

# HIGH-PERFORMANCE OSK KAPTON® TAPE

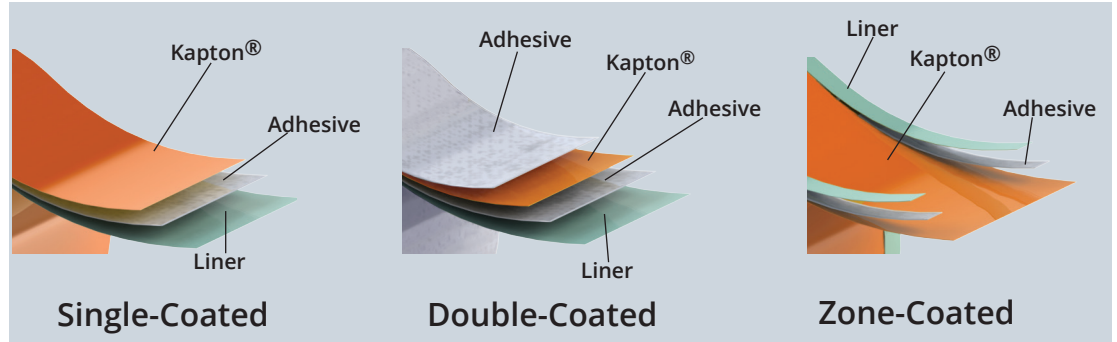
Technical Data Sheet

Fralock's OSK (Original Standard Kapton®) tape is a polyimide general purpose tape suitable for demanding applications. Manufactured with durable DuPont™ Kapton® HN film, it effectively operates in applications requiring robust properties with a wide temperature range. OSK tape is available with your choice of adhesives to best fit your requirements.

## Applications

- Electrical insulation
- Mechanical/structural connections
- Flexible circuit bonding
- Thermal management
- Masking and protection
- Gaskets and seals

## ADHESIVE CONFIGURATIONS



## Film Properties (Kapton® HN)

### THERMAL

Thermal Property	Typical Value	Test Condition	Test Method
Melting Point	None	None	ASTM E-794-85 (1989)
Thermal Coefficient of Linear Expansion	20 ppm/°C (11 ppm/°F)	-14 to 38°C (7 to 100°F)	ASTM D-696-91
Coefficient of Thermal Conductivity, W/m·K	0.12	296 K	ASTM F-433-77 (1987)
$\frac{\text{cal}}{\text{cm}\cdot\text{sec}\cdot\text{°C}}$	$2.87 \times 10^4$	23°C	
Specific Heat, J/g·K (cal/g·°C)	1.09 (0.261)		Differential calorimetry
Heat Sealability	not heat sealable		
Solder Float	pass		IPC-TM-650, method 2.4.13A
Smoke Generation	$D_m < 1$	NBS smoke chamber	NFPA-258
Shrinkage, % 30 min at 150°C 120 min at 400°C	0.17 1.25		IPC-TM-650 Method 2.2.4A; ASTM D-5214-91
Limiting Oxygen Index, %	37-45		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		

## PHYSICAL

Property	1 mil	2 mil	3 mil	5 mil	Test Method
Ultimate Tensile Strength psi (MPa) at 23°C, (73°F) at 200°C (392°F)	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			ASTM D-882-91, Method A
Tensile Modulus psi (GPa) at 23°C, (73°F) at 200°C (392°F)	370,000 (2.5) 290,000 (2.0)				ASTM D-882-91, Method A
Density g/cc	1.42				ASTM D-1505-90
MIT Folding Endurance (cycles)	285,000	55,000	6000	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) (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% - MPa (psi) at 23°C, (73°F) at 200°C (392°F)	69 (10,000) 41 (6000)				ASTM D-882-91
Stress to produce 5% elong. MPa (psi) at 23°C, (73°F) at 200°C (392°F)	90 (13,000) 61 (9000)				ASTM D-882-92
Impact Strength - N•cm•(ft lb) at 23°C, (73°F)	78 (0.58)				DuPont Pneumatic Impact
Coefficient of Friction, kinetic (film-to-film)	0.48				ASTM D-1894-90
Coefficient of Friction, static (film-to-film)	0.63				ASTM D-1894-90
Refractive Index (sodium D line)	1.70				ASTM D-542-90
Poisson's Ratio	0.34				Avg. three samples, Elongated at 5, 7, 10%
Low temperature flex life	pass				IPC-TM-650, Method 2.6.18

