



DuPont High Performance Materials

Kapton® JPB

polyimide film for forming

Product Description

The Kapton® JPB family of polyimide films has been designed to give optimum forming characteristics. JPB films have higher elongations at elevated temperatures while maintaining the combination of excellent physical, electrical, and mechanical properties inherent in Kapton® HN and HA. JPB polymer properties enable drawing deeper parts at lower temperatures and shorter cycle times. After forming, parts exhibit excellent shape retention and minimum shrinkage. Kapton® JPB has been formulated with black pigment throughout the polymer matrix to ensure uniform distribution. Property comparisons are shown in **Table 1** and **Figures 1** and **2**.

Application Examples

Parts may be formed from JPB film that were previously difficult or impossible to form with Kapton® HN and HA:

- Diaphragms for automotive and heating and ventilating sensors and switches
- Speaker cones, domes, spiders, and surrounds
- Other applications including appliances, electronics, and aerospace

Available Film Thicknesses

Kapton® Grade	mil	µm
200JPB	2	50
300JPB	3	75
500JPB	5	125

Maximum width: 48 in

Table 1
Typical Properties of Kapton® JPB Polyimide Film versus Kapton® 500HA

Property	200JPB	300JPB	500JPB	500HA	Test Method
Physical					
Ultimate Tensile Strength, kpsi at 23°C (73°F)	27.0	29.0	25.0	25.0	ASTM D-882
Yield Point at 3%, kpsi at 23°C (73°F)	10.0	9.5	8.5	9.5	ASTM D-882
at 200°C (392°F)	5.3	5.0	5.0	4.8	
Stress to Produce 5% Elongation, kpsi at 23°C (73°F)	14.4	15.1	13.9	15	ASTM D-882
at 200°C (392°F)	7.3	6.9	6.3	6.8	
Ultimate Elongation, % at 23°C (73°F)	75.0	90.0	110.0	115	ASTM D-882
at 200°C (392°F)	135.0	145.0	175.0	126	
Tensile Modulus, kpsi at 23°C (73°F)	425.0	425.0	330.0	400	ASTM D-882
at 200°C (392°F)	210.0	210.0	175.0	204	
Yield, ft ² /lb	76.8	45.5	28.0	27	
Thermal					
Dimensional Stability, MD/TD at 400°C (752°F)	1.7/2.2	2.2/2.2	2.9/2.6	2.66/2.22	ASTM D-5214
at 250°C (482°F)	.15/.25	.20/.20	.15/.20	0.28/0.16	
Electrical					
Dielectric Strength, V/mil	2550	2300	1700	3500	ASTM D-149
Dielectric Constant, 50% RH, 1 kHz at 25°C (77°F)	3.85	4.15	4.35	3.40	ASTM D-150
Dissipation Factor	0.0010	0.0010	0.0015	0.0025	ASTM D-150

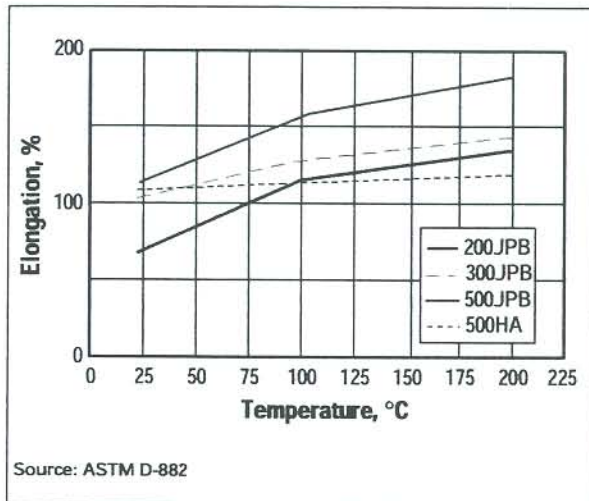
Forming Information

JPB films can be thermoformed using high temperature forming technology developed by DuPont. JPB films can be formed at temperatures approximately 93°C (200°F) lower than those needed to form conventional Kapton® films such as HN and HA.

Some guidelines for forming JPB films include:

- forming temperatures of 280–300°C (535–570°F)
- 400–500 psi pressure
- annealing of the part

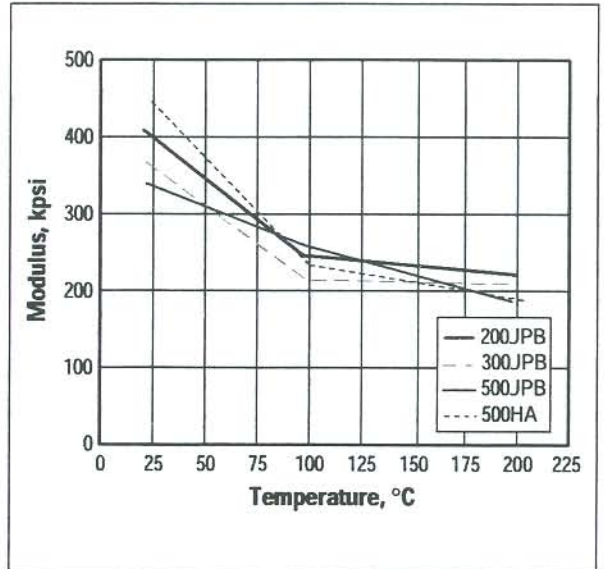
Figure 1. Elongation of Kapton® JPB films as a function of temperature



Parts formed using optimum forming conditions have shrinkage of <4% after 8 hr exposure to temperatures up to 260°C (500°F).

DuPont can provide additional forming information for specific applications if requested. DuPont has also established a list of experienced forming partners to provide parts to customers.

Figure 2. Modulus of Kapton® JPB films as a function of temperature



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