

## Seitz® AKS4 Series Depth Filter Sheets For Color and Flavor Correction

Seitz AKS4 series depth filter sheets were developed to satisfy general purpose carbon adsorption applications in the food and beverage industry.

### Description

Powdered activated carbon (PAC) is widely used in the food and beverage industry for adsorption applications. The use of bulk PAC has significant drawbacks relating to the handling of bulk carbon powder, cleaning of the process equipment, as well as time and costs associated with carbon removal from the process.

Seitz AKS immobilized carbon filter media alleviates these concerns by incorporating activated carbon within a matrix of cellulosic fibers. This immobilized carbon media can be coupled with a downstream protective filter paper to prevent any possible carbon particle shedding downstream of the filter. Additionally, the adsorption efficiency of Seitz AKS immobilized carbon filter media is greater than an equivalent amount of bulk powdered activated carbon (PAC), reducing overall process time and increasing product yield. An internal comparative study using the same carbon grade showed up to 150 % better color removal efficiency when compared to bulk PAC.



Seitz AKS4 Series Filter Sheets

Features	Benefits
Carbon-impregnated media with a homogeneous and consistent matrix	<ul style="list-style-type: none"> <li>• Free of carbon dust</li> <li>• Simplified handling and cleaning</li> <li>• When using protection paper downstream, no further trap filtration required</li> </ul>
High adsorption efficiency as compared to PAC	<ul style="list-style-type: none"> <li>• Reduction of overall process time</li> <li>• Increased product yield</li> <li>• Good permeability with excellent filtrate quality</li> </ul>
General-duty media targeted to food and beverage industry needs	<ul style="list-style-type: none"> <li>• High economic efficiency due to a long service life</li> </ul>

### Quality

- Filter sheets produced in a controlled environment
- Manufactured according to ISO 9001:2008 certified Quality Management System

### Food Contact Compliance

Please refer to the Pall website [www.pall.com/foodandbev](http://www.pall.com/foodandbev) for a Declaration of Compliance to specific National Legislation and/or Regional Regulatory requirements for food contact use.

### Main Constituents

Cellulose, powdered activated carbon, diatomaceous earth (DE, Kieselguhr)

### Applications

- Dechlorination of water
- Correction of off color, flavor and odors in distilled spirits
- Decolorization of sweetener and sugar syrups
- Color correction in juice and beer applications
- Gelatin decolorization and deodorization

### Adsorption Capability

At an optimized flow rate, the probability of contact between the impurities and carbon particles is greater in carbon-impregnated sheets. This is due to process fluids more efficiently contacting carbon particles immobilized into a sheet matrix. Because of the depth (thickness) of the sheet, it is possible to consider the structure as being made up of a series of layers containing PAC. Having a depth of PAC and passing the fluid at an optimal flow rate through that depth enables maximum utilization of the carbon.

Macro- and mesopores can generally be regarded as the highways into the carbon particle, and are crucial for adsorption kinetics. Macropores are used for the transport, and adsorption occurs in the meso- and micropores.

Small molecules, such as methylene blue, which has a molecular weight of 319.86 Dalton, are mainly captured in micropores. Typically, over 20 g/m<sup>2</sup> methylene blue is adsorbed.

## Characterization

Sheet with Protection Paper	Mass per Unit Area g/m <sup>2</sup>	Thickness mm	Ash %	Water Permeability <sup>1</sup> L/m <sup>2</sup> /min (gal/ft <sup>2</sup> /min)
No	1050	3.8	13	291 (7.2)
Yes				100 (2.5)

These figures have been determined in accordance with in-house test methods and the methods of the Technical / Analytical Work Group within the European Depth Filtration Association.

<sup>1</sup>The permeability was measured under test conditions with clean water at 20 °C (68 °F) and a Δp of 1 bar (14.5 psi).

## Regeneration

Depending upon the application and the nature of the adsorbed contaminants, AKS series filter sheets may be regenerated by means of rinsing with clean water in the forward direction. However, the achievable regeneration efficiency must be determined by monitoring filtrate quality.

## Sterilization and Sanitization

Method	Temperature °C (°F)	Maximum Differential Pressure bar (psi)	Time <sup>2</sup> / Cycle min
Steam	125 (257)	0.5 (7.2)	20
Hot Water	90 (194)	1 (14.5)	30

<sup>2</sup>The actual time required may vary as a function of the process conditions.

## General Instructions for Use

To achieve optimal filtrate quality, Pall recommends the use of protection paper downstream. Sheet options which include a downstream protection paper are available<sup>3</sup>.

In order to maximize the required adsorption of impurities, particle filtration must occur upstream of carbon-impregnated filter sheets.

## Filtration Guidelines

Typical flux rates used on food and beverage fluids are 150-250 L/m<sup>2</sup>/h (3.7-6.2 gal/ft<sup>2</sup>/h).

Higher fluxes may be possible according to the application. Due to the various factors, which may affect the adsorption process, Pall recommends an initial scaled-down testing as a reliable method of qualifying filter performance.

For additional operating guidelines, including rinsing of sheets prior to use, please refer to instructions provided by Pall.

## Available Sheet Formats<sup>3</sup>

### Rectangular Sheets

400 mm x 400 mm (15.8" x 15.8")

600 mm x 612 mm (23.6" x 24.1")

<sup>3</sup>Sheets are available with or without downstream protection paper. Please indicate which type is required upon order placement.

Other formats are available on request.

Seitz AKS4 series filter sheets are also available in SUPRAdisc™ I module configuration. Please contact Pall.



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