

K-PRO™

Positive Photoresist for Advanced Packaging

DESCRIPTION

K-PRO™ photoresists are advanced packaging positive resists for use in i-line, g-line and broadband packaging applications.

- Designed for plating, bumping, TSV, and other metal deposition processes.
- Excellent substrate adhesion for wet etch applications.
- Compatible with most plating metals and offer high sensitivity, steep wall profiles, high aspect ratios, increased heat resistance, and excellent process latitude.

Tone: Positive
 Film Thickness: 1 – 25 µm single coat
 Sensitivity: Broadband, i-line, g-line
 Developer: TMAH-based, KOH-based
 Remover: NMP, DMSO, etc.

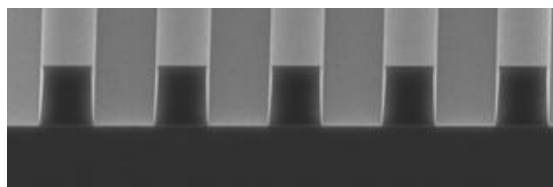


Figure 1. Silicon substrate: Film Thickness 25 µm: 15 µm

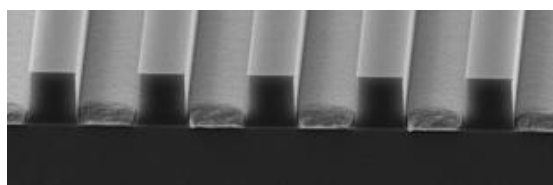


Figure 2. Copper Substrate: Plated Cu on Cu substrate Film Thickness 15 µm: 10 µm line/space 1:1

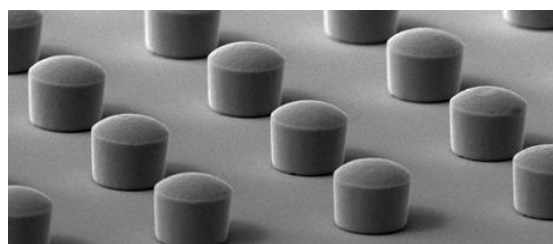


Figure 3. Copper Substrate: Photoresist strip - 10 µm Cu Post

PROCESSING GUIDELINES

Product	Film Thickness (µm)	Soft Bake	Rehydration Time	Broadband Aligner Exposure
K-PRO 1	1	115 °C for 2 min	3 minutes	65 mJ/cm ²
K-PRO 2	2	115 °C for 2 min	3 minutes	72 mJ/cm ²
K-PRO 3	3	115 °C for 2 min	3 minutes	76 mJ/cm ²
K-PRO 5	4	115 °C for 2.5 min	5 minutes	80 mJ/cm ²
K-PRO 7	7	115 °C for 3 min	15 minutes	125 mJ/cm ²
K-PRO 15	15	115 °C for 4 min	30 minutes	210 mJ/cm ²
	25	115 °C for 5.5 min	30 minutes	380 mJ/cm ²

K-PRO™ POSITIVE ADVANCED PACKAGING PHOTORESIST

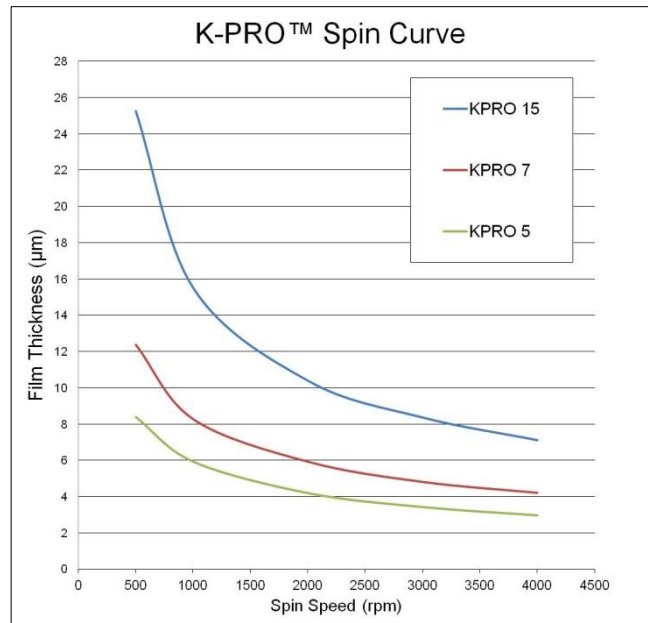
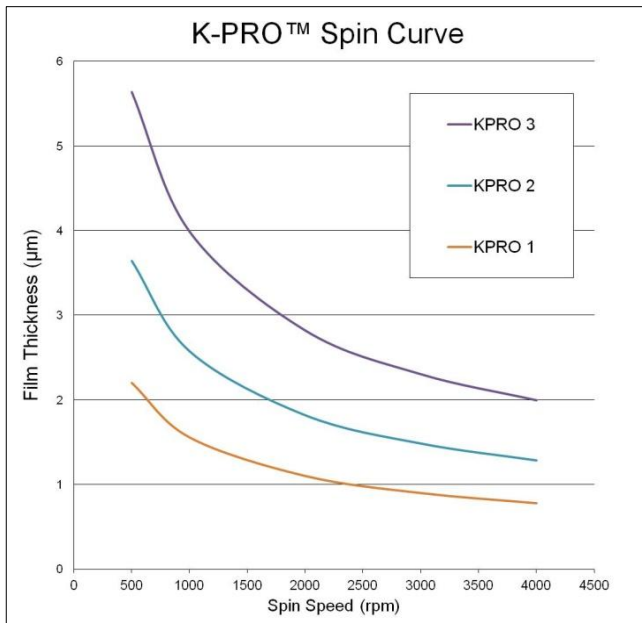
SUBSTRATE PREPARATION

