



Cellu-Stack® Product Line Overview

Applications

- ▶ Food / Beverage - Beer, Distilled Spirits, Juice, Wine
- ▶ Chemicals - Specialty, Fine
 - ▶ Cosmetics
 - ▶ Dielectric Fluids
 - ▶ Dyes
 - ▶ Flavors
 - ▶ Fragrances
 - ▶ Gelatin
 - ▶ Inks
- ▶ Photographic Solutions
- ▶ Photoresist Solutions
 - ▶ Utility

Gusmer Enterprises' Cellu-Stacks are a convenient way to utilize depth filtration media in an enclosed system. Offered in all Gusmer media types, these stack filters can be used for coarse, fine, and pre-sterile filtration in numerous filtration applications.

Each Cellu-Stack filter cell is independently sealed through an injection molding process. Edge seal bosses are incorporated as a special feature to prevent cell collapse during prolonged filtration runs. Specially designed anti-rotating spacers are placed between the cells and the entire unit is pre-compressed and sealed in a module format by a series of stainless steel straps.

Multiple stacks can be arranged within a housing to form a leak-free, convenient filtration system with exceptional filtration surface area and particle retention.

Cellu-Stack filters are designed for ease in loading and unloading filter housings. This significantly reduces operating costs and production downtime.

Cellu-Stack filters are assembled under sufficient compression to maintain integrity into 12- or 16-cell configurations. Depending on your filtration needs, a variety of optional gasket materials are available.

Cellu-Stack Advantages

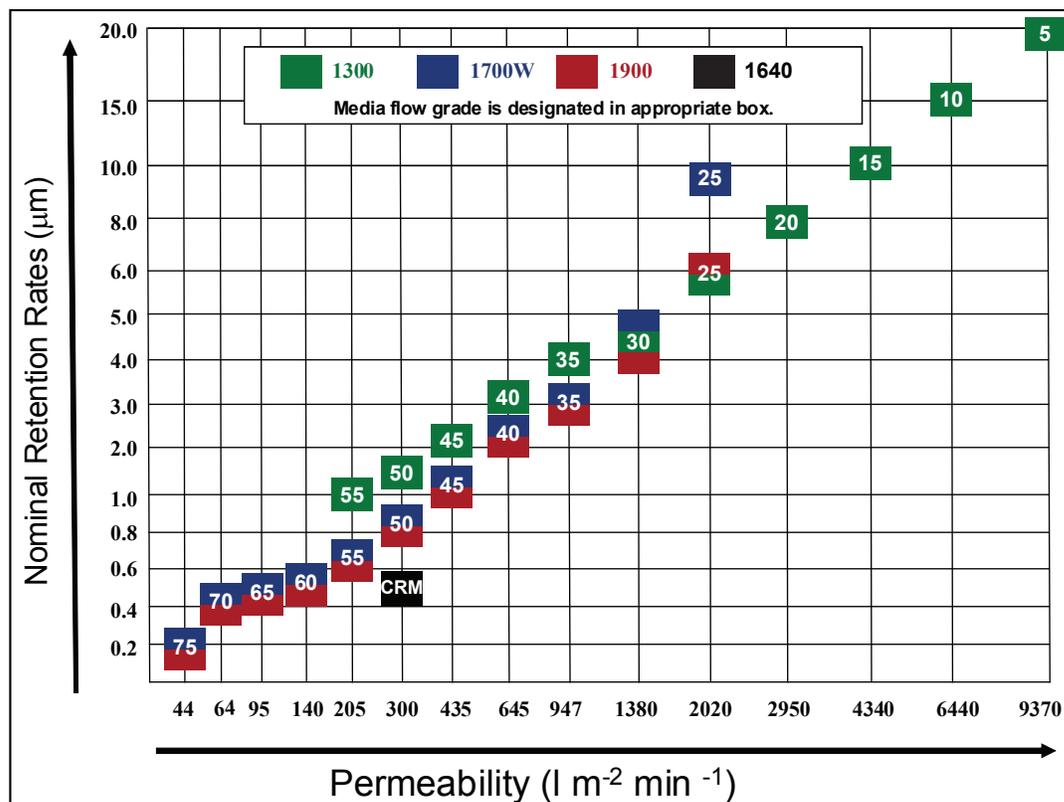
- ◇ Full range of filter media types with high adsorptive and retention properties
- ◇ Clean and safe filtration method when dealing with elevated pressures, temperatures, vapors, etc.
- ◇ Convenient operations with short set-up or changeover times
- ◇ Small process footprint
- ◇ Stack design meets USP Class VI test requirements
- ◇ Designed to conform with GMP practices and procedures
- ◇ Highly economical with minimal maintenance and low operating costs
- ◇ Protection of filtrate against spoilage in enclosed depth filtration system
- ◇ No product drip losses



MEDIA OFFERINGS

Gusmer's standard media series offer a broad range of material options to best meet our customer's needs.

