





Dexnyl© PI SF Polyimide Film_33

Technical Data Sheet



Product Description

Polyimide (PI) is a polymer of imide monomers, aslo know as heat resistant film or high temperature film. With their high heat-resistance, polyimide enjoys diverse applications in roles demanding rugged organic materials. Polyimide film is ideal for insulating circuit boards, high temperature powder coating and transformers manufacturing.

Polyimide film provides excellent electrical, thermal, physical and chemical properties over a wide temperature range between -269°C (-452°F) and 400°C (752°F) making them superior for electrical insulation applications. Polyimide film can be laminated, metallized, punched, formed or adhesive coated. It is the recommended choice for applications that require an all-polyimide film with an excellent balance of properties over a wide range of temperatures.

Features

- Temperature Resistance from -269°C to over 400°C (452°F to over 752°F)
- Exceeds UL 94 V-0 flammability.
- 235°C (445°F) Relative Thermal Index (RTI).
- Dimensionally stable (<0.08% shrink).
- Isotropic (MD/TD Elongation 85%).
- Scratch and abrasion resistant.
- Excellent solvent resistance (MEK, Benzene, and Toulene).

Applications

- Mechanical parts
- Electronic parts
- Electrical Insulation
- Pressure sensitive tape
- Fiber optics cable
- Insulation blankets
- Insulation tubing
- Automotive diaphragms sensors and manifolds
- Etching
- Shims

Data Sheet

Thickness	30µm
Color	Amber
Density (kg/m³)	1420±20
Tensile Strength (MD/TD)	≥160 Mpa/≥140 Mpa
Elongation at Break (MD/TD)	≥50%/≥45%
Surface Resistivity 200 °C	≥1.0*10^13 Ω
Frequency Electric Strength	≥190MV/m
Volume Resistivity 200 °C	≥1.0*10^14 Ω.m
Relative Inductivity 50HZ	3.5±0.4
Dielectric Loss Factor 50HZ	≤4.0*10-3
Shrinkage 150 ℃	≤1.0%
Working Temperature range	-269℃ to + 400℃

Physical Properties

Physical Properties of Polyimide film at 23°C (73°F)

Property	Unit	1 mil 25µm	2 mil 50µm	3 mil 75µm	5 mil 125µm	Test Method
Ultimate Tensile Strength at 23°C, (73°F) at 200°C (392°F)	psi (MPa)	33,500(231) 20,000(139)	33,500(231) 20,000(139)	33,500(231) 20,000(139)	33,500(231) 20,000(139)	ASTM D-882-91, Method A*
Ultimate Elongation at 23°C, (73°F) at 200°C (392°F)	%	72 83	82 83	82 83	82 83	ASTM D-882-91, Method A
Tensile Modulus at 23°C, (73°F) at 200°C (392°F)	psi (GPa)	370,000 (2.5) 290,000 (2.0)	370,000 (2.5) 290,000 (2.0)	370,000 (2.5) 290,000 (2.0)	370,000 (2.5) 290,000 (2.0)	ASTM D-882-91, Method A
Density	g/cc	1.42	1.42	1.42	1.42	ASTM D-1505-90
MIT Folding Endurance	cycles	285,000	55,000	6,000	5,000	ASTM D-2176-89
Tear Strength-propagating (Elmendorf), N (lbf)		0.07 (0.02)	0.21 (0.02)	0.38 (0.02)	0.58 (0.02)	ASTM D-1922-89
Tear Strength, Initial (Graves), N (lbf)		7.2 (1.6)	16.3 (1.6)	26.3 (1.6)	46.9 (1.6)	ASTM D-1004-90
Yield Point at 3% at 23°C, (73°F) at 200°C (392°F)	MPa (psi)	69 (10,000) 41 (6,000)	69 (10,000) 41 (6,000)	69 (10,000) 41 (6,000)	69 (10,000) 41 (6,000)	ASTM D-882-91
Stress to produce 5% elong. at 23°C, (73°F) at 200°C (392°F)	MPa (psi)	90 (13,000) 61 (9,000)	90 (13,000) 61 (9,000)	90 (13,000) 61 (9,000)	90 (13,000) 61 (9,000)	ASTM D-882-92
Impact Strength at 23°C, (73°F)	N•cm•(ft Ib)	78 (0.58)	78 (0.58)	78 (0.58)	78 (0.58)	DuPont Pneumatic Impact Test
Coefficient of Friction, kinetic (film-to-film)		0.48	0.48	0.48	0.48	ASTM D-1894-90
Coefficient of Friction, static (film-to-film)		0.63	0.63	0.63	0.63	ASTM D-1894-90
Refractive Index (sodium D line)		1.70	1.70	1.70	1.70	ASTM D-542-90
Poisson's Ratio		0.34	0.34	0.34	0.34	Avg. three samples, elon- gated at 5, 7, 10%
Low temperature flex life		pass	pass	pass	pass	IPC-TM-650, Method 2.6.18

*Specimen size 25 x 150 mm (1.6 in); jaw separation 100 mm (4 in), jaw speed, 50mm/min (2 in/min). Ultimate refers to the tensile strength and elongation measured at break.





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