KL5300
Positive Photoresist

DESCRIPTION

KL5300 series are positive photoresists for use in i-line, g-line and broadband applications. They offer high sensitivity, high resolution and excellent process latitude.

- Single coat coverage 0 – 2.5 µm
- Designed for use with industry standard TMAH 0.26N developers
- Achieve resolution 0.55 µm
- Competes with S1805™, S1808™, S1811™, S1813™, S1818™

Tone:	Positive
Film Thickness:	0 – 2.5 µm
Sensitivity:	Broadband, i-line, g-line
Developer:	TMAH-based
Remover:	NMP, DMSO, etc. at 50–80°C

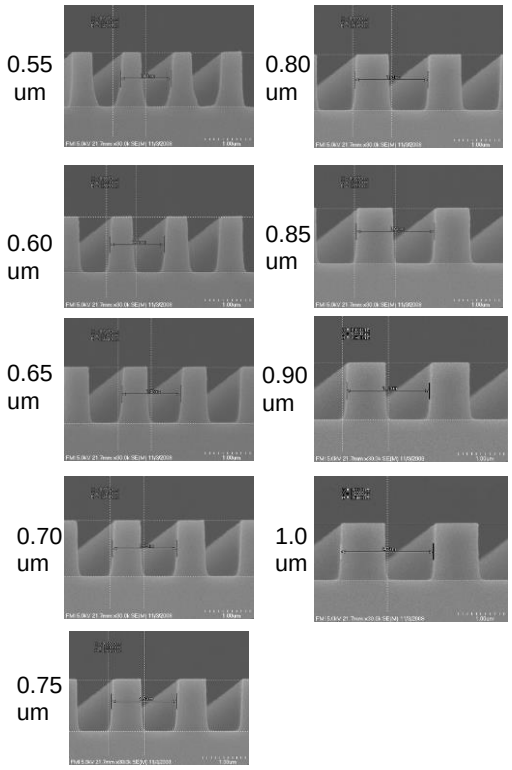


Figure 1. Exposure: 60mJ @ 365 nm, Nikon I9 Stepper, NA=0.54

PROCESSING GUIDELINES

	KL5315	KL5310	KL5305	KL5302-HiRes
Film thickness Range (microns):	*1.2 - 2.5*	*0.7 - 1.5*	*0.4 - 1.0*	*0.15 - 0.30*
Softbake	105°C for 60 seconds			
Exposure (Broadband, i-line, g-line)	40 mJ/cm^2	35 mJ/cm^2	30 mJ/cm^2	60 mJ/cm^2
PEB	115°C for 60 seconds			
Develop Time (seconds) in 0.26N TMAH	30 sec	25 sec	20 sec	30 sec
Hard Bake (optional)	110°C for 60 seconds			

SUBSTRATE PREPARATION

For maximum adhesion, substrates should be clean and dry prior to applying the KL5300 photoresist. HMDS primer is recommended with oxide-forming substrates (Si, etc.).

KL5300 adheres to a variety of substrates; including silicon, copper, gold, glass, aluminum, and chromium.

COAT

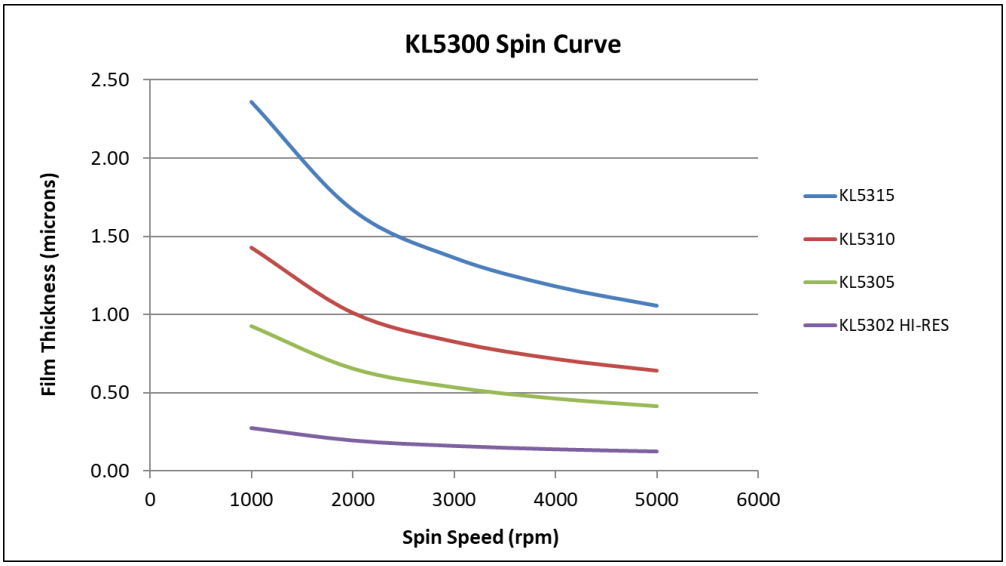
Film thickness is targeted using the spin speed curves shown below. Spin curves are determined using 6 inch Si and static dispense of approximately 4 ml of KL5300 photoresist.

