



DUPONT™ KAPTON® GS POLYIMIDE FILM

TECHNICAL DATA SHEET

DuPont™ Kapton® GS film has been specifically designed and manufactured to expand the processing window and improve yields during artificial graphite sheet production. This particular film has high tensile strength and uniform properties that permit controlled shrinkage during the carbonization process. The film's molecular structure permits uniform graphite formation during the graphitization process.

The above described properties of Kapton® GS films enable excellent “in plane” thermal conductivity and electrical conductivity when converted into artificial graphite sheet.

APPLICATIONS

Artificial Graphite Sheets

- Used as a thermal dissipative “in plane” material in a variety of commercial & industrial applications to consumer electronics such as cell phones and tablet computers.

- Enables excellent downstream process latitude for lamination of coverfilms, adhesive application, and punching or forming of the graphite sheets to the desired shape.

PRODUCT SPECIFICATIONS

Kapton® GS conforms to the pad roll specification, width tolerances, and packaging material requirements as outlined in the Kapton® general specification bulletin (H-38487).

CERTIFICATION

Kapton® GS meets ASTM D-5213 (type 1, item A) requirements. Written confirmation is available with each delivery upon request.

TYPICAL VALUES OF PHYSICAL PROPERTIES OF DUPONT™ KAPTON® GS AT 23°C (73°F)

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

Property	Unit	1 mil	1.5 mil	1.75 mil	2 mil	2.5 mil	2.75 mil	3 mil	5 mil	Test Method
		25 micron	37.5 micron	43 micron	50 micron	62.5 micron	68.75 micron	75 micron	125 micron	
Ultimate Tensile Strength	psi (Mpa)	39,000 (269)	39,000 (269)	39,000 (269)	39,000 (269)	36,000 (248)	36,000 (248)	36,000 (248)	36,000 (248)	ASTM D-882, Method A
Elongation	%	78	78	80	80	86	86	86	86	ASTM D-882, Method A
Density	g/cc	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	ASTM D-1505
Coefficient of Friction (Kinetic) film to film		0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	ASTM D-1894
Coefficient of Friction (Static) film to film		0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	ASTM D-1894
Refractive index (Sodium D line)		1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	ASTM D-542
Poisson's Ratio		0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	Avg 3 samples elongated at 5, 7, and 10%



DUPONT™ KAPTON® GS POLYIMIDE FILM

TECHNICAL DATA SHEET

THERMAL PROPERTIES OF DUPONT™ KAPTON® GS FILM

Thermal Property	Typical Value	Test Method
Melting Point	None	ASTM E-794
Specific Heat, J/g K (cal/g °C)	1.09 (0.261)	Differential Calorimetry
Heat Sealability	Not Heat Sealable	
Smoke Generation (performed in NBS Smoke Chamber)	$D_m < 1$	NFPA-258
Shrinkage, % 30 min at 150°C 120 min at 400°C	0.17	IPC-TM-650 Method 2.2.4A; ASTM D-5214
Limiting Oxygen Index, %	1.25	ASTM D-2863-87
Glass Transition Temperature (T_g)	A second order transition occurs in Kapton® between 360°C (680°F) and 410°C (770°F) and is assumed to be the glass transition temperature. Different measurement techniques produce different results within the above temperature range.	

THERMAL COEFFICIENT OF EXPANSION DUPONT™ KAPTON® GS FILM, 25 μM (1 MIL)

Temperature Range, °C (°F)	ppm/°C
30–100 (86–212)	17
100–200 (212–392)	32
200–300 (392–572)	40
300–400 (572–752)	44
30–400 (86–752)	34

For more information on DuPont™ Kapton® polyimide films, please contact your local representative, or visit our website for additional regional contacts:

Americas

DuPont Circuit & Packaging Materials
U.S. Rt. 23 & DuPont Road
Circleville, OH 43113
Tel: 800-967-5607

Taiwan

DuPont Taiwan
No. 45, Hsing-Pont Road
Taoyuan, Taiwan, R.O.C.
Tel: 886-3-377-3688

China

DuPont China Holding Co., Ltd.
Shanghai Branch
399 Keyuan Road, Bldg. 11
Zhangjiang Hi-Tech Park
Pudong New District, Shanghai,
P.R. China 201203
Tel: 86-21-3862-2888

Korea

DuPont Korea Inc.
4/5 floor, Asia Tower
#726, Yeoksam-dong, Kangnam-ku, Seoul
135-082 Korea
Tel: 82-2-2222-5224

Singapore

DuPont Singapore Pte, Ltd.
1 HarbourFront Place #11-01
harbourFront Tower One
Singapore 098633
Tel: 65-6586-3091

Europe

DuPont de Nemours (Luxembourg)
S.A.R.L.
Rue General Patton
L-2984 Luxembourg
Tel: 352-3666-5935

kapton.dupont.com

Copyright © 2014 DuPont. All rights reserved. The DuPont Oval Logo, DuPont™, and all DuPont products denoted with ® or ™ are registered trademarks or trademarks of E. I. du Pont de Nemours and Company or its affiliates.

This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentations. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge and experience becomes available. Since we cannot anticipate all variations in end-use conditions, DuPont makes no warranties, and assumes no liability in connection with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102-4.