



## Robust Filter

### Technical Capabilities



 **PTI Technologies Inc.**

*Listen, Understand, Deliver*

## PTI Technologies 421® : The Ideal Filter Medium

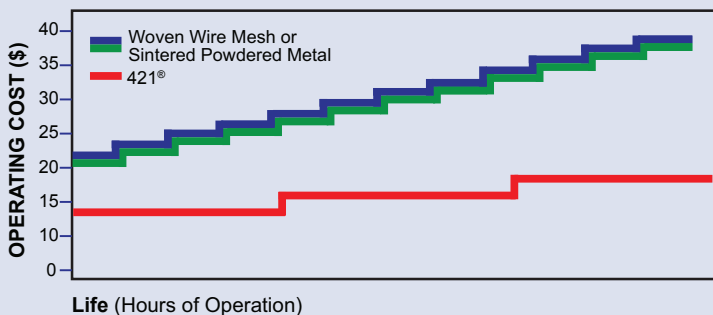
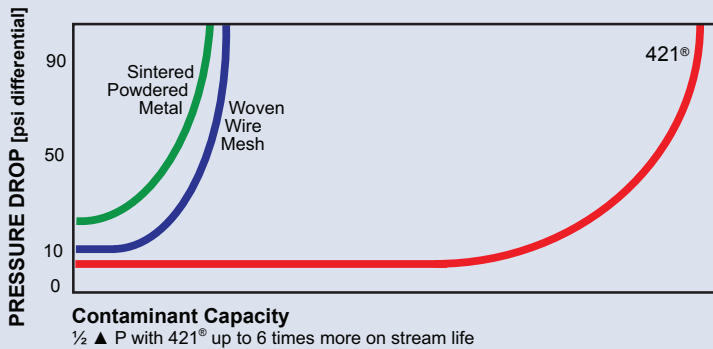
PTI Technologies filter elements begin with 421 filter media, the result of a technological breakthrough in filtration science. The 421 media consists of metallurgically sintered and mechanically compressed metal fibers that offer superior temperature resistance, corrosion resistance, cleanability, and cost effectiveness.

### Why You Should Select 421®

PTI Technologies random fiber filter media is the highest performance media on the market today. It will give you a higher purity end product, a lower pressure drop, and a higher contaminant retention capacity than either woven metallic wire cloth or sintered powder metal. 421 elements are ideal for filtration of highly viscous, high temperature, cryogenic and corrosive chemicals.

### The Best Value For You and The Environment

The exceptionally long life between cleanings and replacements makes 421 filter cartridges the most economical type of filter elements available. In addition, 421 elements are easily cleanable and as a result, they're friendliest to the environment.



### PTI 421® RANDOM FIBER MEDIA

This photo illustrates a top view of a 40 micron absolute rated random fiber media at 200 magnification. Micrograph courtesy of Eastman Kodak Company.

### Handles Challenging Process Requirements

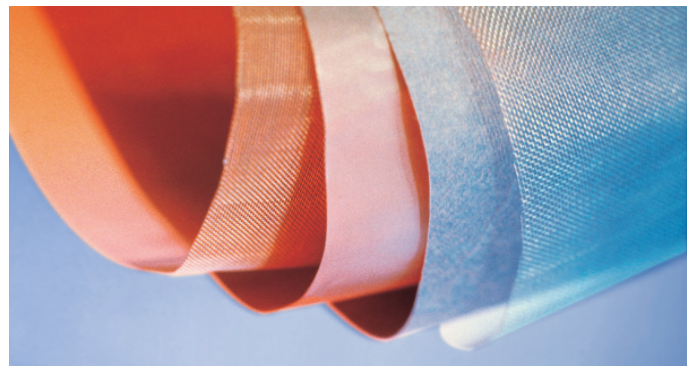
421 products provide high performance, economical filtration at temperatures above 600°F, and differential pressures exceeding 3000 psid for highly viscous fluids. In addition, the 421 media is suitable for many corrosive environments.

### Easy to Clean

PTI Technologies 421 media is cleanable through the use of chemical solvents, organic solvents, backflushing, or some combination of these.

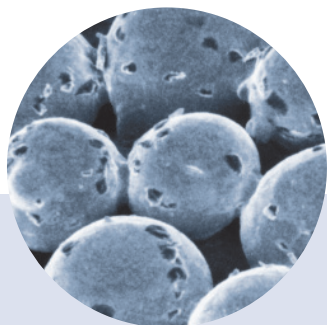
### Increased Retention Capacity

The secret of PTI Technologies filters is the patented 421 random fiber, soft sintered media, made of 316L stainless steel. It is also available in other metals such as Carpenter 20 Cb-3 and Hastelloy R.



The depth matrix of fine, yet durable metallic fibers creates a stable pore structure that is virtually unchangeable for the life of the filter.

PTI Technologies 421 captures more contaminants at a given pressure drop than either woven wire cloth or sintered powder metal media. This is a result of the larger number of particle trapping interstices formed by the many close intersections of the random stainless steel fibers. The resulting open pore structure gives 421 media a retention capacity four or more times as great as other competitive media. At the same time, the high porosity of the media offers less resistance to fluid flow.



#### SINTERED POWDER METAL

This photo illustrates a side view of a 15 micron absolute rated sintered bronze at 200 magnification.

