

HZO Guardian Plus™ (Parylene C) Material Properties



Physical and Mechanical Properties	HZO Guardian Plus	ASTM Method
Density (g/cm ³)	1.29	D1505
Tensile modulus (GPa)	3.2	D882
Tensile strength (MPa)	70	D882
Yield strength (MPa)	55	D882
Elongation to break (%)	20 to 200	D882
Yield elongation (%)	2.9	D882
Coefficient of friction-static	0.29	D1894
Coefficient of friction-dynamic	0.29	D1894
Water absorption [% (24 hr)]	< 0.1	D570
Index of refraction	1.64	D542

Electrical Properties	HZO Guardian Plus	ASTM Method
Dielectric strength (V) @ 25.4 μm (1 mil)	5,500	D149
Dielectric strength (V/μm) @ 25.4 μm (1 mil)	220	D149
Dielectric constant (60 Hz)	3.15	D150
Dielectric constant (1 kHz)	3.10	D150
Dielectric constant (1 MHz)	2.95	D150
Dissipation factor (60 Hz)	0.020	D150
Dissipation factor (1 kHz)	0.019	D150
Dissipation factor (1 MHz)	0.013	D150
Volume resistivity (23 °C, 50% RH, Ω·cm)	8.8 x 10 ¹⁶	D257
Surface resistivity (23 °C, 50% RH, Ω)	1.0 x 10 ¹⁴	D257

Thermal Properties	HZO Guardian Plus	ASTM Method
Melting point (°C)	290	D3417
Linear coefficient of expansion (10 ⁻⁵ /°C)	3.3	D696
Thermal conductivity [25 °C, W/(m·K)]	0.084	C177
Specific heat [20 °C, cal/(g·°C)]	0.17	E1269

Barrier Properties	HZO Guardian Plus	ASTM Method
Water vapor transmission (38 °C 90% RH, g·mil/100 in ² ·day)	0.25	F1249
Gas permeability [cm ³ ·mil/100 in ² ·24 h·atm (23 °C)]		
N ₂	0.7	D3985
O ₂	5.1	D3985
CO ₂	5.4	D3985
SO ₂	11.0	D3985
Cl	0.35	D3985
H ₂ S	13	D3985