For maximum adhesion, substrates should be clean and dry prior to applying the K-PRO™ photoresist. HMDS primer is recommended with oxide-forming substrates (Si, etc.).

K-PRO™ adheres to a variety of substrates; including silicon, copper, gold, glass, aluminum, and chromium.

COAT

Film thickness is targeted using the spin speed curves shown below.



SOFTBAKE

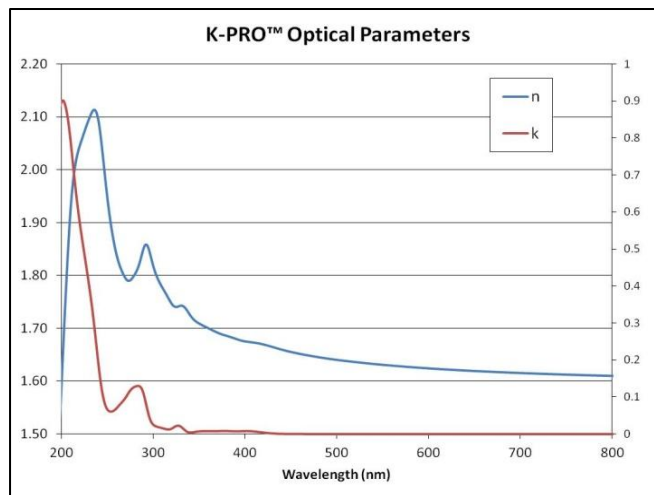
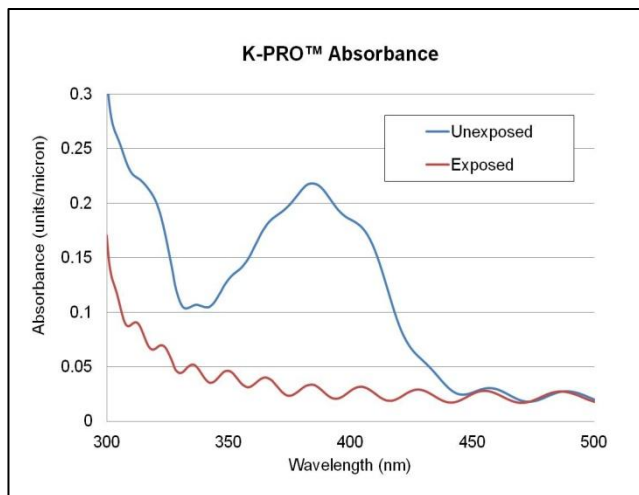
Recommended softbake contact hotplate temperature is 115°C. Typical bake time is 2 - 5 minutes.

REHYDRATION TIME

3 - 30 minutes at 35 - 50% relative humidity is recommended. Film thickness dependant. See process guidelines.

EXPOSURE & OPTICAL PARAMETERS

K-PRO™ is suitable for i-line, broadband or g-line exposure. See curves below.



POST-EXPOSURE BAKE (PEB)

No PEB required.

DEVELOPMENT

K-PRO™ is designed for use with a variety of industry standard developers such as: 0.26N TMAH, KOH, and Potassium borates. It can be developed with immersion, puddle or spray puddle. These thick films benefit from refreshing developer during the develop step. For example: Use two developer baths for immersion; or multiple puddles.

ETCH RESIST

Wet chemical etchants (for Au, Cu, Cr, Al, etc) do not degrade the patterns made with K-PRO™.

RESIST REMOVAL

K-PRO™ can be removed using industry standard removers (such as NMP) at 50 – 80 °C. Thicker films may benefit from using a two bath process; the first bath removes the bulk of the resist, and the second bath to clean it off thoroughly.

STORAGE

Avoid light and store in an upright airtight container at 4 – 21°C. Keep resist away from oxidizers, acids, bases and sources of ignition.

HANDLING & DISPOSAL

Consult the SDS for handling and appropriate PPE. K-PRO™ photoresist contains a combustible liquid; keep away from ignition sources, heat, sparks and flames. This K-PRO™ photoresist is compatible with typical waste streams used with photoresist processing. It is the user's responsibility to dispose in accordance with all local, state, and federal regulations.

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