Media	Overview
Cellupore® 1300 Series	All cellulose filter series is a blend of refined cellulose fibers and offers enhanced contaminant loading capacity. For liquid filtration applications where filter aids such as diatomaceous earth or perlites are not suitable. This filter series is the best option for low extractables, high wet strength, and increased throughput.
1330AO / 1330GO Utility Series	These specialized filters are designed as dielectric fluid reconditioning filters. The AO grade is specifically designed with an advanced absorbent layer for high capacity water removal.
Carbac® 1600 Carbon Series	Carbon gradient density filter sheets have high adsorptive capacities with superior throughput capacity. The sheets are comprised of the finest charge-modified cellulose pulps, activated carbon, and inorganic filter aids. These grades are particularly suitable for decolorization, odor, and flavor removal.
Cellupore® 1700W Series	These depth filters are designed to cover the full range of applications from coarse, polish, and pre-sterile filtration for the food and beverage industry. Exhibiting a positive zeta potential, the mixtures of cellulose and inorganic filter aids provide reliable filtration performance for all applications.
Cellupore® 1900 Series	The Cellupore 1900 series has enhanced filtration performance with high wet strength with low extractables. The gradient density filters are manufactured under strict process and quality controls to ensure uniform and consistent filtration performance. The specially designed combination of highly refined pulp and inorganic filter aids results in a filter series that meets USP XXIII Class VI requirements.



