

ULTEM™ UTF120 FILM

PRODUCT DATASHEET

DESCRIPTION

ULTEM™ Polyetherimide (PEI) UTF120 film offers solutions for professional-grade dielectric film capacitors, meeting the most stringent technical demands. ULTEM UTF120 film exhibits stable properties through temperature (-40 °C to +150 °C) and frequency, including stable Capacitance, good Insulation Resistance, stable Dielectric Constant (Dk) and Low Dissipation Factor (Df). ULTEM UTF120 film has been validated with both film-foil and metalized electrodes, including flat aluminium, heavy edge/light body and fused/patterned electrode designs. ULTEM UTF120 film has been developed to offer excellent handling through metallization, winding and capacitor squashing / flattening. ULTEM UTF120-based capacitors have been shown to provide stable electrical performance through standard 260°C solder reflow processes.

TYPICAL PROPERTY VALUES

Property	Test Method	Units	Value
Electrical			
BDS Large Area Electrode (200V/um)	SABIC Method	Counts/m ²	0.5
BDS Large Area Electrode (250V/um)	SABIC Method	Counts/m ²	2.43
BDS Large Area Electrode (300V/um)	SABIC Method	Counts/m ²	11.2
Breakdown strength (BDS) at 23°C	ASTM D149	V/um	580
Breakdown strength (BDS) at 150°C	ASTM D149	V/um	493
Dielectric Constant (Dk) 27°C (metallized film)	ASTM D150	1kHz	3.175
Dissipation Factor (Df) 27°C (metallized film)	ASTM D150	1kHz	0.0022
COF (Dynamic) - Metal/Bare film	JIS K7125		0.39
COF (Static) - Metal/Bare film	JIS K7125		0.48
Volume Resistivity	ASTM D257	Ω-cm	2.93x10 ¹⁶
Surface Resistivity	ASTM D257	Ω/square	9.9x10 ¹³
Thermal			
Coefficient of Thermal Expansion (MD)	ASTM E831	(x10 ⁻⁵ /°C)	49
Coefficient of Thermal Expansion (TD)	ASTM E831	(x10 ⁻⁵ /°C)	62
Glass Transition Temperature (Tg)	ASTM D3418	°C	214
Shrinkage @ 170°C / 0.5 hr (MD)	ASTM D1204	%	0.5
Shrinkage @ 170°C / 0.5 hr (TD)	ASTM D1204	%	0
Physical			
Density	ASTM D792	g/cm ³	1.29
Water Absorption, Equilibrium, 23°C, 24 hrs	ASTM D570	%	1.16
Water Absorption, 50%, 23°C, 24 hrs	ASTM D570	%	0.23
Surface roughness of roll face	TM0022	µm	0.11
Surface roughness of air face	TM0022	µm	0.12
Mechanical			
Tensile Modulus (MD)	JIS K6781	MPa	3307
Tensile Strength @ Yield (MD)	JIS K6781	MPa	95
Tensile Elongation @ Yield (MD)	JIS K6781	%	5.3
Tensile Strength @ Break (MD)	JIS K6781	MPa	86
Tensile Elongation to Break (MD)	JIS K6781	%	41
Tensile Modulus (TD)	JIS K6781	MPa	3265
Tensile Strength @ Yield (TD)	JIS K6781	MPa	86
Tensile Elongation @ Yield (TD)	JIS K6781	%	4.3

Mechanical			
Tensile Strength @ Break (TD)	JIS K6781	MPa	84
Tensile Elongation@ Break (TD)	JIS K6781	%	18
Tear Strength (MD)	JIS K7128	N/mm	131

* These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local SABIC Innovative Plastics, Specialty Film & Sheet representative or the Quality Services Department. Reported values are based on 5-micron film thickness and are tested at machine direction unless otherwise noted.

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MANUFACTURING SPECIFICATIONS

GAUGE	5 µm +/-5% - 10 µm +/-5%
STANDARD ROLL WIDTH	620 mm
COLOUR CODE	1000
COLOUR	Natural amber

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REV. 07-04-2017.1