

ULTEM™ UTF120 FILM

PRODUCT DATASHEET



KEY FEATURES & BENEFITS

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	4µm	5µm	7µm	10µm
Thickness						
Mean Thickness	In-line x-ray	µm	4.0	5.0	7.0	10.0
Thickness variation	In-line x-ray	% (3σ=x% of thickness)	2.9	2.9	2.5	2.0
Electrical						
BDS Large Area Electrode (200V/µm)	SABIC Method	Cumulative counts/0.033 m ²	1.1	0.2	0.1	0.0
BDS Large Area Electrode (250V/µm)	SABIC Method	Cumulative counts/0.033 m ²	5.9	1.5	1.1	0.3
BDS Large Area Electrode (300V/µm)	SABIC Method	Cumulative counts/0.033 m ²	25.8	14.9	11.0	3.4
Breakdown strength (BDS) at 23°C	ASTM D149	V/µm			580	
Breakdown strength (BDS) at 150°C	ASTM D149	V/µm			495	
Dielectric Constant (Dk) at 27°C, 1 kHz (metallized film)	ASTM D150				3.175	
Dissipation Factor (Df) at 27°C, 1 kHz (metallized film)	ASTM D150				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	0.10	0.10	0.09	0.08
Surface roughness of air face	TM0022	µm	0.09	0.10	0.09	0.09
Mechanical						
Tensile Modulus (MD)	JIS K6781	MPa				3307
Tensile Strength @ Break (MD)	JIS K6781	MPa	105	136	154	190
Tensile Elongation to Break (MD)	JIS K6781	%	66	47	60	95
Tensile Modulus (TD)	JIS K6781	MPa				3265
Tensile Strength @ Break (TD)	JIS K6781	MPa	95	125	140	172
Tensile Elongation @ Break (TD)	JIS K6781	%	20	24	30	40
Tear Strength (MD)	JIS K7128	N/mm	99	99	99	103
Tear Strength (TD)	JIS K7128	N/mm	90	90	90	92

* 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.

MANUFACTURING SPECIFICATIONS

Gauge	4, 5, 7 and 10 µm
Standard Roll Width	620 mm
Standard Roll Length	5000 m
Color code	1000
Color	Natural amber

CONTACT US

Middle East and Africa

SABIC Global
Headquarters
PO Box 5101
Riyadh 11422
Saudi Arabia
T +966 (0) 1 225 8000
F +966 (0) 1 225 9000
E info@sabic.com

Americas

2500 CityWest Boulevard
Suite 100
Houston, TX 77042
USA

Technical Answer Center
T +1 800 845 0600
E productinquiries@sabic.com

Europe

Plasticslaan 1
PO Box 117
4600 AC
Bergen op Zoom
The Netherlands
T +31 (0)164 292911
F +31 (0)164 292940

Technical Answer Center
T (0) 0 800 1 238 5060
T2 0036 1 288 3040

E webinquires@sabic.com

Asia Pacific

2550 Xiupu Road
Pudong
201319 Shanghai
China
T +86 21 2037 8188
F +86 21 2037 8288

DISCLAIMER: THE MATERIALS, PRODUCTS AND SERVICES OF SAUDI BASIC INDUSTRIES CORPORATION (SABIC) OR ITS SUBSIDIARIES OR AFFILIATES ("SELLER") ARE SOLD SUBJECT TO SELLER'S STANDARD CONDITIONS OF SALE, WHICH ARE AVAILABLE UPON REQUEST. INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS DOCUMENT ARE GIVEN IN GOOD FAITH. HOWEVER, SELLER MAKES NO EXPRESS OR IMPLIED REPRESENTATION, WARRANTY OR GUARANTEE (i) THAT ANY RESULTS DESCRIBED IN THIS DOCUMENT WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN OR APPLICATION INCORPORATING SELLER'S MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS. UNLESS OTHERWISE PROVIDED IN SELLER'S STANDARD CONDITIONS OF SALE, SELLER SHALL NOT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS DESCRIBED IN THIS DOCUMENT. Each user is responsible for making its own determination as to the suitability of Seller's materials, products, services or recommendations for the user's particular use through appropriate end-use and other testing and analysis. Nothing in any document or oral statement shall be deemed to alter or waive any provision of Seller's Standard Conditions of Sale or this Disclaimer, unless it is specifically agreed to in a writing signed by Seller. Statements by Seller concerning a possible use of any material, product, service or design do not, are not intended to, and should not be construed to grant any license under any patent or other intellectual property right of Seller or as a recommendation for the use of any material, product, service or design in a manner that infringes any patent or other intellectual property right.

SABIC and brands marked with ™ are trademarks of SABIC or its subsidiaries or affiliates.

© 2018 Saudi Basic Industries Corporation (SABIC). All Rights Reserved.

Any brands, products or services of other companies referenced in this document are the trademarks, service marks and/or trade names of their respective holders.