

Technical Bulletin

Spectra® Fiber: Chemical Resistance

Spectra® fiber is manufactured from ultra-high molecular weight polyethylene. UHMW polyethylene is 10 times the molecular weight of conventional density polyethylene resins. The higher molecular weight imparts a unique combination of characteristics contributing to the performance of Spectra® fiber in many applications.

One of the unique characteristics of Spectra® fiber is its high chemical resistance, which comes from its chemical make-up. Polyethylene is naturally chemically resistant because of the lack of bonding sites along its polymer chain. The hydrogen atoms of the long chain of ethylene monomer units forming polyethylene present limited reactive sites for attack on the molecule. This provides a high level of resistance to a wide range of chemicals.

Honeywell conducts extensive testing on all of its products. The chart below illustrates that when exposed to a broad range of chemicals for six months and then re-evaluated at two years, Spectra® fiber retained 100 percent of its original strength in almost every instance.

Strength Retention After Chemical Immersion		
	Six Months	Two Years
Seawater	100%	100%
Hydraulic Fluid	100%	100%
Kerosene	100%	100%
10% Detergent Solution	100%	100%
Gasoline	100%	100%
Toluene	100%	96%
Glacial Acetic Acid	100%	100%
1M Hydrochloric Acid	100%	100%
5M Sodium Hydroxide	100%	100%
Ammonium Hydroxide (29%)	100%	100%
Perchloroethylene	100%	100%

For more information about Honeywell's ballistic materials, please visit our Web site: www.spectrafiber.com, where you can also find information about our partnership with the National Tactical Officers Association (NTOA) and the Safe Today, Alive Tomorrow safety awareness program.

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