: go for ZD version)		X	X	
5500			X	X	
5900			X	X	

Example Part Number:

SUPRApak PW 5200 L W

See bold reference codes in tables.

Table 3: Nominal Dimensions (Figure 9)

Code	Height	External Diameter
L	250 mm (9.8 in)	415 mm (16.3 in)
M	250 mm (9.8 in)	285 mm (11.2 in)
S	250 mm (9.8 in)	183 mm (7.2 in)

Figure 9



SUPRApak modules in S, M, and L sizes (from left to right) and different stack heights offer maximum flexibility to handle a variety of applications.

For detailed information about SUPRA products please visit: <https://food-beverage.pall.com/en/depth-filtration.html>



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