



Pall Corporation

# Zylon™ Backwash Filtration System

**One-Step Brine Polishing  
Without Pre-Coat**

*Filtration. Separation. Solution.<sup>SM</sup>*

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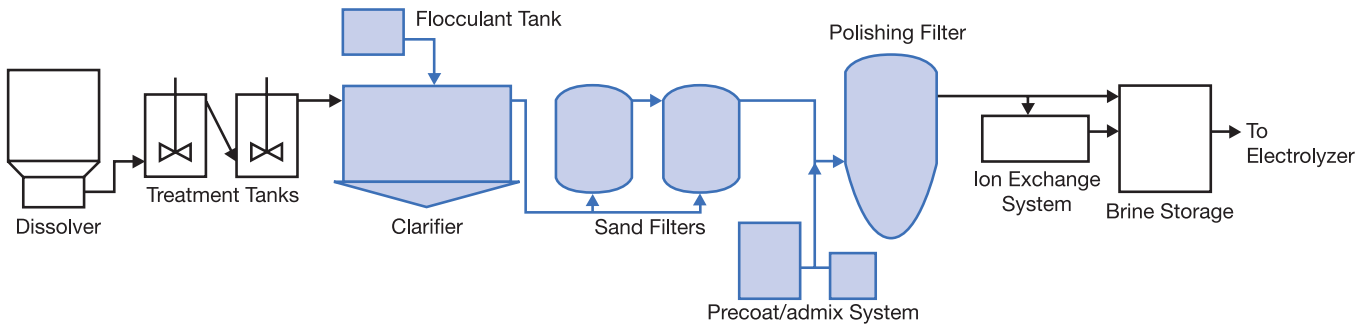
## One-Step Polishing without Pre-Coat

Pall's Zylon™ Backwash Filtration System is the most cost-effective system for one-step brine polishing without pre-coat available today. You can replace costly clarifiers, sand filters, and pre-coat systems while still producing crystal clear brine with our proven solution (See Figures 1 and 2).

At the heart of the Zylon System is the ultra-high-efficiency GORE® Filter Sock. Pioneered by W. L. Gore & Associates more than 25 years ago, this expanded polytetrafluoroethylene (PTFE) media has been successfully used in thousands of applications. It offers excellent filtration to the sub-micron level and is exceptionally easy to clean.

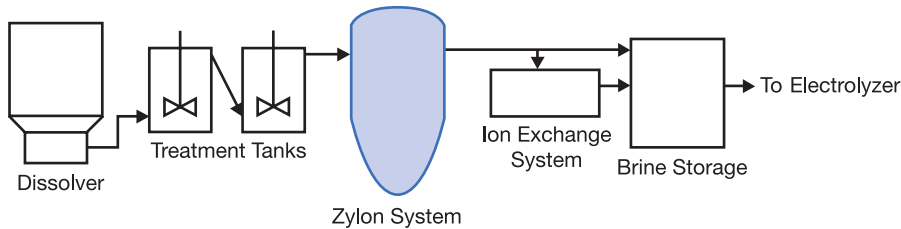
The Zylon System combines the latest filtration materials and hardware technologies to help ensure long-term performance and trouble-free operation. You'll benefit from Pall's industry leadership in filtration, separation, and purification, as well as Gore's 40 years of experience in expanded PTFE membrane technology. The result is the most efficient brine clarification system available today.

Figure 1: Conventional Brine Treatment



A conventional NaCl or KCl brine treatment process is complicated. Brine is processed through as many as six steps before it is ready for the electrolyzer. Using clarifiers, sand filters and a pre-coat systems increase capital and maintenance costs.

Figure 2: Pall Zylon System for Brine Treatment

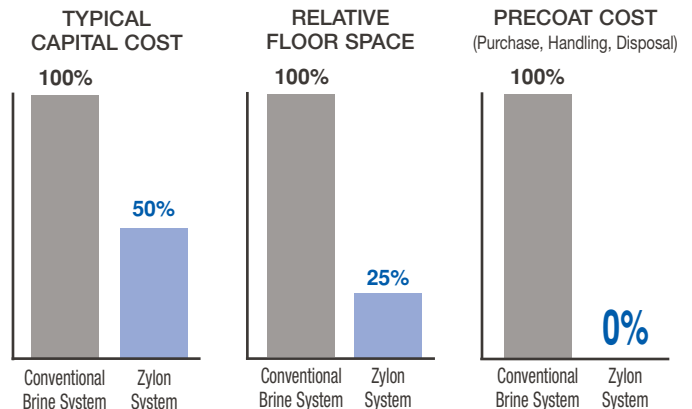


The Zylon System delivers high purity brine to your downstream process while it eliminates the need for clarifiers, sand filters, and pre-coat systems. The result is potential capital savings of approximately \$3 million.

