



Pall Corporation

[www.pall.com](http://www.pall.com)

## Permi-L Filter Elements

Precoatable, backflushable, string wound filters  
for condensate polishing



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

# A Need for Clean Condensate

Conventional and nuclear power plants have a constant need to polish water that is condensed from steam. It is important that fine particulate and dissolved contaminants are removed from the condensate before the feed water is reintroduced into the boiler. If left alone, these particulates and dissolved contaminants can become concentrated enough to cause major problems to boilers and turbines — leading to unexpected downtime and costly repairs.

Filtration and deionization play a major role in preventing contaminant build-up in plant equipment and piping. Condensate polishing can:

- Remove particulate and dissolved contaminants from water
- Extend equipment life
- Minimize equipment downtime
- Minimize costly repairs



## State-of-the-Art Technology

Pall's Permi-L powdered, precoat elements are designed specifically for condensate polishing applications. Permi-L elements are high-quality, string wound elements that exhibit no resin leakage and provide extended service life — addressing the concerns that operators have when selecting precoat elements for condensate polishing.

## Expert Knowledge, Superior Support

In addition to providing exceptional products, Pall offers its customers expert application knowledge and support.

Pall's Permi-L resin retaining elements advance the cutting-edge technology of powdered resin precoat demineralizers. Years of research and development, along with strong customer partnerships, have enabled Pall to advance its technology and become a leader in precoat condensate polishing.

We work closely with our customers to understand their needs and develop solutions that address their problems. Our strong customer relationships provide us with the direction that's needed to meet the needs of the industry.



Permi-L elements

# Filtration Technology Designed for Condensate Polishing

- Resin retaining elements with a longer service life than conventional elements
- Higher quality precoat which reduces resin use and disposal costs
- No resin bleed-through due to tighter surface retention
- Minimal extractables through the use of pure materials of construction



New



Coated



Backflush



After Backflush

## Unique Features Provide Added Value

### Consistent permeability

Resin retaining elements that have variations in permeability will produce variations in precoat quality. Resin retaining elements that lack precise permeability have shorter run times and lives, and yield poorer water quality.

Pall understands the importance of uniform permeability and follows strict procedures throughout the manufacturing process to ensure consistency. Permi-L elements are integrity tested to verify performance.

### Surface vs. depth filtration

Conventional resin retaining elements utilize a depth capture design which causes particles to be trapped within the fiber matrix. Once trapped, these particles will not backflush entirely. In contrast, the optimal resin retaining element works as a surface filter causing the particles to remain on the upstream side of the element, which allows efficient backflushing.

Permi-L resin retaining elements feature distinct technology that's not found in conventional elements. Permi-L elements use tight pores on the surface of the element for optimizing surface filtration. Therefore, excellent backflushing results are achieved by keeping the powdered resin and corrosive contaminants on the surface of the element.

### Fiber media integrity

Damage caused by repeated precoating, use and backflushing of conventional resin retaining elements can be considerable. Deterioration of the conventional fiber matrix causes poor precoats which leads to shortened element life.

Pall identified the conventional element damage as a potential resin bleed-through concern. Accordingly, Pall designed its Permi-L resin retaining elements with a continuous filament yarn, to add strength and durability to the fiber matrix. This proprietary technology increases the long-term structural integrity of the fiber matrix of the Permi-L element.

### Minimal extractables

The staple yarn found in conventional resin retaining elements contains pigments and delusterants. These additives contain harmful cationic, anionic and organic contaminants which are released into the condensate.

The fiber used to manufacture the Permi-L elements is free of pigments and delusterants. As a result, harmful extractable contaminants are reduced, giving customers a resin retaining element with one of the lowest extractable levels available.

## Internal radial sealing

Sealing mechanisms used on conventional resin retaining elements frequently rely upon horizontal fiber pressure to seal the yarn to the end caps. The integrity of the end cap seal can change due to the pressure upon the fiber matrix.

The unique, proprietary, internal radial sealing mechanism of the Permi-L element eliminates this concern. The internal radial sealing eliminates epoxy, polymer bonds, loose felt, and plastic pieces. Permi-L element end connections are welded to stainless steel center cores.

## Ordering Information

Pall Part Number = PERMI-L 1 2 3 4

Table 1

| Code | Cartridge lengths (cm/in) nominal |
|------|-----------------------------------|
| 52   | 132.1/52                          |
| 57   | 144.8/57                          |
| 60   | 152.4/60                          |
| 70   | 177.8/70                          |

Table 3

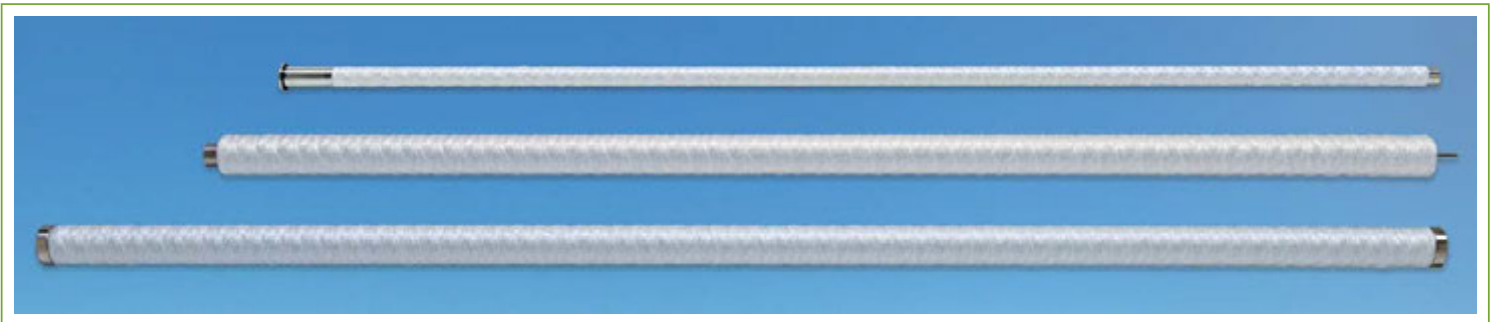
| Code | End configurations                  |
|------|-------------------------------------|
| AE   | Double open end                     |
| AS   | Single open end NPT fitting         |
| AR   | Metallic retrofit (2.5 cm / 1 inch) |

Table 2

| Code | Media material |
|------|----------------|
| U    | Polypropylene  |
| N    | Nylon          |
| RT   | Ryton          |

Table 4

| Code  | Gasket material    |
|-------|--------------------|
| Blank | No gasket required |
| P     | EPDM               |



Pall Corporation

### Power Generation

25 Harbor Park Drive  
Port Washington, New York 11050  
+1 516 484 3600 telephone  
+1 888 873 7255 toll free US

Portsmouth - UK

+44 (0) 23 9233 8000 telephone  
+44 (0) 23 9233 8811 fax  
industrialeu@pall.com




ENABLING A  
GREENER  
FUTURE<sup>SM</sup>

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