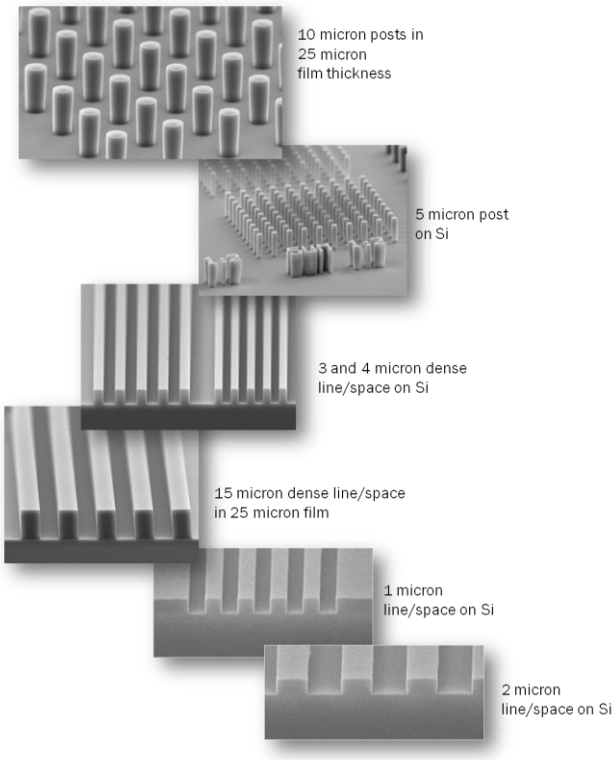
KL NPR

Negative Photoresist with Vertical Profile

DESCRIPTION

KL NPR is a negative tone, novolac photoresist designed for electroplating, metal deposition, TSV, and RIE etch. It has a single coat film thickness of up to 20 µm and features vertical sidewalls and high aspect ratios. KL NPR is thermally stable and can withstand temperatures up to 130ºC without profile degradation.

Tone:	Negative
Film Thickness:	Up to 20 µm (single spin coat)
Sensitivity:	Broadband, i-line
Developer:	Industry standard TMAH, KOH, etc.
Remover:	Industry standard NMP, DMSO, etc.



SUBSTRATE PREPARATION

For maximum adhesion, substrates should be clean and dry prior to applying the KL NPR resist. To remove all moisture, a dehydration bake at 110ºC hotplate for 2 minutes is recommended. NPR adheres to a variety of substrates; including silicon, gold, glass, aluminum, and chromium. Not designed for use on copper.

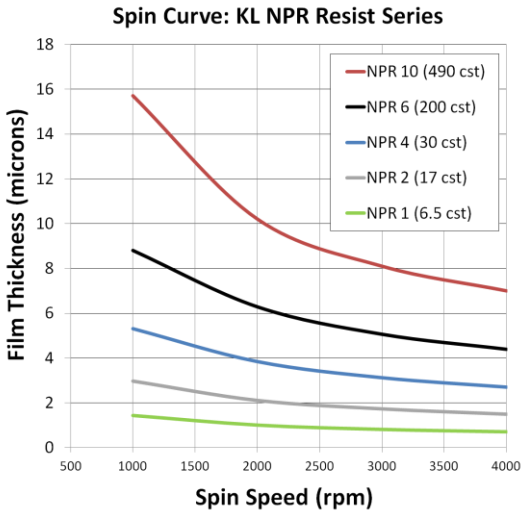
PROCESSING GUIDELINES

	Processing Guidelines	
NPR 1 FT: 1µm	Coat	Spin @ 2000 rpm 45 sec
	Softbake	90 sec @ 110ºC
	Exposure (Broadband on Si)	45 mJ/cm²
	PEB	90 sec @ 110ºC
	Develop (0.26N TMAH)	15-30 sec
NPR 2 FT: 2µm	Coat	Spin @ 2000 rpm 45 sec
	Softbake	90 sec @ 110ºC
	Exposure (Broadband on Si)	50 mJ/cm²
	PEB	90 sec @ 110ºC
	Develop (0.26N TMAH)	30 sec
NPR 4 FT: 4µm	Coat	Spin @ 2000 rpm 45 sec
	Softbake	90 sec @ 110ºC
	Exposure (Broadband on Si)	65 mJ/cm²
	PEB	90 sec @ 110ºC
	Develop (0.26N TMAH)	45 sec
NPR 6 FT: 6µm	Coat	Spin @ 2000 rpm 45 sec
	Softbake	90 sec @ 110ºC
	Exposure (Broadband on Si)	70 mJ/cm²
	PEB	90 sec @ 110ºC
	Develop (0.26N TMAH)	60 sec
NPR 10 FT: 10µm	Coat	Spin @ 2000 rpm 45 sec
	Softbake	120 secs @ 110ºC
	Exposure (Broadband on Si)	75 mJ/cm²
	PEB	120 secs @ 110ºC
	Develop (0.26N TMAH)	90 sec

KL NPR NEGATIVE PHOTORESIST

COAT

Film thickness is targeted using the spin speed curve (shown below). Coat program includes a 5-10 second spread cycle. Spin time at final speed is 45 seconds. Spin curves are determined using 6-inch Si wafer and static dispense of approximately 3-6 ml of photoresist.



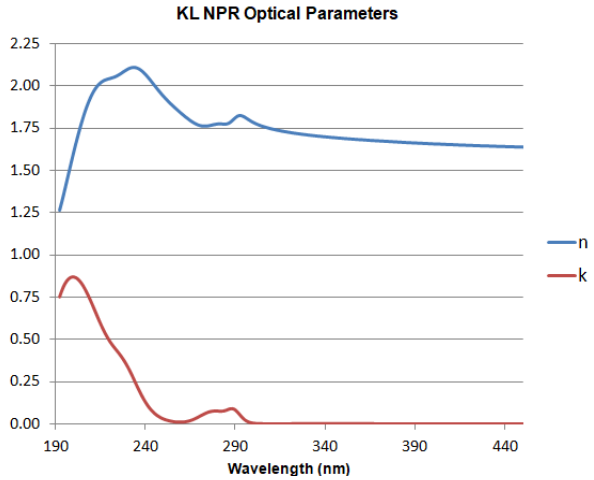
SOFTBAKE

Recommended contact hotplate temperatures and times for each KL NPR film thickness shown below.

Product	Softbake
NPR 1	90 sec @ 110ºC
NPR 2	90 sec @ 110ºC
NPR 4	90 sec @ 110ºC
NPR 6	90 sec @ 110ºC
NPR 10	120 secs @ 110ºC

EXPOSURE & OPTICAL PARAMETERS

KL NPR is optimized for broadband and i-line exposure tools. See processing guidelines.



POST-EXPOSURE BAKE (PEB)

PEB is required to crosslink the photoresist. PEB times and temperatures vary by application. Recommended PEB temperatures and times for each KL NPR film thickness shown below.

Product	PEB
NPR 1	90 sec @ 110ºC
NPR 2	90 sec @ 110ºC
NPR 4	90 sec @ 110ºC
NPR 6	90 sec @ 110ºC
NPR 10	120 secs @ 110ºC

DEVELOPMENT

KL NPR resist series is designed to be compatible with industry standard developers such as 0.26N TMAH and MIB developers such as KOH.

RESIST REMOVAL

Removal is performed using industry standard removers (NMP, DMSO, etc.) at 50 – 80ºC.

STORAGE

Avoid light and store in an upright airtight container at 4-21ºC. Keep resist away from oxidizers, acids, bases and sources or ignition.

HANDLING & DISPOSAL

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