

ELCRES™ HTV150A FILM

HIGH VOLTAGE, HIGH TEMPERATURE DIELECTRIC FILM

SABIC's ELCRES™ HTV150A dielectric film offers high temperature solutions for professional grade DC-Link power capacitors, addressing future high voltage industry requirements. ELCRES™ HTV150A dielectric film exhibits stable performance at -40°C to +150°C and frequency up to 100 kHz, including stable capacitance, good insulation resistance, stable dielectric constant (Dk) and low dissipation factor (Df). SABIC's HTV150A dielectric film has been validated by customers with both film-foil and metallized electrodes, including flat aluminum, heavy edge/light body and fused/patterned electrode designs. ELCRES™ HTV150A dielectric film can be processed on existing metallization, slitting, capacitor winding and squashing/flattening equipment.



KEY FEATURES & BENEFITS

- High Dk and low Df up to 150°C and 100 kHz
- High breakdown strength from -40°C to 150°C
- Good self-healing up to 150°C
- Excellent metal adhesion (Al, Zn)
- 5 and 3 μm gauge (+/- 5% gauge uniformity)
- Empowers wide-band-gap (WBG) semiconductors

POTENTIAL APPLICATIONS

- xEV traction inverter
- xEV on board charger
- xEV electrical compressor
- Renewable energy
- Mass transportation
- Motor drive and control
- Deep well drilling

TYPICAL PROPERTIES*

		Test method	Unit	Value (5μm)	Value (3μm)
Electrical	Breakdown Strength (BDS) 23°C	ASTM D149	V/μm	765	
	Breakdown Strength (BDS) 150°C	ASTM D149	V/μm	725	
	Dielectric Constant (Dk) at 27°C, 1 kHz (metallized film)	ASTM D150		2.9	
	Dissipation Factor (Df) at 27°C, 1 kHz (metallized film)	ASTM D150		0.0017	
	Clearing Counts @ 200 V/μm	Bosch Test	Counts/m ²	1.5	--
	Clearing Counts @ 250 V/μm	Bosch Test	Counts/m ²	2.5	--
	Clearing Counts @ 300 V/μm	Bosch Test	Counts/m ²	5.5	--
Thermal	Shrinkage at 170°C/0.5 hours (MD/TD)	JIS K7133	%	-0.34 / -0.25	-0.50 / -0.24
	Glass Transition Temperature (Tg)	ASTM D3418	°C	206	206
	Density	ASTM D792	g/cm ³	1.12	1.12
	Water Absorption, Equilibrium at 23°C, 24 hours	ASTM D570	%	0.30	0.30
	Surface Roughness	JIS B0601	μm	0.24	0.22
Mechanical	Coefficient of Friction (COF) -Dynamic - Metal/Bare film	JIS K7125		0.44	0.51
	Tensile Strength at Break (MD/TD)	JIS Z1702	MPa	66/64	65/60
	Tensile Elongation at Break (MD)	JIS Z1702	%	39	22
	Tear Strength (MD/TD)	JIS K6781	N/mm	100 / 97	83 / 83

*These are typical properties and are not intended for specification purposes. Clearing Counts values are based on 5 μm thickness. BDS, Df, and Dk are based on 3μm thickness.

PROPERTY COMPARISON

	BOPP	PET	PEN	PPS	PC	ELCRESTM HTV150A Film
Intrinsic BDS 23°C (V/μm)	690	800	660	530	660	850
Intrinsic BDS 150°C (V/μm)	NA	NA	NA	465	NA	720
Dk at 1 kHz	2.2	3.3	3.0	3.0	2.7	2.9
Df at 1 kHz	0.0007	0.0040	0.0040	0.0005	0.0022	0.0017
Temperature Range (°C)	-40 to +105	-40 to +125	-40 to +140	-40 to +150	-40 to +125	-40 to +150
Self-Healing 23°C	•••	•	•	•	••	••
Self-Healing 150°C	•	•	•	•	•	••
Metallization	REQUIRES PLASMA	••	••	•	••	••
Solder Reflow Capable	NO	NO	YES	YES	NO	Not Tested
Available Thickness (μm)	>2.0	>0.5	>1.2	>1.2	>2.0	3 and 5
Cost	•••	••	•	•	•	•
Certainty of Supply	•••	•••	•	•	•	•••
Overall Performance at 150°C	•	•	•	•	•	••

••• Excellent •• Good • Moderate • Poor • None



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