KL IR LO 15

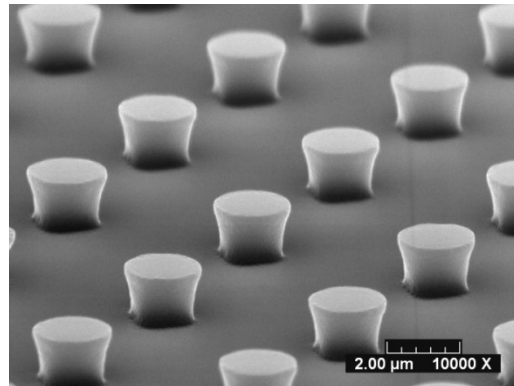
Image Reversal Lift-Off Photoresist for High Resolution

DESCRIPTION

KL IR LO 15 image reversal resist series can be processed as positive or negative in i-line, g-line and broadband applications. The resist is designed for lift-off profiles when used as negative photoresist. KL IR LO 15 can replace AZ® 5214E.

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 lift-off



Film Thickness	1.5 microns
Broadband exposure	100 mJ/cm2
Develop time	45 seconds puddle (recommended)

POSITIVE RESIST MODE PROCESSING GUIDELINES

Softbake	105°C, 90sec
Exposure	Broadband (120 mJ/cm^2); i-line, g-line
PEB	115°C, 60sec
Development	0.26N TMAH, 45 – 60 sec puddle
Removal	KL Photoresist Remover / NMP / DMSO-based strippers

NEGATIVE RESIST MODE PROCESSING GUIDELINES

Softbake	105°C, 90sec
Exposure	Broadband (100 - 180 mJ/cm^2); i-line, g-line
Reversal bake*	130°C, 120sec
Flood exposure	200 mJ/cm^2 (broadband)
Development	0.26N TMAH, 45 – 60 sec puddle
Hardbake (optional)	130°C, 60sec
Removal	KL Photoresist Remover / NMP / DMSO-based strippers

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COAT

Film thickness is targeted using the spin speed curves shown in Figure 2. Spin curves are determined using 6-inch Si and static dispense of approximately 4 ml of KL IR LO 15 resist.

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

Figure 2. KL IR LO 15 resist film spin curve

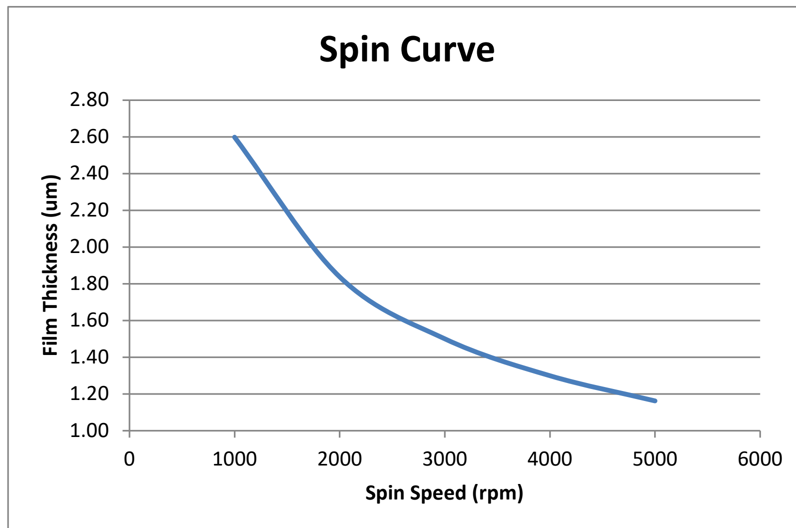
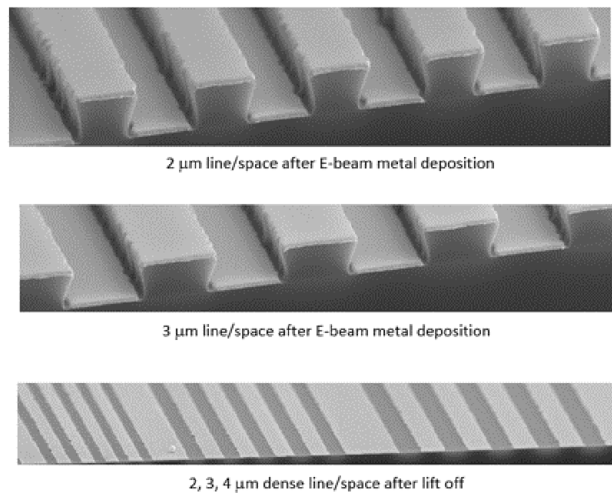


Figure 3. Gold deposition and lift-off process



2 µm line/space after E-beam metal deposition

3 µm line/space after E-beam metal deposition

2, 3, 4 µm dense line/space after lift off

Film Thickness of photoresist	1.5 µm
Film Thickness of Gold	150 nm
Adhesion Layer	Ti

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REVERSAL BAKE (CRITICAL)

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 (NOT CRITICAL)

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.

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 LO 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.

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