



## FILTRATION

Target Market:

## Food and Beverage

Application:

### Trap Filters for Removal of DE or Resin Fines

#### Application Description

Beverages derived from the fermentation of naturally occurring organic materials (grapes, grains, starches, etc.) have cold insoluble materials which create a lack of clarity when the beverage is chilled or stored at room temperature. Contaminants must be removed through filtration to improve appearance. Due to the volumes manufactured, the amount of contaminants and the low value per liter, contaminants must be removed economically through filtration to improve appearance. Ion exchange resin is used in the manufacture of high fructose corn syrup to remove dissolved ionic contaminants.

**Material:** Porous Polyethylene

#### Types of Filters Used

The original trap filters used in the removal of DE or resin fines were string wound cartridges. These trap filters have been replaced by meltblown cartridges in some cases due to their higher efficiency, consistency and cleanliness. Pleated cartridges are also used for extended life and greater economics.

#### Purpose of Filtration

The primary purpose of filtration is to provide consumers with an acceptable product. The food or beverage manufacturer must produce a product that is visually clear and free from particles and contaminants. In the case of fermented beverages, the fluid has to be chilled to precipitate the cold insoluble tannins and then filtered to remove them. The most commonly used filter for this application is a diatomaceous earth (DE) filter. This type of filter is very effective in economically removing the contaminants, but has a tendency to shed DE particles. In the case of high fructose corn syrup, the ionic contaminants have to be removed via ion exchange resin. The ion exchange resin is also shed from the filter and into the syrup. In either case, the shedding particle needs to be removed to obtain acceptable clarity and quality of the product. Trap filters are used to trap the escaping contaminate particles prior to packaging.

#### Common Filtration-Related Problems

- Extractables from filters provide an unacceptable change in the flavor of the beverage
- Bleed through of resin or DE fines caused by filter efficiency inconsistency or too large a pore size
- Premature plugging (from the amount of fines leakage) caused by improper operation, age of the DE or resin, or use of very fine DE
- Regeneration of ion exchange beads causes some of them to break and pass through the exchanger into the trap filters causing plugging or break through
- Inconsistent filter performance from batch to batch and cartridge to cartridge caused by inconsistent product quality and flow rate/pressure drop/efficiency

**Sintered High-Density or Ultra-High Molecular Weight Polyethylene**

FEATURE	ADVANTAGE	BENEFIT
<b>Rigid, Omni-Directional Pore Structure</b>		
• Absolute Ratings	• Consistent pore structure minimizes performance changes caused by differential pressure	• Reproducible performance
• Narrow Pore Size Distribution	• Highly-effective surface filtration for particles larger than the filter pore size rating	• Allows for effective cleaning, backwash and reuse
• Thermally-Bonded	• Sintered omni-directional pore structure	• No media migration, bypass or unloading from 5 to 100 microns
• Excellent Chemical and Thermal Compatibility	• High chemical resistance of HDPE and UHMWPE  • Completely incineratable with a high BTU output	• No chemical degradation resulting in bypass or contamination of the process fluid  • No incineration residue
<b>Unique, Molded Radial Design</b>		
• High Surface Area	• Low pressure drop and higher flow rate	• Increased life or fewer filters results in lower filtration costs
• Open Channels	• Easy access to filtration area	• Effective filtration and cleaning
• Single-Layer Structural Media	• Eliminates unnecessary support materials	• Improves backwash and cleanability
• Rigid, One-Piece Construction	• Multiple diameters, lengths and end configurations	• Easily adapts to existing filtration systems

**PERFORMANCE COMPARISON**

<b>Rigid, Omni-Directional Pore Structure</b>			<b>Unique, Molded Radial Design</b>		
POREX Radial Cartridge Filter vs	Depth Cartridges	Pleated Cartridges	POREX Radial Cartridge Filter vs	Depth Cartridges	Pleated Cartridges
Micron Rating	= / -	= / -	Backflushable	+	+
Absolute Filtration	= / +	= / +	Surface Area	+	-
Surface Retention	= / +	+	Molded Construction	+	+
Classification Filtration	= / +	+	Rigid Structure	= / +	+
Sintered Process	+	+	Open Pleats	+	+
Polyolefin Material	=	=	Disposal Cost	+	+
Chemical Compatibility	=	=	Performance Priced	+	+
Thermal Compatibility	=	=	Single Material	=	= / +
			Vessel Seal	=	=
			Housing Fit	=	=

**Symbol Key:** = Porex equivalent + Porex advantage - Porex potential limitation

