



Great Wall Carbflex™ Activated Carbon Depth Filter Sheets

Depth Filter Sheets for Challenging Filtration in Pharmaceutical, Food, Bioengineering, Chemical, and Other Industries
Ideal for Color Removal, Odor Reduction, Endotoxin Elimination, and Broad-Spectrum Adsorption

Carbflex Depth Filter Sheets combine high-performance activated carbon with cellulose fibers and are widely used in pharmaceutical, food, and bioengineering industries. Compared to traditional powdered activated carbon (PAC), Carbflex is more efficient at removing color, odor, and endotoxins while reducing dust generation and cleaning efforts. By integrating activated carbon with fiber materials, it eliminates the issue of carbon particle shedding, ensuring a more reliable adsorption process.

To meet diverse needs, Carbflex offers filter media in various removal ratings and configurations. This not only standardizes carbon treatment but also simplifies operation and handling, allowing users to select the most suitable product according to their specific requirements.

Main Constituents

- Cellulose
- Powdered activated carbon
- Wet strength agent
- Diatomaceous earth (DE, Kieselguhr), Perlite (in certain models)

Applications and Examples

Pharmaceutical and Bioengineering

- Decolorization and purification of monoclonal antibodies, enzymes, vaccines, blood plasma products, vitamins, and antibiotics.
- Processing of pharmaceutical active ingredients (APIs).
- Purification of organic and inorganic acids.

Food and Beverages

- Decolorization of sweeteners and syrups.
- Color and flavor adjustment of juices, beer, wine, and cider.
- Decolorization and deodorization of gelatin.
- Taste and color correction of beverages and spirits.

Chemicals and Oils

- Decolorization and purification of chemicals, organic and inorganic acids.
- Removal of impurities in oils and silicones.
- Decolorization of aqueous and alcoholic extracts.

Cosmetics and Fragrances

- Decolorization and purification of plant extracts, aqueous and alcoholic solutions.
- Treatment of fragrances and essential oils.

Water Treatment

- Dechlorination and removal of organic contaminants from water.

Carbflex Depth Filter Sheets are ideally suited for these applications, offering exceptional adsorption capabilities and reliability to enhance product quality and production efficiency across various industries. With a range of grades and configurations available to meet diverse process requirements, they are an ideal choice for effective purification and filtration.

Features and Benefits

Homogeneous Carbon-Impregnated Media

- Easy Handling: Simplifies processing and cleaning without additional filtration steps.
- Free of Carbon Dust: Maintains a clean operating environment.

Excellent Adsorption Performance

- **Efficient Impurity Removal:** Higher adsorption efficiency than powdered activated carbon (PAC).
- **Increased Product Yield:** Reduces process time and enhances production efficiency.

Economical and Durable

- **Long Service Life:** Decreases replacement frequency and lowers operational costs.

Adsorption Capability

The remarkable advantage of Carbflex Depth Filter Sheets stems from the highly porous structure of the activated carbon used. With pore sizes ranging from tiny fissures to molecular dimensions, this structure offers an extensive surface area, enabling effective adsorption of colors, odors, and other organic contaminants. As fluids pass through the filter sheets, contaminants physically bond with the internal surfaces of the activated carbon, which has a strong affinity for organic molecules.

The efficiency of the adsorption process is closely linked to the contact time between the product and the adsorbent. Therefore, adsorption performance can be optimized by adjusting the filtration speed. Slower filtration rates and extended contact times help fully utilize the adsorption capacity of the activated carbon, achieving optimal purification results.

We offer various models of activated carbon, each activated through different methods, resulting in differing adsorption capacities and characteristics. Additionally, different models of filter sheets and processes are available. We can provide customized filtration solutions and filter sheet services to meet your specific process requirements. For details, please contact the Great Wall sales team.

Product Range & Available Sheet Formats

Carbflex depth activated carbon filter sheets offer various filtration grades designed to handle products with different viscosities and characteristics. We categorize different types of products into specific grades to simplify the selection process of Carbflex filter sheets.

We can produce filter sheets in any size and cut according to customer requirements, such as round, square, and other special shapes, to fit different types of filtration equipment and process needs. These filter sheets are compatible with various filtration systems, including filter presses and closed filtration systems.

In addition, the Carbflex Series is available in modular cartridges suitable for use in closed module housings, catering to applications with higher demands for sterility and safety. For more information, please contact the Great Wall sales team.

