

## Filtration of Sulfuric Acid Using Polyethylene Filters

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### Abstract

The efficacy of ultrahigh molecular weight polyethylene (UPE) filter cartridges for reducing particles in 96% sulfuric acid was compared to that of fluoropolymer filter cartridges commonly used in sulfuric acid filtration. Both filter types contained filtration media with pore sizes ranging from 0.05 to 0.3  $\mu\text{m}$ . Two UPE filter configurations, hollow fiber and pleated, were tested. Filter performance was compared under steady-flow and pulsed-flow conditions. UPE filter performance was measured over a sixteen-month period.

The UPE filters provided considerably lower particle concentrations in all tests. In steady-flow tests, particle concentrations downstream of pleated UPE filters were 30 to 100/mL ( $\geq 0.065 \mu\text{m}$ ). The number of particles released when UPE filters were subjected to flow pulses was  $< 10\%$  of the number released by the fluoropolymer filters. The UPE filters also recovered from flow pulses more quickly than the fluoropolymer filters. The UPE filters showed no degradation in performance during sixteen months of exposure to sulfuric acid.