



# KODAK ESTAR

## Polyester (PET) Films

For more than a half century, Kodak has produced millions of feet of high quality flexible polyester (PET) film for numerous consumer and industrial applications stretching far beyond photography. The KODAK ESTAR family of flexible, single or dual-sided, high clarity PET films attests to that fact.

### About

KODAK ESTAR Polyester (PET) films offer very high clarity, optical-grade surface quality for use in a variety of industrial applications. These films can be processed uncoated or with coatings on one or both sides of the material — up to three coatings per side. Coating options can include:

- Adhesion promoting primers
- Anti-static coatings
- Gels
- Adhesion coatings for aqueous or solvent based inks

### Applications

Highly flexible and dimensionally stable, KODAK ESTAR PET films are extremely uniform, very resilient and cost effective, enabling manufacturers and product integrators to use them for multiple industrial purposes, among them:

- Labels and printing
- Metallization
- Emulsion-based coating systems
- Flexible electronic displays
- Membrane touch switches
- Vacuum molded products and packaging

### Features

- Optical-grade surface quality — products are manufactured with minimal surface contact, then scanned to meet the stringent requirements for optical applications.
- Greater than 90% transmittance with less than 1% haze.
- Available in an array of widths and thicknesses.
- Throughout the stretching process, films are transported on a cushion of air without roller contact to virtually eliminate micro scratches that can compromise quality.
- Kodak's Six Sigma Black Belt quality strategy includes statistical modeling and design, rigorous change management, and unsurpassed manufacturing process control.

- Films are available bare or can be coated on one or both sides with a variety of adhesives, gels, inks or anti-stats.
- Available in thicknesses as low as 4 mil (101.6  $\mu\text{m}$ ) and as thick as 7.5 mil (188  $\mu\text{m}$ ) up to a maximum width of 1384 mm (54.5 inches).

### Roll Integrity

- The edge of the roll will be free of nicks, cuts or visible telescoping greater than  $\pm 6.3$  mm (0.25 inches).
- The roll will not contain gauge bands which will visibly distort the film surface.
- There are no splices or cutouts in the roll.

### Product Quality

- Kodak inspects material during the manufacturing process using in-line scanners to detect, correct, and deliver material that meets or exceeds specifications.
- Kodak quality technicians consistently evaluate sample product quality using internal and external standards to confirm quality standards are met.

### Packaging

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

### Approvals/Certifications

- KODAK ESTAR Polyester Films; 5481 Film/ESTAR base UL 94 VTM-2 — for 127  $\mu\text{m}$ , 178  $\mu\text{m}$ <sup>1</sup>. All KODAK ESTAR Polyester Films are manufactured with 5481 Film/ESTAR base and may then have coatings applied.
- KODAK ESTAR's quality system is ISO 9001:2015 Certified

<sup>1</sup> PET Thickness and coatings applied by Kodak or customer may have an impact on UL 94 VTM-2 rating.



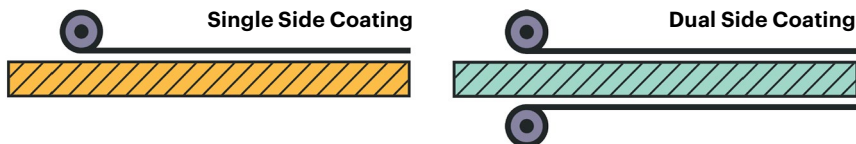
# KODAK ESTAR Polyester (PET) Films

	Thickness Microns (µm)	Value	Test
<b>Physical</b>			
Width Tolerance	102/127/178	± 3 mm Kodak	Kodak Inline Scanner
Length Tolerance	102/127/178	± 30 m Kodak	Kodak Inline Scanner
Knurls — each side	102/127/178	12.5 mm wide	
Planarity (Max «flute» — 10 ft sample)	102/127/178	< 0.5 mm	Kodak Planarity Method
<b>Mechanical</b>			
Tensile Strength	102/127/178	> 25,000 psi	ASTM D 882
Break Elongation	102/127/178	> 70%	ASTM D 882
Young's Modulus	102/127/178	> 500,000 psi	ASTM D 882
<b>Optical</b>			
VLT — with primer	102/127/178	> 90%	ASTM D 1003
Haze — with primer	102/127/178	≤1.5%	ASTM D 1003
<b>Thermal</b>			
Shrinkage MD (150°C)	102/127/178	1%	Kodak Method (30 min @ 150°C)
Shrinkage TD (150°C)	102/127/178	1%	Kodak Method (30 min @ 150°C)

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.

KODAK ESTAR PET Films are available in 4, 5 and 7 mil thicknesses. Films are provided on master rolls between 45 inches (1,143 mil) and 54.5 inches (1,384 mil) wide with Knurls on each side. Lengths vary from 6,000 feet (1,829 meters) to 10,000 feet (3048 meters) depending on coatings used and the thickness of the product. For specific dimension or for dimensions tailored to your precise specifications talk to us!

KODAK ESTAR PET Films can be processed uncoated or with coatings on one or both sides of the material — up to three coatings per side.



To find out what ESTAR Films can do for your business:

[KODAK.COM/GO/ESTAR](https://www.kodak.com/go/estar)



NOTICE: While the data in this publication are typical of production coatings, they do not represent standards which must be met by Kodak. Varying storage, exposure, and processing conditions will affect results. Kodak makes no guarantee of results and assumes no obligation or liability whatsoever in connection with this information. The company reserves the right to change and improve product characteristics at any time.