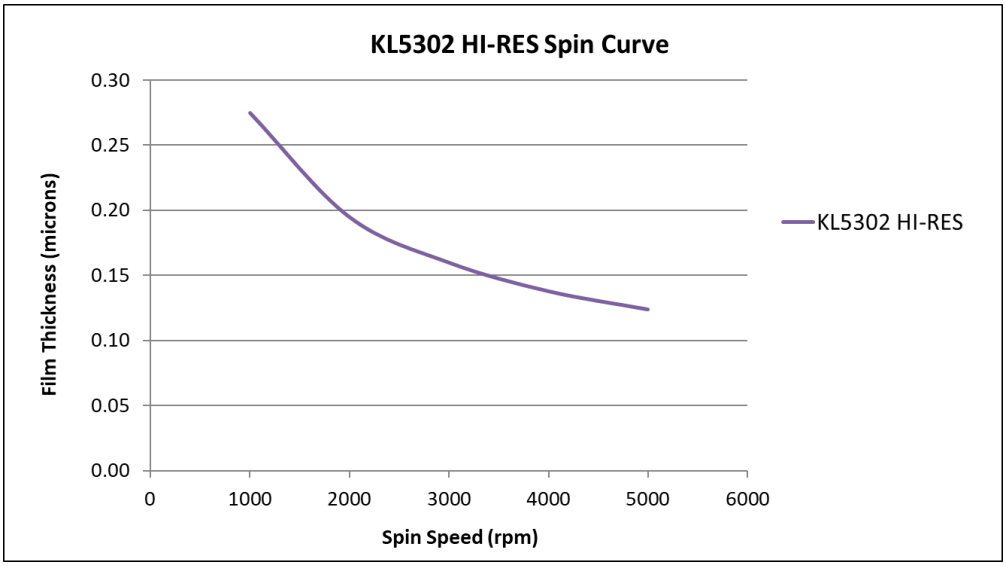
Coat techniques such as spray coat, slot coating, and other additive techniques are possible; please contact techsupport@kemlab.com for more information.

Figure 2. Film thickness range by product

Product	Film Thickness Range (microns)	Viscosity (cst)
KL 5315	1.2 - 2.5	~15
KL 5310	0.7 - 1.5	~ 8
KL 5305	0.4 – 1.0	~ 5
KL 5302 HI-RES	0.15 - 0.3	~2

Figures 3-4. KL5300 spin curves





SOFTBAKE

Recommended softbake contact hotplate temperature is 90-105°C. Typical bake time is 60 seconds.

EXPOSURE & OPTICAL PARAMETERS

KL5300 is suitable for i-line, broadband or g-line exposure. Refractive index, swing curves and absorbance are shown below.