Characterization

Model	Mass per unit area (g/m ²)	Thickness (mm)	Flow time (s)①	Wet bursting strength (kPa≥)
CBF-945	1050-1250	3.6-4.2	5'-15'	130
CBF-965	1400-1550	4.7-5.3	10'-20'	80
CBF-967	1450-1600	4.7-5.3	5'-15'	50

*As part of our commitment to continuous product improvement, specifications may be updated. Please contact us to confirm you have the latest documentation.

①Flow time is a time indicator used to evaluate the filtering accuracy of the filter sheets. It is equal to the time it takes for 50 ml of distilled water to pass 10 cm² of filter sheets under the conditions of 3 kPa pressure and 25°C.

Sanitizing and Sterilizing Procedures

Moistened Carbflex Depth Activated Carbon Filter Sheets can be sanitized with hot water or saturated steam up to a maximum temperature of 250°F (121°C). During this process, the filter press should be slightly loosened. Ensure thorough sterilization of the entire filtration system. Apply final pressure only after the filter pack has cooled down.

▣ Hot Water Sanitization

Parameter	Requirement
Flow Rate	At least equal to the flow rate during filtration
Water Quality	Purified water
Temperature	85°C (185°F)
Duration	Maintain for 30 minutes after all valves reach 85°C (185°F)
Pressure	Maintain at least 0.5 bar (7.2 psi, 50 kPa) at the filter outlet

▣ Steam Sterilization

Parameter	Requirement
Steam Quality	Steam must be free of foreign particles and impurities
Temperature (Max)	Steam must be free of foreign particles and impurities
Duration	Maintain for 20 minutes after steam escapes from all filter valves
Rinsing	Maintain for 30 minutes after all valves reach 85°C (185°F)

Filter Preparation and Filtration

▣ Pre-rinsing and Filtration

- **Pre-rinsing:** After completing sterilization, it is recommended to pre-rinse the closed filtration system with 1.23 gal/ft² (50 L/m²) of water at 1.25 times the filtration flow rate before the first filtration. Depending on the application, this usually requires 10 to 20 minutes of rinsing time.
- **Leak Detection:** Check the entire filtration system for leaks at the maximum operating pressure.
- **Special Solution Handling:** For alcoholic solutions and chemical products that cannot be pre-rinsed with water, circulate the appropriate solvent for 10 to 20 minutes. After rinsing, properly dispose of the rinsing solution.

▣ Maximum Allowable Differential Pressure

- Terminate the filtration process when a differential pressure of 43.5 psi (300 kPa, 3 bar) is reached.

▣ Filter Sheet Installation

- **Handle with Care:** When installing depth filter sheets, handle them carefully to avoid impact, bending, and friction. Do not use damaged filter sheets.
- **Correct Installation Direction:** Carbflex Depth Activated Carbon Filter Sheets have a rough side and a smooth side. The rough side is the inlet side, and the smooth side is the outlet side. When inserting the filter sheets, ensure that the smooth side is in contact with the filtrate plate.

Filtration Guidelines

For liquids in the food and beverage industry, a typical flux rate is 3 L/m²·min. Higher flux rates may be possible depending on the application. Since various factors can influence the adsorption process, we recommend conducting preliminary scale-down tests as a reliable method to determine filter performance. For additional operational guidelines, including pre-rinsing the filter sheets before use, please refer to the instructions we provide.

General Instructions for Use

To achieve optimal filtrate quality, we recommend the use of protection paper downstream of the filter. Filter sheet options that include downstream protection paper are available. In order to maximize the required adsorption of impurities, particle filtration must occur upstream of the carbon-im-pregnated filter sheets.

Waste Disposal

- **Environmental Friendliness:** Carbflex Depth Activated Carbon Filter Sheets are biodegradable.
- **Compliant Disposal:** Please comply with relevant current regulations for waste disposal, depending on the filtered product.

Transportation and Storage

- **Careful Handling:** Due to the product being composed of strongly adsorptive materials, it must be handled carefully during transportation and storage.
- **Storage Conditions:** Store the filter sheets in a dry, odor-free, and well-ventilated place.
- **Avoid Direct Sunlight:** Do not expose the filter sheets to direct sunlight.
- **Shelf Life:** The product has a shelf life of 36 months; it is recommended to use it within 36 months from the production date.

Quality

Filter sheets are produced in a controlled environment to ensure high quality and reliability. Manufactured under an ISO 9001:2015 certified Quality Management System.

Great Wall | Dedicated & Experienced in the Filtration Industry
Depth Filtration Solutions

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