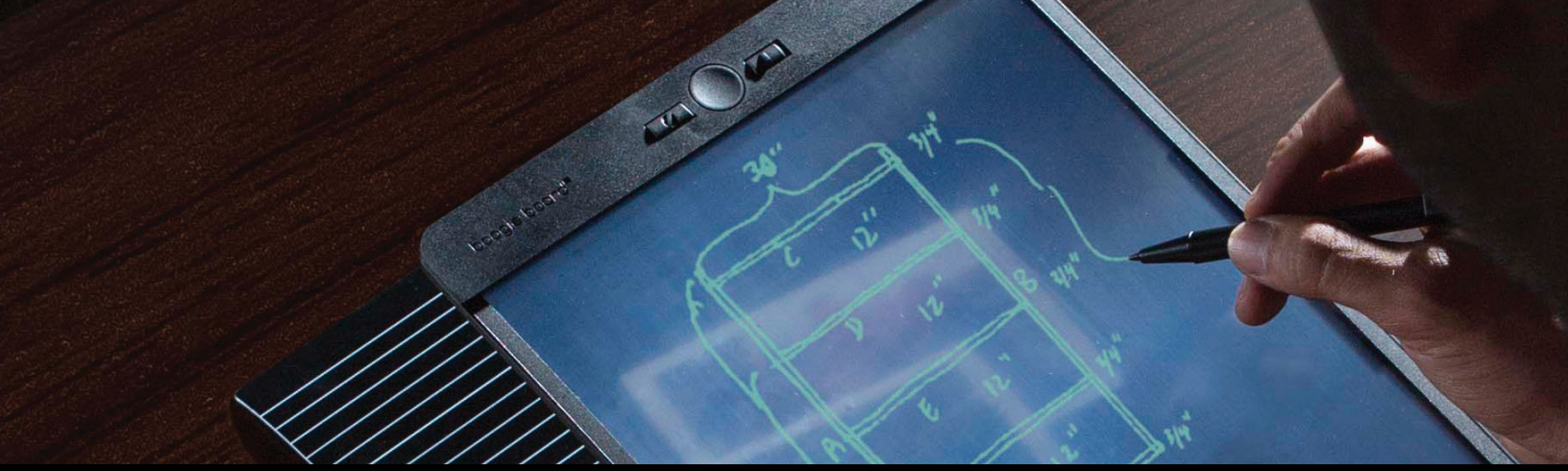

KODAK HCF
(Highly Conductive) Film/ESTAR Base

Optically Clear Highly Conductive Films for Electronic Displays

For more than a half century, Kodak has produced millions of feet of flexible polyester film for consumer and industrial applications stretching far beyond photography.

The KODAK ESTAR family of flexible, single and dual-sided, high clarity, highly conductive films, ideal for medium to large applications, are now made with a more robust conductive PEDOT:PSS polymeric layer that provides enhanced solvent and abrasion resistance for a superior coating — giving you higher yields on your touch screen applications to reduce waste and lower UMC.

Features
- Superior quality, optically clear, single, or dual sided PET films, coated inline to one or both sides on 102–178 µm (4–7 mil) PET thickness, up to 1,384 mm width, and unlimited length.
- Enhanced layer adhesion.
- Robust layer design creates a durable coating that is highly solvent-resistant resulting in higher yields for touch screen applications.
- Highly flexible compared to ITO films, unlikely to crack or lose conductivity when formed to a shape.
- Full sheet conductivity.
- Very low haze with very high light transmittance.
- Superior, relative to ITO films, when low reflectivity is required, while being a cost-effective alternative
- Readily customizable surface resistivity from 150–700 ohms per square.
- Invisible patterning is available on all of the HCF films.
- Unique manufacturing process produces an exceptionally uniform, flexible film, end-to-end and roll-to-roll.

Projected Capacitive (ProCap)
- Touch Displays
- Smart Watches
- Automotive and Aerospace Displays
- Consumer Appliances
- Biosensors
- Medical Devices

Full Sheet Conductors
- LCD Electrode Layers
- Thermo Heating Devices
- Smart Window Conductive Layers

Resistive Applications
- Point of Sales Devices
- Resistive Displays
- Kiosk Displays
- Membrane Switches

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Physical Attributes

Roll Integrity

– The edge of the roll is free of nicks, cuts, or visible telescoping greater than ± 6.3 mm (0.25 inches).
– The roll contains no gauge bands which visibly distort the film surface.

Consistent Surface Quality

– Material is free from surface imperfections, the result of an exclusive Kodak in-line scanning process which detects, corrects, and ultimately delivers a product that meets or exceeds specifications.
– Internal and external quality standards are applied to confirm all applicable specifications are met.

Packaging for a Perfect Product

– Each roll is wound on a standard fiber free core. Inside diameter 152 mm ± 3 mm (6 inches ± 0.04 inch).
– Each roll is suitably wrapped to seal the product, horizontal, supported on core ends, and labeled with product and roll identification.

KODAK HCF FILM/ESTAR BASE

Property	Typical Value						Test Method
Surface resistivity	190 ohms/square		270 ohms/square		450 ohms/square		4 point probe
PEDOT:PSS coating thickness	<0.50 micron		<0.35 micron		<0.20 micron		Calculated nominal thickness
	Single Side	**Dual Side**	**Single Side**	**Dual Side**	**Single Side**	**Dual Side**	
Haze	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	ASTM D 1003
Clarity	>99%	>99%	>99%	>99%	>99%	>99%	ASTM D 1003
Visible Light Transmittance	86	78%	88%	82%	90%	87%	ASTM D 1003
Adhesion	Dry tape adhesion, no removal						ASTM-F-1842
	Wet rub adhesion, DI water, no removal						Kodak Method
Environmental Testing	60C, 90% RH @ 240 hours <15% SER change						
Etching	Material can be laser and chemically etched to create a pattern						
Thermal Dimensional Change	<1.0% average in Machine Direction						30 minutes @ 150C
	<0.5% average in Transverse Direction						
Change in resistivity when exposed to:	Acetone <10% change						Kodak Method (10 minutes @ 24°C)
	IPA <2% change						
	Methanol <5% change						
	Toluene <2% change						
	Water <2% change						

SIZES AVAILABLE

Resistivity Ohms/sq	CAT No.	Product Code	Thickness (Micron)	Width (mm) (1/2" knurl)	Length (m)
KODAK HCF Films with conductive layer on one side, acrylic primer other side					
190	190 7591	6RF1-915K	127	1384	1242
270	161 8644	6RF1-925K	127	1384	1242
450	743 4467	6RF1-945K	127	1384	1242
KODAK HCF Films with conductive layer on both sides					
190	123 9896	6RF1-916K	127	1384	1242
270	172 9532	6RF1-926K	127	1384	1242
450	743 3386	6RF1-946K	127	1384	1242

TYPICAL OPTICAL PROPERTIES
(Colorimetry data: CIE D65, 2°, Transmission mode)

	6RF1-915K S190	6RF1-916K D190	6RF1-925K S270	6RF1-926K D270	6RF1-945K S450	6RF1-946K D450
L*	93.5	90.0	94.4	91.9	95.2	93.9
a*	-1.2	-1.3	-0.6	-0.9	-0.2	-0.4
b*	-0.9	-2.6	-0.7	-1.7	-0.8	-1.0
YI-E313	-2.7	-6.2	-1.7	-4.0	-1.6	-2.2

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Produced using KODAK Technology.

KODAK.COM/GO/ESTAR