Figure 5. Refractive Index v. Wavelength

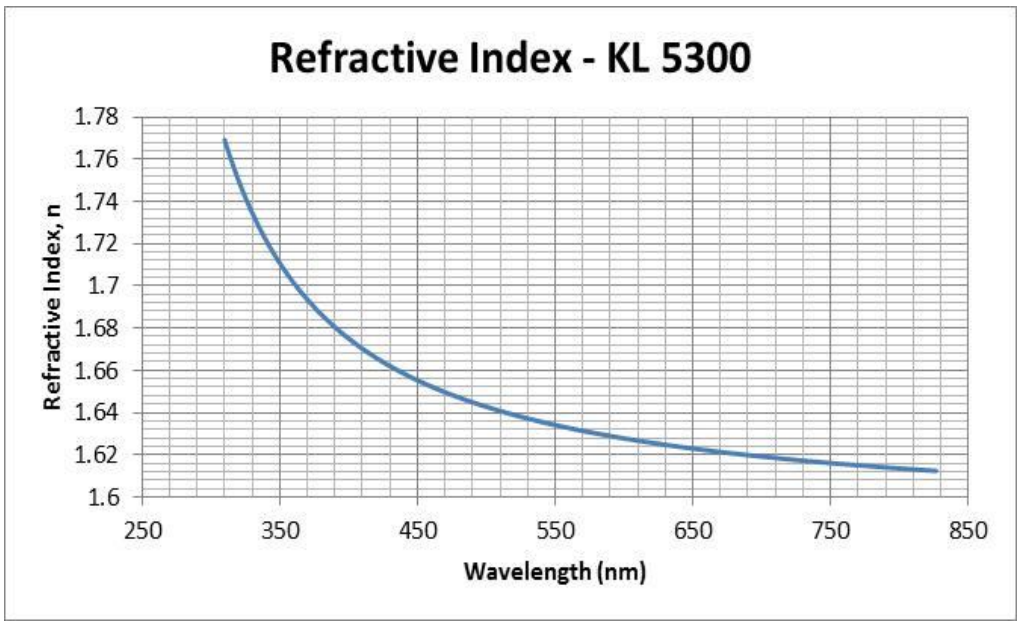


Figure 6. Absorbance per micron

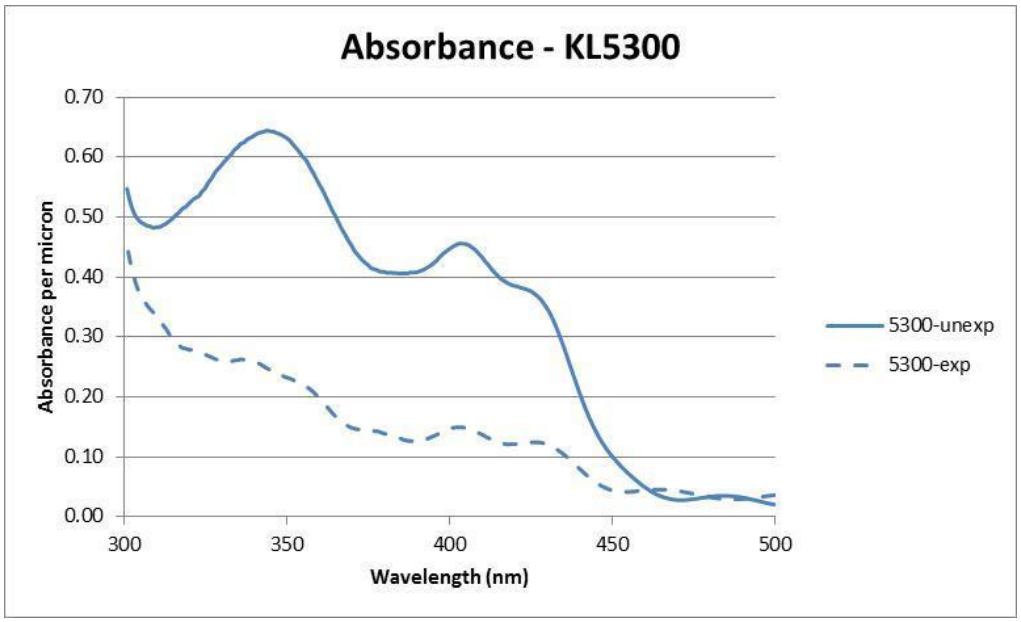
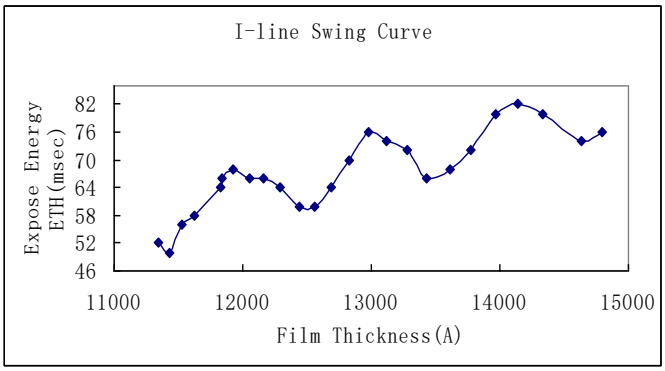
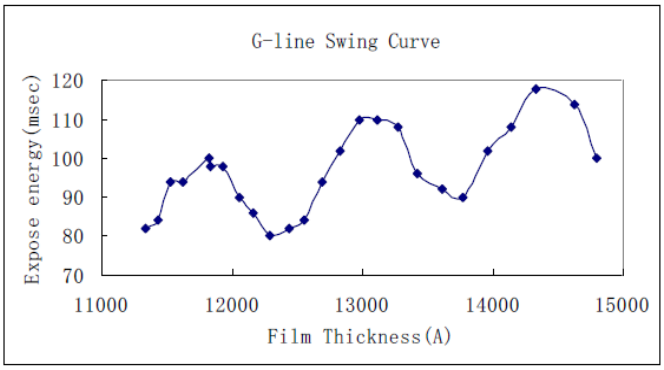


Figure 7. i-line and g-line Swing Curves





POST-EXPOSURE BAKE (PEB)

Bake on contact hotplate at 115°C for 60 seconds.

DEVELOPMENT

KL5300 series is designed for use with 0.26N TMAH developer. It can be developed with immersion, puddle or spray puddle.

RESIST REMOVAL

KL5300 resist 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 or ignition.

HANDLING & DISPOSAL

Consult the SDS for handling and appropriate PPE. KL5300 photoresist contains a combustible liquid; keep away from ignition sources, heat, sparks and flames. This KL5300 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.