KL IR 15

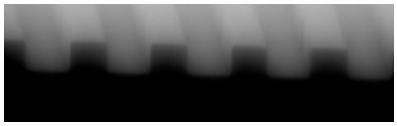
Image Reversal Photoresist

DESCRIPTION

KL IR 15 image reversal series of photoresists are used as either positive and negative photoresist in i-line, g-line and broadband applications. As a negative resist, the KL IR 15 has excellent thermal stability and are optimized for metallization processes. Develop using standard 0.26N TMAH developers and KL Photoresist Remover or standard NMP removers.

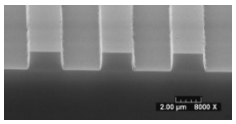
Tone: Positive or negative
Film Thickness: 1.2 – 2.6
Sensitivity: Broadband, i-line, g-line
Developer: TMAH-based
Remover: KL Photoresist Remover / NMP / DMSO-based strippers

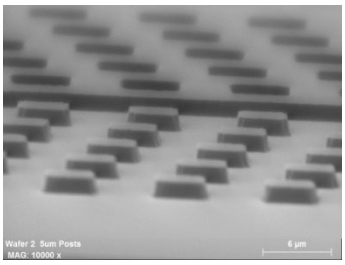
Figure 1. Negative tone process



Film Thickness	1.5 microns
Broadband Exposure	120 mJ/cm^2
Develop Time	60sec puddle (recommended)

Figure 2. Positive tone process





Film Thickness	1.5 microns
Broadband Exposure	~70 mJ/cm^2 at 1.5 µm FT (broadband)
Develop Time	60sec puddle (recommended)

NEGATIVE RESIST MODE PROCESSING GUIDELINES

Substrate Preparation	HMDS primer is recommended with oxide-forming substrates (Si, etc.). KL IR adheres to a variety of substrates; including silicon, copper, gold, glass, aluminum, and chromium.
Softbake	105°C, 90sec
Exposure	Broadband (120 mJ/cm^2); i-line, g-line
Reversal bake*	130°C, 120sec
Flood exposure	150 mJ/cm^2 (broadband)
Development	0.26N TMAH, 45 – 60 second puddle
Hardbake (optional)	130°C, 60sec
Removal	KL Photoresist Remover / NMP / DMSO-based strippers

**The reversal bake temperature is a critical parameter in the image reversal process.*

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NEGATIVE RESIST MODE *Process Only*

REVERSAL BAKE

The most critical factor of the image reversal process is the reversal bake temperature. This critical temperature must be kept within ± 1°C to maintain stable processes.

FLOOD EXPOSURE

The flood exposure is not critical to the process. 150 mJ/cm^2 (broadband) is the processing guideline. Exposures between 150 - 300 mJ/cm^2 will not have a major effect on performance.

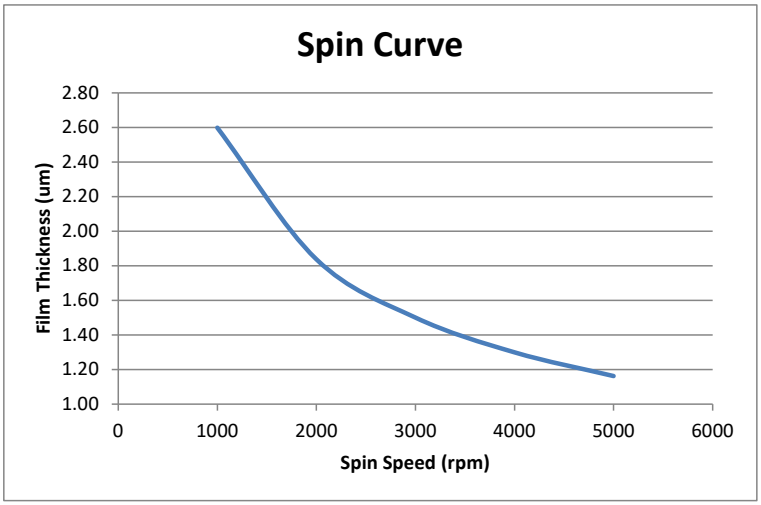
POSITIVE RESIST MODE PROCESSING GUIDELINES

Substrate Preparation	HMDS primer is recommended with oxide-forming substrates (Si, etc.). KL IR adheres to a variety of substrates; including silicon, copper, gold, glass, aluminum, and chromium.
Softbake	105°C, 90sec
Exposure	Broadband, i-line, g-line
Post Exposure Bake (PEB)	115°C, 60sec
Development	0.26N TMAH, 45 – 60 second puddle
Hardbake (optional)	115°C, 60sec
Removal	KL Photoresist Remover / NMP / DMSO-based strippers

COAT

Film thickness is targeted using the spin speed curves shown in Figure 3. Spin curves are determined using 6-inch Si and static dispense of approximately 4 ml of KL IR 15 resist.

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



RESIST REMOVAL

KL image reversal resist can be removed using KL Photoresist Remover or any 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 4–21ºC. Keep developer away from oxidizers, acids, bases and sources or ignition.

HANDLING & DISPOSAL

Consult the SDS for handling and appropriate PPE. KL IR 15 resist contains a combustible liquid; keep away from ignition sources, heat, sparks and flames. This developer 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.