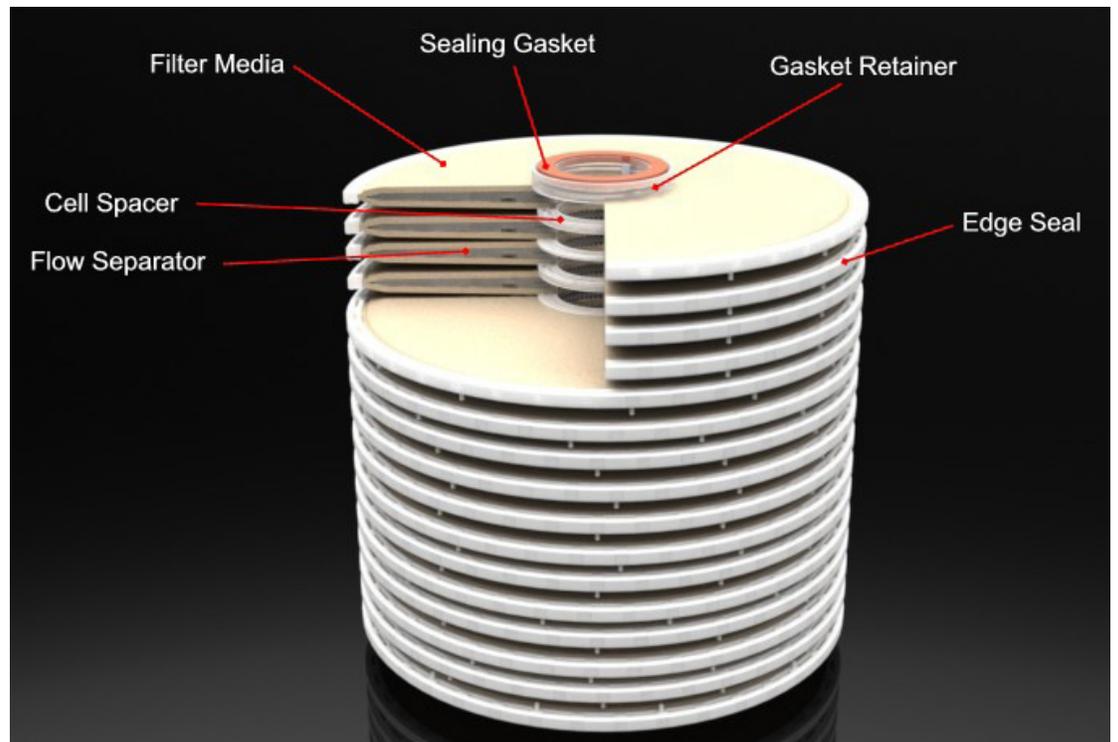
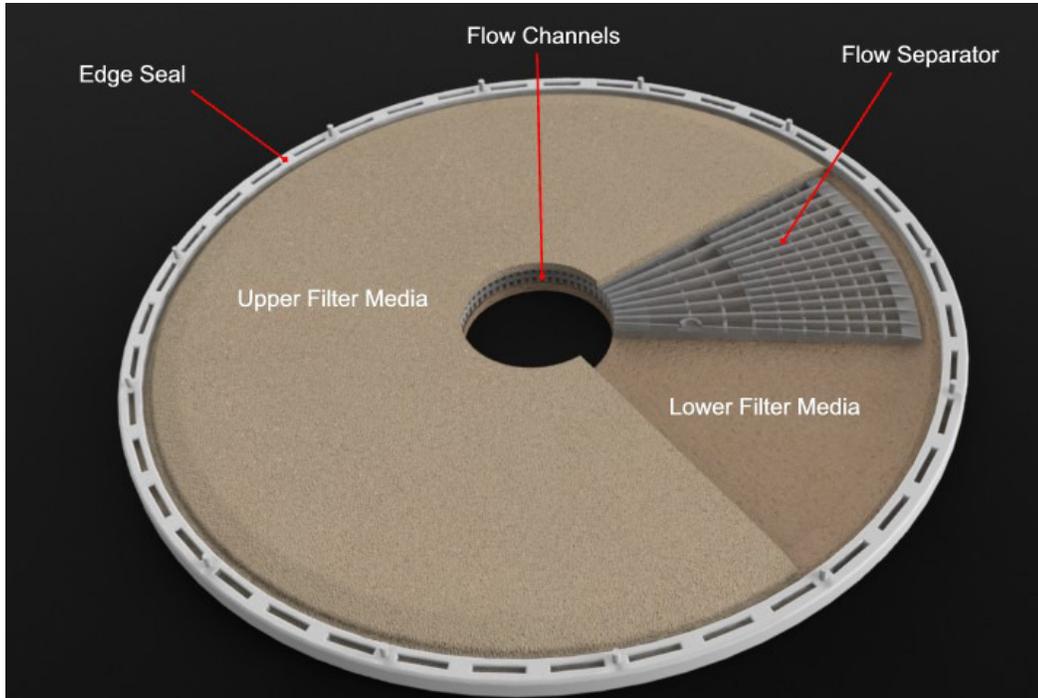


STACK CONSTRUCTION

Cellu-Stacks® are available in multiple sizes and configurations. Each stack is constructed from individual cells of Gusmer Cellupore media assembled in a precompressed format (see below). The cells are sealed by three 316 stainless steel bands with propylene flow separators and edge seals. Multiple gasket materials are available to meet your compatibility and application needs.

STACK SPECIFICATIONS

Max. Operating Temp.	176°F (80°C)
Steam in Place - 3 cycles	253°F (123°C)
Max. Differential Pressure	30 psid (2.1 bar)
Recommended Rinse Volume	2.5 gal/ft ² (100L/m ²)





STACK SPECIFICATIONS

All Cellupore depth filter sheet grades are available in Cellu-Stack formats. The stack configurations are manufactured in 12" (284 mm) and 16" (410 mm) diameters).

Configuration	Cellu-Stack Materials of Construction	Effective Filtration Surface Area
12" diameter, 16 cell	Propylene edge seal, end rings	17.7 ft ²
16" diameter, 16 cell	Propylene edge seal, end rings	38.0 ft ²

Note: Custom stack configurations with a different number of cells are available upon request following validation.

Custom Cellu-Stacks: Please inquire for additional Cellu-Stack options (i.e. 6 or 9 cell). *Note:* Select filter grades and certain customizations may require additional time for configuration.

Important Note: *Gusmer Enterprises, Inc. provides this information to the best of our knowledge. This information does not claim to be complete and Gusmer Enterprises, Inc. cannot assume liability for improper use. All users are advised to test products to meet their specific needs.*



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