

# HZO Sentinel EX™ Material Properties



Environmental Properties	HZO Sentinel EX	Test Specification
Insulation Resistance ( $\Omega$ )	$> 1 \times 10^{10}$	IPC TM-650 2.6.3.7
Temperature and Humidity Aging	Pass	J-STD-004B (7 days)
Moisture Insulation Resistance ( $\Omega$ )	$> 1 \times 10^9$	IPC TM-650 2.6.3.4
Flammability	Pass [V0]	UL94
Breakdown Temperature ( $^{\circ}\text{C}$ )	$> 255$	TGA (10% wt. loss in air)
Thermal Shock Testing	Pass	IPC-CC-830C 3.7.2

Chemical Properties	HZO Sentinel EX	Test Specification
Water Contact Angle ( $^{\circ}$ )	$> 104$	Sessile Drop Method
Oil Contact Angle ( $^{\circ}$ )	$> 85$	Sessile Drop Method
Fluorescence	No	IPC CC-830B 3.5.3
Surface Energy (Dynes/cm)	$< 22$	ISO 8296, Dyne Pens

Optical Properties	HZO Sentinel EX	Test Specification
Transparency - Visible Light	Pass	IPC CC-830B 3.5.2

Physical Properties	HZO Sentinel EX	Test Specification
Appearance	Pass	IPC CC-830B 3.5.2
Flexibility	Pass	TPC TM-650 2.4.5.1

Electrical Properties	HZO Sentinel EX	Test Specification
Dielectric Constant (1 MHz)	2.5	CV Plotter and Mercury Probe
Loss Tangent (1 MHz)	$< 0.01$	CV Plotter and Mercury Probe
Dielectric Strength (V/m)	$> 5 \times 10^8$	ASTM-D149
Dielectric Withstanding Voltage (V)	$> 1500$	IPC TM-650 2.5.7.1
Dielectric Withstanding Voltage	Pass	IPC-CC-830C 3.6.1