APTIV™ FILMS 1102

General Information

Product Description

The APTIV™ 1102 range of films are 20% mineral filled, semi-crystalline films manufactured from VICTREX™ PEEK polymer, developed to support engineers designing for ultra-high performance environments where dimensional stability and mechanical robustness are critical. Positioned within the broader APTIV film portfolio, the 1102 range provides an optimized material solution where enhanced stiffness and thermal stability are required beyond unfilled film grades.

APTIV films represent a versatile range of high-performance thermoplastic films that can enable reduced system costs, improved component reliability, and greater design freedom. The APTIV 1102 range combines high temperature capability with mechanical strength, durability, and excellent resistance to radiation, hydrolysis, and aggressive chemicals. The films also deliver electrical insulation, excellent barrier performance with high purity, low moisture absorption, and favourable flammability performance without the use of flame retardants, while maintaining low toxicity of combustion products.

Compared with the APTIV 1000 series, the mineral filled structure provides higher modulus and a lower coefficient of linear thermal expansion, supporting applications that demand improved dimensional control under thermal and mechanical load.

Material Properties

Physical	Nominal Value	Unit	Test Method
Density (23°C)	1.45	g/cm³	ISO 1183
Water Absorption [1]			ISO 62
Equilibrium, 23°C, 0.0500 mm, 50% RH	0.080	%	
Shrinkage MD [2] (200°C, 50.0 µm)	< 0.50	%	
Shrinkage TD [2] (200°C, 50.0 µm)	< 0.50	%	
Films	**Nominal Value**	**Unit**	**Test Method**
Film Thickness - Recommended / Available	12 to 125 µm		
Tensile Modulus			ISO 527-3
MD : 23°C, 25 µm	5000	MPa	
TD : 23°C, 25 µm	4500	MPa	
MD : 23°C, 50 µm	4800	MPa	
TD : 23°C, 50 µm	4300	MPa	
MD : 23°C, 100 µm	4500	MPa	
TD : 23°C, 100 µm	4200	MPa	
Tensile Stress			ISO 527-3
MD : Break, 23°C, 25 µm	100	MPa	
TD : Break, 23°C, 25 µm	80.0	MPa	
MD : Break, 23°C, 50 µm	100	MPa	
TD : Break, 23°C, 50 µm	80.0	MPa	
MD : Break, 23°C, 100 µm	100	MPa	
TD : Break, 23°C, 100 µm	80.0	MPa	
Tensile Elongation			ISO 527-3
MD : Break, 23°C, 25 µm	> 100	%	
TD : Break, 23°C, 25 µm	> 10	%	
MD : Break, 23°C, 50 µm	> 100	%	
TD : Break, 23°C, 50 µm	> 10	%	
MD : Break, 23°C, 100 µm	> 100	%	
TD : Break, 23°C, 100 µm	> 10	%	

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Films	Nominal Value	Unit	Test Method
Trouser Tear Resistance [3]			ISO 6383-1
MD : 50 µm	6.00	N/mm	
TD : 50 µm	7.00	N/mm	
Puncture Resistance (23°C, 50.0 µm)	5	kJ/m²	Internal Method
Thermal	**Nominal Value**	**Unit**	**Test Method**
CLTE - Flow [4] (0.0500 mm)	3.5E-5	cm/cm/°C	ASTM D696
Thermal Conductivity			ASTM E1461
-- [5]	0.43	W/m/K	
-- [6]	0.91	W/m/K	
Electrical	**Nominal Value**	**Unit**	**Test Method**
Volume Resistivity [7] (23°C, 50 µm)	1.0E+16	ohms·cm	ASTM D257
Dielectric Strength [8] (23°C, 50 µm)	200	kV/mm	ASTM D149
Dielectric Constant (23°C, 50 µm, 10 MHz)	3.6		ASTM D150
Dissipation Factor (23°C, 50 µm, 10 MHz)	1.0E-3		ASTM D150

Notes

[1] 24 hrs

[2] TM-VX-84

[3] 23°C

[4] below Tg

[5] Through Plane

[6] In-Plane

[7] 100 V

[8] 0.25 inch electrode

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