	Approx. Cost**
Clarifier	\$2.0M
Set of sand filters	\$1.3M
Pre-coat system	\$1.9M
Total for conventional brine treatment	\$5.2M
Total for Zylon System	\$2.0M
<b>Capital savings (approx.):</b>	<b>\$3.2M</b>

\* Gore is a trademark of W.L. Gore & Associates

\*\* Costs for a typical system with a flow rate of 1000-1200gpm



## System Components

The Zylon Backwash Filtration System consists of filter support tubes covered with tubular membrane filter elements. These filter elements are mounted in a tube sheet clamped between the flanges of the top dome and the vertical filter tank.

The lower part of the filter vessel has a coned bottom designed to densify solids and minimize brine loss to waste.

The filter dome and filtrate outlet are designed to provide optimal back-washing pulse and volume for effective and reliable cleaning.

## Filtration Process

Directly from the treatment tanks, brine enters the feed zone of the filter shell below the tube bundle.

In a Zylon filter vessel, the brine passes through the tubular membrane filters. Filtered brine flows upward through the filters to the dome. Suspended solids that are detrimental to the ion exchanger units are collected on the membranes as filter cake. Polished brine exits the filter on its way to the ion exchange system or holding tank.

## Cleaning

During filtration, the pressure drop builds across the filter as particulates are removed from the brine stream. When the pre-determined set point is reached, the inlet and outlet valves are closed.

The filter vessel is partially drained in a controlled manner to prepare for cleaning the membranes.

Next, a precise volume of filtrate in the dome is forced into the filter candles by instantly expanding air from a separately installed air tank.

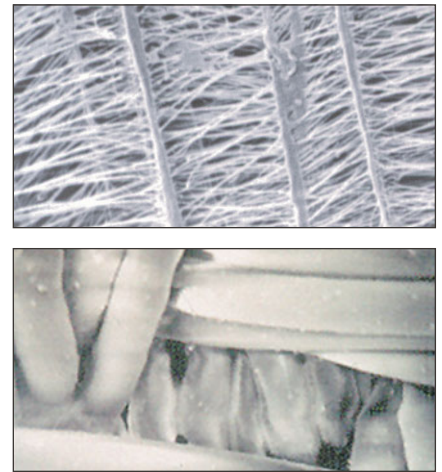
This reverse flow, or back pulse, causes the flexible filter socks to expand and completely removes the filter cake from the membranes. Continued back-flow flushes the tubular membrane filters, regenerating the media.

After backpulsing, the solids are concentrated and collected in the conical bottom of the filter vessel. The highly concentrated sludge is purged from the vessel in a controlled manner that eliminates brine waste.

## Featuring GORE® Filter Socks

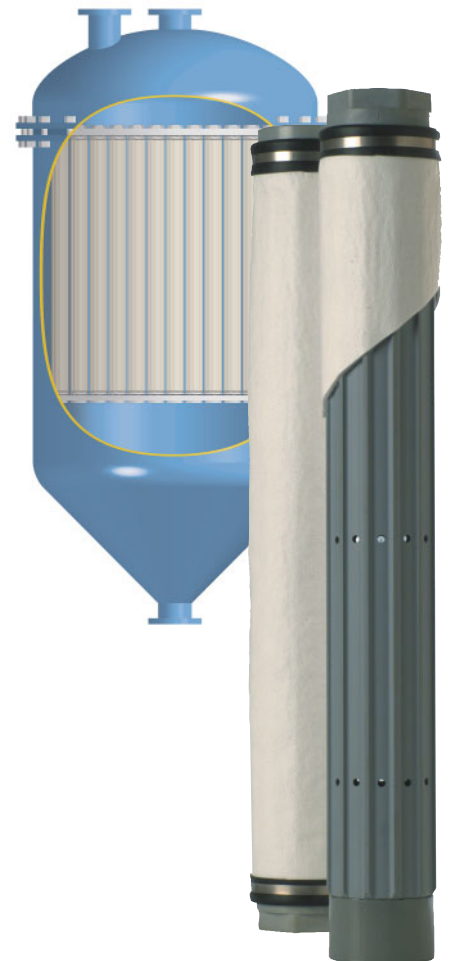
The Filtration system enables true one-step brine filtration. Membrane filter socks bring the benefits of self-cleaning membrane filtration to large-scale industrial filters. They combine the fine particle removal properties of membranes with the durability of high-strength felts. Additionally, the flow rate is equal to or higher than conventional filter media.

