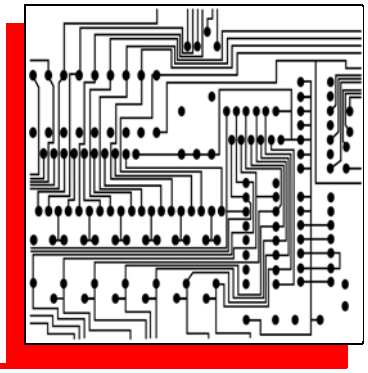
TECHNICAL DATA / **PRINTED CIRCUIT BOARD FILM**

KODAK PRECISION LINE Film LPF7

—High Complexity PCB Starts With the Right Phototools—



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KODAK PRECISION LINE Film LPF7 is a contact film specifically designed for the manufacture of encoder disks and strips. LPF7 Film produces excellent line-edge acuity and high image density. It has wide exposure and processing latitude for consistent results.

- High contrast, orthochromatic film
- Darkroom handling under red safelight
- Negative working
- High density
- Contact speed with a point source exposure lamp
- Most commonly used in the manufacture of encoder strips and disks
- Low matte level
- Dimensionally stable ESTAR Base and ESTAR Thick Base
- Excellent scratch and abrasion resistant overcoat
- May be processed in rapid access developers such as KODAK ACCUMAX Rapid Access Developer and Replenisher, or lith developers.

SUPPORT

Dimensionally stable support.

LPF7	7-mil (0.18 mm)	ESTAR Thick Base

DARKROOM RECOMMENDATIONS

Use a KODAK 1A Safelight Filter / light red in a suitable safelight lamp equipped with a 15-watt bulb. Keep the film at least 4 feet (1.2 metres) from the safelight.

STORAGE AND HANDLING

Keep unexposed film and processed film in a cool, dry place. Process film as soon as possible after exposure.

EXPOSURE

Contact Exposures

(Can be processed in both lith and rapid access developers)

Starting-point example when using a variable voltage point source lamp:

Set lamp for 16 volts at 5 feet from the exposure plane—approximately 4 footcandles (43 lumens/sq m).

5 to 10 seconds*

*With KODAK WRATTEN Neutral Density Filter No. 96 (0.6)

Kodak

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PROCESSING

Notice: Observe precautionary information on product labels and Material Safety Data Sheets.

Use KODAK ACCUMAX Rapid Access Developer and Replenisher (1:4) and KODAK Rapid Fixer and Replenisher (diluted 1:3).

	Size	CAT No.
KODAK ACCUMAX Rapid Access Developer and Replenisher	5 L concentrate	887 5569
KODAK Rapid Fixer and Replenisher	5 L concentrate	174 9839

Recommended Starting Points

Deep-Tank Processors	40-80 seconds at 80° F (26.5° C)
Rapid Access Processors	25-40 seconds at 95° F (35° C)

Fixer: Use a fixer temperature of 32 - 35° C (90 - 95° F).

Replenishment Rates

Developer	Fixer
350 mL/sq m	540 mL/sq m

DIMENSIONAL STABILITY

Dimensional stability is an all-inclusive term. In photography, it applies to size changes caused by changes in humidity and in temperature, and by processing and aging. The dimensional properties of ESTAR Base may vary slightly in different directions within a sheet; the differences that may exist, however, are not always equal in both the length and width directions.

Differences in size change between length and width should be within 10 percent of each other.

Thermal Coefficient of Linear Expansion:

Unprocessed or Processed	0.001% per Degree F
	0.0018% per Degree C

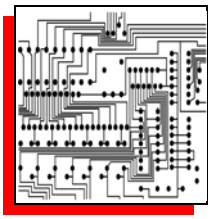
Humidity Coefficient of Linear Expansion:

Unprocessed	0.0016% per % RH
Processed	0.0015% per % RH

Processing Dimensional Change:

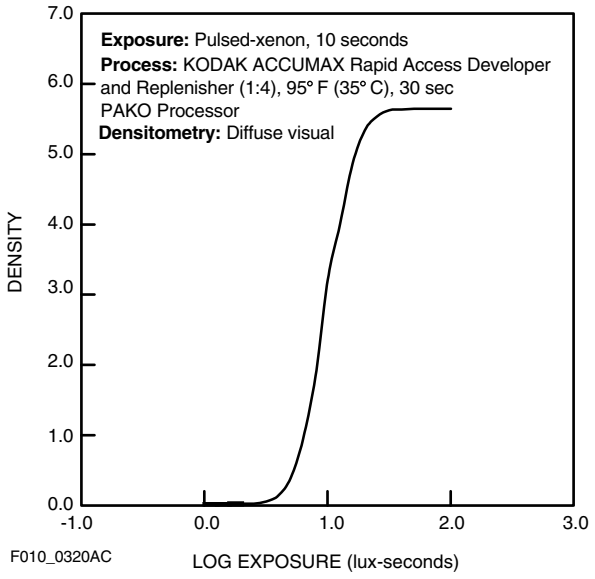
Dependent on drying conditions

Recommended dryer temperature starting point	35° C (95° F)

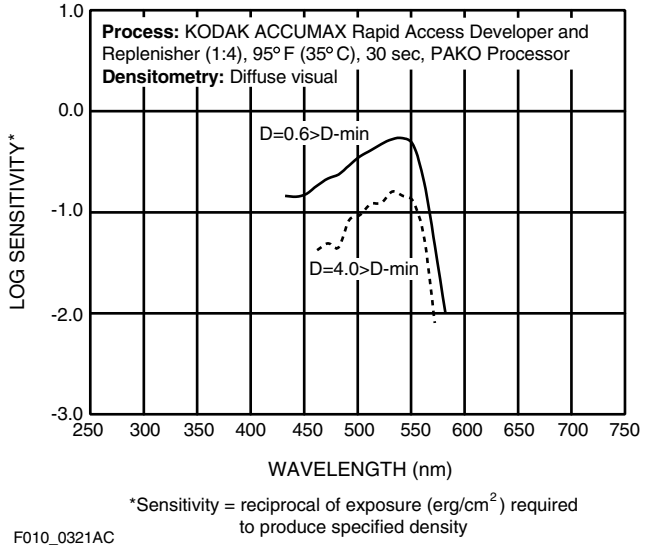


CURVES

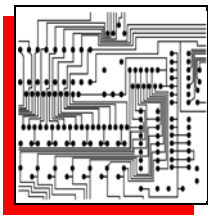
Characteristic Curve



Spectral Sensitivity Curve



*Sensitivity = reciprocal of exposure (erg/cm^2) required to produce specified density



MORE INFORMATION

For the latest version of technical support publications for Kodak products, visit Kodak on-line at: **http://www.kodak.com/go/PCBproducts**
If you have questions about Kodak products, call Kodak. In the U.S.A.: 1-800-242-2424, Ext. 19, Monday–Friday 9 a.m.–7 p.m. (Eastern time) In Canada: 1-800-465-6325, Monday–Friday 8 a.m.–5 p.m. (Eastern time) From outside the US/Canada: 1-716-724-4000

Note: The Kodak materials described in this publication for use with LPF7 Film are available from dealers who supply KODAK PCB Products. You can use other materials, but you may not obtain similar results.

NOTICE: The sensitometric curves and data in this publication represent product tested under the conditions of exposure and processing specified. They are representative of production coatings, and therefore do not apply directly to a particular box or roll of photographic material. They do not represent standards or specifications that must be met by Eastman Kodak Company. The company reserves the right to change and improve product characteristics at any time.

Industrial Imaging
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