



KODAK ESTAR

Heat Stabilized (HS) Films

Touch function with outstanding ink adhesion for your printed electronics applications

Our flexible, high clarity, single or dual-sided heat stabilized films are now available with an improved polymer system for broad ink adhesion, ideal for medium to large format applications. Your printed electronics applications will look better and last longer.

Your Kodak Quality Advantage

Use films that are easier for your manufacturing team to work with and give your final product a high-quality touch.

Optical-grade Surface Quality means minimal shrinkage in both the machine direction (MD) and transverse direction (TD) — less waste, more output. And your appliances and switches will look better due to our greater than 90% visible light transmittance with less than 1% haze.

Optimal Roll Integrity to reduce manufacturing waste the edge of the roll is free of nicks, cuts, or visible telescoping greater than ± 6.3 mm (0.25 inches) with no gauge bands to visibly distort the film surface.

Consistent Product Quality

Kodak inspects material throughout the manufacturing process using in-line scanners and quality technicians to detect and correct defects, and ultimately deliver a product that meets or exceeds specifications.

Touch Function Flexible Applications

- Consumer appliances
- Membrane touch switches
- Automotive seat sensors
- Electro-luminescent surfaces/lamps
- RFID tags/labels
- Photovoltaics
- Diagnostic test strips
- Transfer release films
- High-heat laser printing

Packaging for a Perfect Product

- Standard core; inside diameter 152 mm \pm 3 mm (6 inches \pm 0.04 inch)
- Each roll is labeled and suitably wrapped to seal the product
- Each roll is horizontal, supported on core ends

Exceptional Workforce Standard gives you a consistently high-quality product every time. The cost-effective, consistent quality of KODAK ESTAR HS Films is the result of 50 years of experience in manufacturing polyester (PET) film base. Stringent workforce standards for our Six Sigma Black Belt strategy include statistical modeling and design, rigorous change management, and unsurpassed manufacturing process control.

Approvals/Certifications

KODAK ESTAR Films quality system is ISO 9001:2015 Certified PET Thickness and coatings applied by Kodak or customer may have an impact on UL 94 VTM-2 rating.



KODAK ESTAR HS Films

KODAK ESTAR Heat Stabilized (HS) Films are a premium polyester (PET) produced to maintain consistent dimensional stability (<0.2%) at temperatures of 150°C -30 minutes (ASTM D.1204).

Thermal Properties				
Film Type	3mil HS	5mil HS	7mil HS	Test
Shrinkage (MD)	0.2	0.16	0.14	Kodak Method (30 min @ 150°C)
Shrinkage (TD)	0	0	0	Kodak Method (30 min @ 150°C)
Melt Point	265	265	265	

Electrical Properties					
Film Type	5mil HS	7mil HS	5mil non-HS	7mil non-HS	Test
Coating Product Family	301/302	301/302	5481	5481	
Coating	PVDC	PVDC	BARE	BARE	
Dielectric Constant	2.27	2.42	2.24	2.46	ASTM D150-98
Dielectric Strength (V/mil)	3300	2230	3370	2630	ASTM D149-09
Volume Resistivity (Ohm/cm)	1.73E+17	1.27E+17	1.84E+17	1.25E+17	ASTM D257-07
Surface Resistivity (Ohm/Square)	5.23E+15	5.23E+15	5.24E+15	5.24E+15	ASTM D257-07

Mechanical Properties			
Film Thickness		5mil	7mil
MD Tensile Strength (N/mm ²)		206	208
TD Tensile Strength (N/mm ²)		218	212
MD Break Elongation (%)		135	140
TD Break Elongation (%)		108	115
MD Young's Modulus (N/mm ²)		4682	4603
TD Young's Modulus (N/mm ²)		5455	5213

Physical Properties		
Property	Typical Value	Test
Width Tolerance	± 3 mm Kodak	Inline Scanner
Length Tolerance	± 30 m Kodak	Inline Scanner
Knurls — Each Side	12.5 mm wide	

Optical Properties					
Film Type	Estar Product Code	Coating Type*	VLT (%)	HAZE (%)	CLARITY (%)
3mil HS	6RF1-302	Acrylic A	96	0.35	99.9
5mil HS	6RF1-509	Bare	90	0.3	99.9
	6RF1-502	Acrylic A	96	0.35	99.9
	6RF1-505	PVDC	92	0.8	99.9
	6RF1-582	Acrylic B	92	0.9	99.9
7mil HS	6RF1-709	Bare	90	0.4	99.9
	6RF1-702	Acrylic A	96	0.5	99.9
	6RF1-705	PVDC	93	0.88	99.9
	6RF1-782	Acrylic B	92	1	99.9

*Product codes shown above are all dual coatings. Products are also available with single sided coatings.

The above information is given in good faith and is generally reliable based on the testing methodologies used. However, the information is subject to change due to any improvements or innovations achieved during the manufacturing process. It is the role of the customer to examine the suitability of the film for a particular application. Kodak assumes no liability for any changes in the information resulting from customer use for specific applications. Varying storage, exposure, and processing conditions will affect results.

KODAK ESTAR Polyester Films; 5481 Film/ESTAR base UL 94 VTM-2 — for 127 µm, 178 µm.

All KODAK ESTAR Polyester Films are manufactured with 5481 Film/ESTAR base and may then have coatings applied.

To find out what ESTAR Films can do for your business, visit www.kodak.com/go/estar or email us at PETproducts@kodak.com.

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