



Food and Beverage



SUPRApak™ 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

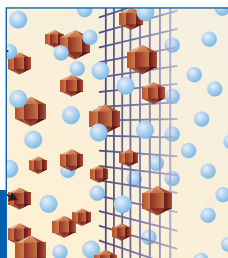
- Particle filtration
- Colloidal removal
- Polishing filtration
- Final filtration



Sugar



Gelatin



Enzyme Solutions



Spirits



Beer



Wine

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SUPRApak module design

The SUPRApak filter design is an entirely new and unique configuration of filter sheet material, which sets a new standard for enclosed sheet filtration.

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.

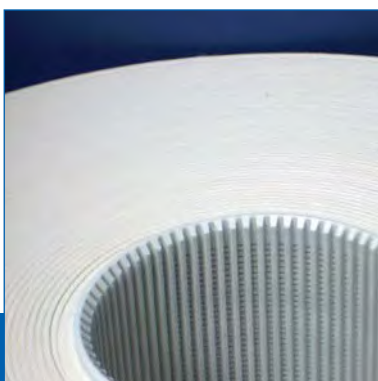
Unique to the SUPRApak module is an entirely new depth filter flow configuration based on the “edge flow” principle. The filter sheet material contains feed and filtrate channels wrapped around a permeable core (Figure 1). Straps are then used to attach the sheet material to the core (Figure 2).

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

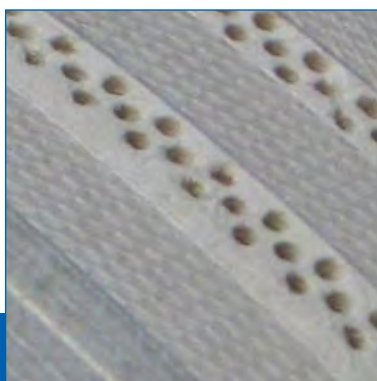
- Increased process safety and product quality due to enclosed, hygienic system
- Increased process uptimes, as the edge flow principle can allow longer throughputs and use of the full capacity of the depth filter material
- High turbidity reduction due to increased particle adsorption capacity
- High 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
- Easy disposal of modules
- Low capital investment compared to classical plate and frame assemblies
- Secure operation without bypass due to external tensioning control
- 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



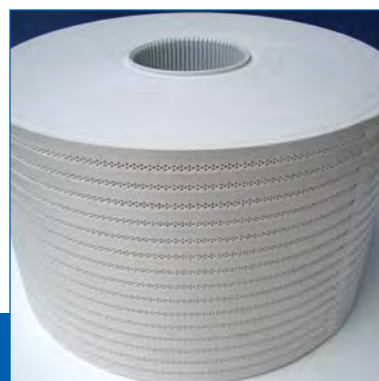
Core wrapped in sheet material

Figure 2



Straps and perforated structure of filtrate channels

Figure 3



Core wrapped in sheet material



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SUPRApak filter media

SUPRApak SW Range (standard)

Filter material in the SW range is made from high-grade cellulose, diatomite and perlite as well as <3 % polyolefin fibers. The SUPRApak SW range offers 10 filtration grades ranging from type SW 5200 for final filtration to type SW 7300 for removing coarse particles. An additional grade in the SW range is SW7700, made from high-grade cellulose. See table below and Figure 4.

SW Range Examples of use

SW 5200	Final filtration of enzyme solutions Final filtration of sugar solutions
SW 5300	Final filtration of fructooligosaccharides Fine filtration of beer
SW 5500	Final filtration of sugar solutions Fine filtration of beer
SW 5600	Final filtration of sugar solutions Fine filtration of beer
SW 5700	Clarifying filtration of beer Final filtration of sugar solutions
SW 5800	Filtration of enzyme solutions Clarifying filtration of beer
SW 5900	Polishing filtration of thin liquor gelatine Polishing filtration of flavors Clarifying filtration of beer
SW 7000	Clarifying filtration of thin liquor gelatine
SW 7100	Clarifying filtration of thin liquor gelatine Clarifying filtration of flavors
SW 7300	Coarse particle removal
SW 7700	Coarse particle removal; wax removal in edible oils

SUPRApak SR Range (high resistance)

The filter material in the SR 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 SW range. As a result of the polyolefin fibers, the SUPRApak SR modules are highly resistant to enzymes which break down cellulose, making them the ideal choice for use in the enzyme industry. See table below.