The filter socks consist of expanded PTFE membranes laminated to strong felt supports. Filtration takes place on the membrane surface, effectively removing submicron particles. The membrane has a micro-porous structure (Figure 3). The porosity is controlled, permitting the manufacture of membranes to fit specific filtration requirements. The result is fine particle retention and excellent cake release. The filter socks are installed over and

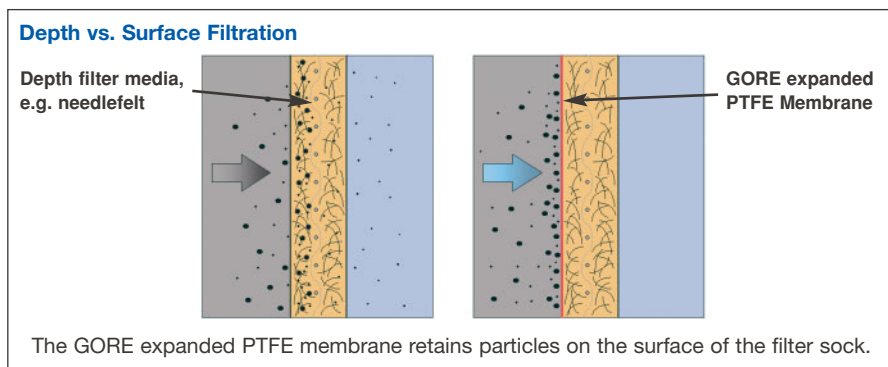


**Figure 3**  
These photomicrographs compare the expanded PTFE membrane (top) to a heavily calendared woven cloth (bottom) of similar permeabilities.

supported by a unique, patented, molded support element comprised of chlorinated polyvinyl chloride (CPVC) (Figure 4) designed specifically for brine filtration.



**Figure 4: Pall Zylon Backwash Filtration System with molded support elements.**



## Exclusive Features and Benefits

### Eliminate Clarifiers, Sand Filters, and Pre-Coat Systems

The Zylon System can save you millions of dollars by eliminating the need to purchase and maintain clarifiers, sand filters and pre-coat systems.

### Reduce Waste Discharge—

Conventional pre-coat brine polishing requires at least one pound of filter aid for every pound of solids removed. Eliminating the pre-coat means reducing solids discharge to your waste treatment plant by more than 50 percent.

### Proven Technology—

Pall Corporation is the worldwide leader in brine purification, supplying both precoat and non-precoat backwash filter systems. Dozens of chloralkali plants currently use non-precoat, backwashable expanded PTFE membrane filter technology.

### Zero Bypass—

The absence of pre-coat means there's no chance for filter aid bleed through.

### Minimal Maintenance—

The one-step Zylon System eliminates moving parts, filter-aid holding and mixing tanks, metering pumps, and extra piping.

### GORE filter socks—

The unique characteristics of GORE filter socks include uniformly fine pore size and a non-stick PTFE surface. The socks enable one-pass submicron filtration with efficient in-place cleaning.

### Field Support—

The Pall Field Service Team provides worldwide support, so help is just a phone call away.

### Simple, Efficient, In-Place Cleaning—

Controlled back pulsing and patented element configuration ensures that 100% of the filter media is regenerated.

### Tolerates Upsets—

The Zylon System accommodates upsets in flow or solids concentration of the brine with no change in filtered brine quality or long-term media blinding.

### Patented Support Tube Elements—

The unique design of the Zylon CPVC filter elements ensures equal flow distribution, high flow rates, and optimal cleaning. They are easily inspected and replaced.

### Greater Capacity—

Eliminating the pre-coat step means that the filter is online longer, enabling it to process more brine.

## Summary

The Zylon System produces ultra-pure brine without the use of pre-coat systems, clarifiers, and sand filters. The systems can save you hundreds of thousands of dollars in capital and maintenance costs while continuing to protect down-stream systems.

To learn more about the Zylon System and to arrange for an evaluation of your brine stream, call Pall Corporation at 516.484.5400. Outside New York state, call 1.888.873.7255. Or visit our Web site at [www.pall.com](http://www.pall.com).



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