



DUPONT™ KAPTON® FN

POLYIMIDE FILM

DuPont™ Kapton® FN is a general purpose HN film that is coated or laminated on one or both sides with FEP fluoropolymer. Kapton® FN imparts heat sealability, provides a moisture barrier, and enhances chemical resistance.

Kapton® FN is recommended in applications that require a heat bondable film, or moisture and chemical resistance beyond the capabilities of uncoated Kapton® films. A list of available constructions can be found in the DuPont™ Kapton® polyimide film general specification, H-38479.

APPLICATIONS

- Tubing
- Heater circuits
- Heat sealable bags
- Automotive diaphragms and manifolds
- Electrical insulation

PRODUCT SPECIFICATIONS

Kapton® FN is manufactured, slit and packaged according to the product specifications listed in H-38479, DuPont™ Kapton® polyimide film general specification.

CERTIFICATION

Kapton® FN meets ASTM D5213 (type 2, item A) requirements.

Table 1-Physical Properties of Kapton® FN Film

| Property | Typical Value for Film Type | | | Test Method |
|--|----------------------------------|----------------------------------|----------------------------------|------------------------------|
| | 120FN616 | 150FN019 | 250FN029 | |
| Ultimate Tensile Strength, MPa (psi) 23°C (73°F) 200°C (392°F) | 207 (30,000) 121 (17,500) | 162 (23,500) 89 (13,000) | 200 (29,000) 115 (17,000) | ASTM D882, Method A* |
| Yield Point at 3%, MPa (psi) 23°C (73°F) 200°C (392°F) | 61 (9000) 42 (6000) | 49 (7000) 43 (6000) | 58 (8500) 36 (5000) | ASTM D882 |
| Stress at 5% Elongation, MPa (psi) 23°C (73°F) 200°C (392°F) | 79 (11,500) 53 (8000) | 65 (9500) 41 (6000) | 76 (11,000) 48 (7000) | ASTM D882 |
| Ultimate Elongation, % 23°C (73°F) 200°C (392°F) | 75 80 | 70 75 | 85 110 | ASTM D882 |
| Tensile Modulus, GPa (psi) 23°C (73°F) 200°C (392°F) | 2.48 (360,000) 1.62 (235,000) | 2.28 (330,000) 1.14 (165,000) | 2.62 (380,000) 1.38 (200,000) | ASTM D882 |
| Impact Strength at 23°C (73°F), N•cm (ft•lb) | 78 (0.58) | 68.6 (0.51) | 156.8 (1.16) | DuPont Pneumatic Impact Test |
| Tear Strength, initial Graves, N (lbf) | 1.8 (2.6) | 1.5 (2.6) | 17.8 (4.0) | ASTM D1004 |
| Tear Strength, propagating Elmendorf, N | 7.2 | 16.3 | 26.3 | ASTM D1922 |
| Polyimide, wt% FEP, wt% | 80 20 | 57 43 | 73 27 | |
| Density, g/cc or g/mL | 1.53 | 1.67 | 1.57 | ASTM D1505 |

*Speciman 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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Table 2-Typical Electrical Properties of Kapton® FN Film at 23°C (73°F), 50% RH

| Property | 120FN616 | 150FN019 | 250FN029 | Test Method |
|---|----------------------|----------------------|----------------------|-------------|
| Dielectric Strength, V/ μ m (V/mil) | 272 (6900) | 197 (5000) | 197 (5000) | ASTM D149 |
| Dielectric Constant | 3.1 | 2.7 | 3.0 | ASTM D150 |
| Dissipation Factor | 0.0015 | 0.0013 | 0.0013 | ASTM D150 |
| Volume Resistivity, $\Omega \cdot$ cm | | | | |
| 23°C (73°F) | 1.4×10^{17} | 2.3×10^{17} | 1.9×10^{17} | ASTM D257 |
| 200°C (392°F) | 4.4×10^{14} | 3.6×10^{14} | 3.7×10^{14} | |

Table 3-Chemical Properties of Kapton® FN Film

| Property | 120FN616 | 150FN019 | 400FN022 | Test Method |
|--|----------|----------|----------|-------------|
| Moisture Absorption, % at 23°C (73°F), | | | | |
| 50% RH | 1.3 | 0.8 | 0.4 | ASTM D570 |
| 98% RH | 2.5 | 1.7 | 1.2 | |
| Water Vapor Permeability, | | | | |
| g/(m ² •24 h) | 17.5 | 9.6 | 2.4 | ASTM E96 |
| g/(100 in ² •24 h) | 1.13 | 0.62 | 0.16 | |

FOR MORE INFORMATION ON DUPONT™ KAPTON® FN POLYIMIDE FILMS, PLEASE CONTACT YOUR LOCAL REPRESENTATIVE, OR VISIT OUR SALES & SUPPORT WEBPAGE FOR ADDITIONAL REGIONAL CONTACT INFORMATION.

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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.

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