SR Range Examples of use

SR 5100	Final filtration of enzyme solutions
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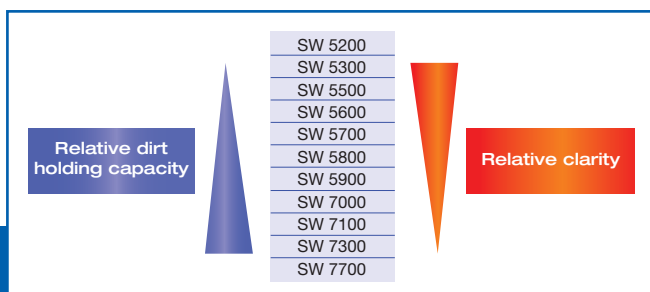
SUPRApak SH Range (ion reduced)

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

SH Range Examples of use

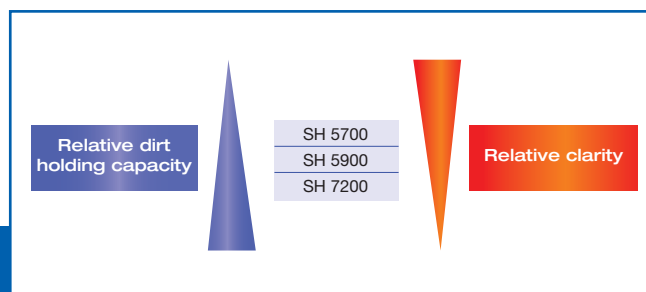
SH 5700	Chill/polishing filtration of white spirits
SH 5900	Chill filtration of brown spirits or white spirits high in fatty acids
SH 7200	Particle removal

Figure 4



SW range of filtration grades

Figure 5



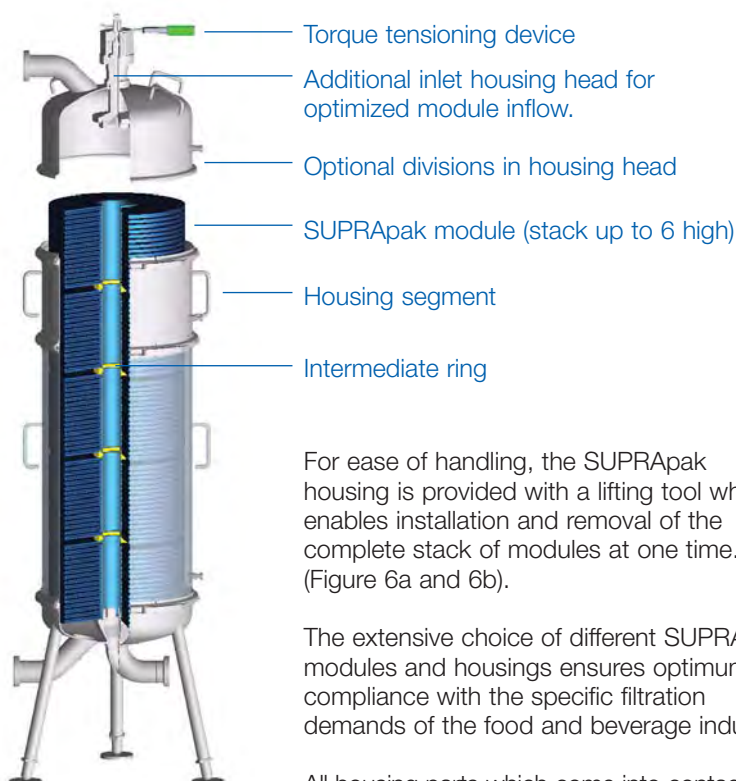
SH range of filtration grades

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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

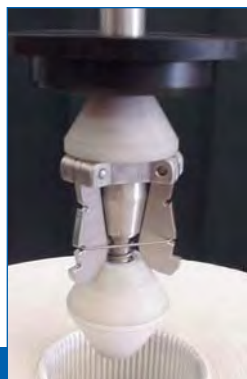
- Enclosed filter system limits environmental exposure and microbial contamination
- Large, hydrodynamically designed inlet and outlet connections ensure high flow rates with low pressure differential
- Polished wetted surfaces enhance cleanability
- External torque control device enables optimal operational 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
- 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



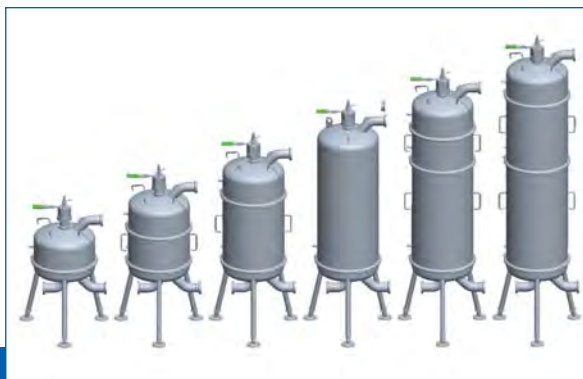
SUPRApak module lifting device

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

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 W

Table 1

Table 2

Table 3

Example Part Number:

SUPRApak SW 5200 L W

See bold reference codes in tables.

Table 1: Module Type

Code	Range
SW	Standard
SR	High Resistance
SH	Ion Reduced

Table 2: Media Range

Code	Range
5200	SW Range
5300	
5500	
5600	
5700	
5800	
5900	
7000	
7100	
7300	
7700	
5100	SR Range
5700	
5900	SH Range
7200	

Table 3: Nominal Dimensions (Figure 9)

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