Micrograph courtesy of Scanning Electron Analysis Lab.



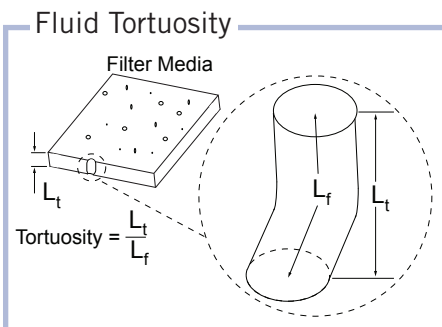
#### WOVEN METALLIC WIRE CLOTH

This photo illustrates 165x800 wire cloth, rated at 40 micron absolute. The magnification is 200X.

Micrograph courtesy of Scanning Electron Analysis Lab.

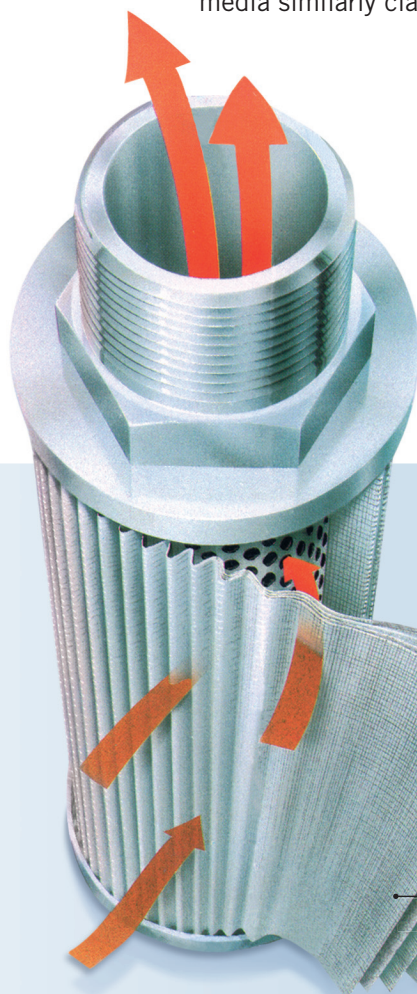
### Low Pressure Drop

The low resistance to flow exhibited by 421 elements is a direct result of the media's high porosity, and also its low fluid tortuosity. Fluid tortuosity is the ratio of the length of the fluid flow path to the thickness of the filter medium. Low fluid tortuosity minimizes pressure drop, by minimizing changes in the direction of flow. The 421 media also features variable media thickness, controlled pore size, and the lowest shear versus flow rate ratio of any filter media similarly classed.



$L_t$  = the thickness of the filter media

$L_f$  = the length of the fluid flow path



**COARSE INSIDE SCREEN**  
Acts as fluid manifold keeping the exit flow path open from inside surface area.

**FINE INSIDE WIRE CLOTH**  
Acts as fluid manifold providing separation area.

**421® FILTER MEDIA**

**COARSE OUTSIDE SCREEN**  
Protects 421® from particle impingement of high velocity particles and acts as fluid manifolding.

### Standard Features

The 421 depth matrix is reinforced on both sides with woven wire screen. These screens protect the 421 media from particle impingement and provide media support under the rigors of temperature, pressure, and directional flow changes. To maximize surface area, the layered medium is pleated into a cylinder and wrapped onto a stainless steel core. Each 421 cartridge is completed by welding the stainless steel fitting, end cap, and pleated cylinder into a single unit. 421 media elements are available from 0.5 to 80 micron absolute ratings. Woven wire screen covers the coarser range up to 250 micron.

### Typical Applications

PTI Technologies 421 chemical process filters provide our customers with state of the art products used in the manufacturing of magnetic tapes, synthetic films, textile fibers, resins, and virtually all types of specialty thermoplastics.

The filters dramatically enhance the end products produced by reducing gelatinous fragments as well as particulate contamination, thus reducing down time and scrap, improving product yields, and ultimately contributing to your bottom line.

### Benefits of using 421® Filters

- Exceptional Service Life
- Economy and Reliability
- Low Pressure Drop
- Customized Pore Size Distribution
- Zero Media Migration
- High Corrosion Resistance
- High Collapse Pressure
- Stainless Steel Construction
- High Temperature Resistance



## PTI Technologies Continues to Improve Filter Media Performance

As industry demands higher levels of efficiency and economy in filtration design, PTI applies finely tuned high technology to our testing methods and element designs. Our unique R & D laboratory employs the most advanced test techniques. At PTI Technologies, standard operating procedure includes detailed dirt holding capacity and efficiency tests on all media. Complete testing allows PTI to continually optimize filtration performance.

## Computer Math Models

PTI Technologies revolutionized chemical process filtration with the first computerized pressure drop math model designed to predict clean pressure drops for both Newtonian and non-Newtonian fluids across fiber media. Individual process conditions of our customers are programmed into the computer, which calculates clean pressure drop. In cases where clean pressure drops are excessive, PTI makes the necessary design changes to assure proper filtering while lowering the pressure drop. This allows PTI to provide the proper filter and predict its performance in each client's process before installation. We can also assist you in retrofit design, so maximum performance can be obtained with your present system.

