Parker ProBond™ Competitive Advantage

Filter Cartridge Evaluation for Industrial Coatings & Ink Applications

Technical Application Publication

Background

This product comparison was initiated to determine the performance characteristics of Parker Probond™ in relation to competitors' cartridges.

The breakthrough design of Parker ProBond uses a blend of acrylic and polyester fibers and a phenol-formaldehyde resin. It is a patented, two-stage filter cartridge utilizing long, prime grade fibers. The first stage is a mat of carefully blended fibers to provide the desired efficiency performance. The second stage is a coarser, spiral-wrapped layer to be a pre-filter for the inner layer and improve service life. This spiral layer eliminates the need to machine grooves into the outer surface.

In contrast, the competitive products offered in the market today use either polyester or acrylic fibers with a phenolic resin to add strength. This differs significantly from Parker's patented process as it can lack structural pre-filtration characteristics and show performance variations within each section of multi-length cartridges.

Results

The test results indicate that Parker ProBond™ offers significant advantages over the competitors' products:

- More accurate ratings differentiation
- Higher removal ratings
- Consistent classifying performance characteristics
- Certified silicone-free construction
- Reduced fiber dust

ENGINEERING YOUR SUCCESS.

ProBond™ Performance

Test Protocol

Competitive cartridges, rated 5, 10, 25, 50, and 75 micron nominal, were tested per ASTM F-795-88 Single Pass Test Method using standard SAE Test Dust in water at a flow rate of 3.5 gpm per 10-inch cartridge to a terminal pressure drop of 30 psid. Dirt-holding capacity (DHC) data, defined as the weight of contaminant added to reach terminal pressure drop, was then compared to Parker Pro-Bond™ cartridges. Particle removal efficiency was determined using a Coulter Multisizer II automatic particle counter. Throughout the test inlet and outlet turbidity was measured with on-line Hach Model Ratio 2000 D turbidimeters.

Results

Published Rating	Competitor Product	DHC (gm)	Size at 90% Removal	Parker ProBond	DHC (gm)	Size at 90% Removal
5	A	91	12µm	PRO5-9	80	8µm
10	B	115	13µm	PRO10-9	182	12µm
25	C	178	18µm	PRO25-9	188	22µm
50	D	223	26µm	PRO50-9	219	38µm
75	E	373	35µm	PRO75-9	358	80µm

Published Rating	Competitor Product Turbidity Efficiency %			Parker ProBond Turbidity Efficiency %		
	Initial	Middle	End	Initial	Middle	End
5	60	94	97	84	87	88
10	52	90	90	47	71	78
25	49	97	97	34	78	78
50	67	92	93	37	71	74
75	31	78	82	33	40	44

CONCLUSIONS

1. In comparing dirt-holding capacities of competitors' cartridges, performance is comparable. However, based on field experience in viscous fluids ProBond provides extended service life because large particles are captured in the coarse outer layer, protecting the inner layer from plugging prematurely.

2. The competitors' products show little efficiency differentiation between 5 and 10 micron ratings. In addition, their product at 25, 50 and 75 microns reflects minimal performance variations at 90% removal as compared to ProBond. ProBond cartridges are distinctly different at all rating levels giving the customer flexibility to make required adjustments in their specific application.

3. The turbidity data shows that the competitors' cartridges act as "clarifying" filters, i.e. efficiency improves steadily throughout the life cycle. ProBond cartridges act as "classifying" filters, i.e. efficiency remains relatively constant during filtration. Classifying filters are preferred in most coating applications because desirable particles, such as pigments, are allowed to pass the filter while large agglomerated particles are retained.

4. While handling the competitors' cartridges, fiber dust fell off the filters because of the short fibers and machined surface. Such dust can easily contaminate filtered fluids and cause rejects. The ProBond spiral wrapped cartridges were much cleaner.

5. Because ProBond cartridges are made with prime acrylic and polyester fibers, they are certified silicone-free. The competitors' cartridges could not be certified silicone-free because the source cannot be traced to a fiber producer. Filters used in the coatings industry must be silicone-free to avoid changes to the adhesion properties and eliminate blemishes in the coated surface.