### Coefficient of Thermal Expansion, of 1 mil TSK Thermally Exposed

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

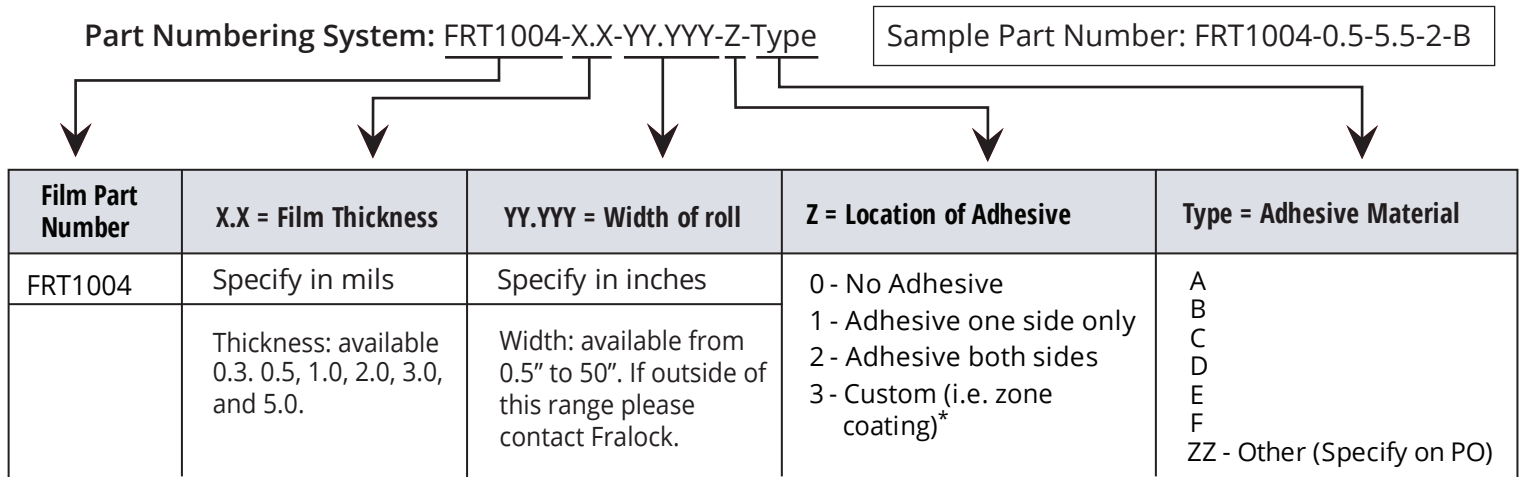
## ELECTRICAL

Property Film Gage	Typical Value		Test Condition	Test Method
<u>Dielectric Strength</u> 25 µm (1 mil) 50 µm (2 mil) 75 µm (3 mil) 125 µm (5 mil)	<u>V/m kV/mm</u> 303 240 205 154	<u>(V/mil)</u> (7700) (6100) (5200) (3900)	60 Hz 1/4 in electrodes 500 V/sec rise	ASTM D-149-91
<u>Dielectric Constant</u> 25 µm (1 mil) 50 µm (2 mil) 75 µm (3 mil) 125 µm (5 mil)	3.4 3.4 3.5 3.5		1 kHz	ASTM D-150-92
<u>Dissipation Factor</u> 25 µm (1 mil) 50 µm (2 mil) 75 µm (3 mil) 125 µm (5 mil)	Ω 0.0018 0.0020 0.0020 0.0026		1 kHz	ASTM D-150-92
<u>Volume Resistivity</u> 25 µm (1 mil) 50 µm (2 mil) 75 µm (3 mil) 125 µm (5 mil)	•cm $1.5 \times 10^{17}$ $1.5 \times 10^{17}$ $1.4 \times 10^{17}$ $1.0 \times 10^{17}$			ASTM D-257-91

Adhesives - Pressure-Sensitive

Adhesive ID #	A	B	C	D	E	F
Temp range Min/Max	-40°F (-40°C) to 450°F (232°C)	-40°F (-40°C) to 450°F (232°C)	-40°F (-40°C) to 500 °F (260 °C)	-40°F (40°C) to 203°F (95°C)	Up to 400°F (204°C)	-100°F (-38°C) to 500°F (260°C)
Adhesive Material	Acrylic	Acrylic	Acrylic	Acrylic	Silicone	Silicone
Adhesive Thickness	2 mil	1 mil	2 mil	2 mil	4 mi	2 mil
Key Features	Exceptional shear values Low outgassing	Exceptional shear values Low outgassing	UV and solvent resistant	Anisotropically electrically conductive  Good adhesion to common PCB substrates	Low surface energy  Isotropically electrically conductive  Performs at high temperatures	Electrically Conductive in the Z axis  Excellent bond strength  Chemically resistant Temperature extremes

## Ordering Information



Standard length is 100 ft. roll. Custom lengths available.

\*Custom zone coating: Please specify areas for coating

## Kapton® Film Certifications

Kapton® HN meets ASTM D-5213 (type 1, item A) and IPC 4202/1 requirements.  
This material is compliant with ASTM D-5213 (type 1, item A) and IPC 4202/1 requirements.

Fralock® offers complex precision laminating, adhesive coating, and a variety of cutting services for high-performance tapes. Our application engineers are available to assist with design and production of custom products that fulfill your performance requirements.

With manufacturing in the U.S.A., Fralock® offers product design, development, prototyping, converting, manufacturing, and automated placement services with ISO 9001, AS9100 and ISO 13485 Registered Quality Management system. ITAR compliant.

*Contact us for more information on Kapton® Tapes and other related polyimide products.*

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Warranty: User is responsible for determining whether the product is fit for a particular purpose and suitable for user's application. Limitation of Liability: Fralock® will not be liable for any loss or damage arising from the product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability. The above values are averaged values and should not be used in writing specifications.