KL7000 Series

Positive Photoresist

PFAS-Free – Contains no PFAS or Fluorine compounds

Film Thickness 0.15-3.0 microns

DESCRIPTION

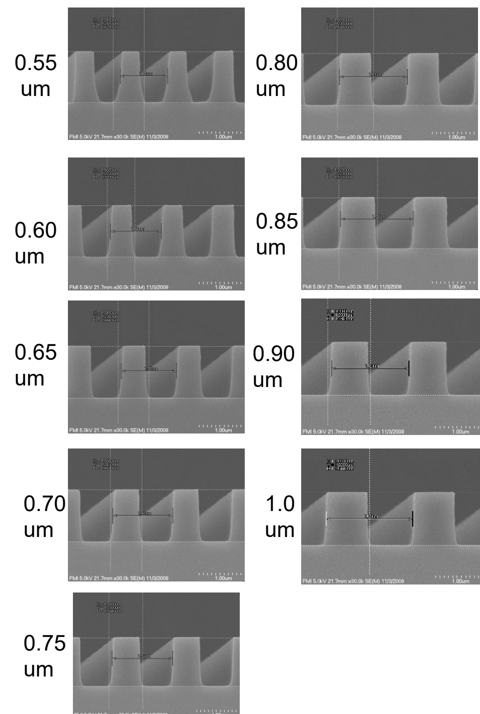
KL7000 series are positive photoresists for use in i-line, g-line and broadband applications. They offer high sensitivity, high resolution and wide process latitude.

The KL7000 system is engineered to contain no PFAS and no Fluorine containing materials for environmental safety and demanding regulatory compliance.

- Single coat coverage 0.15 – 3.0 µm
- Designed for use with industry standard MIF and MIB developers; optimized for 0.26N TMAH
- Achieve resolution 0.55 µm dense line/space and 0.40 µm isolated line
- Competes with S1800™, AZ®1500, and other general use positive tone photoresist

FEATURES

Tone:	Positive
Film Thickness:	0.15 – 3.0 µm
Sensitivity:	NUV, Broadband, i-line, h-line, g-line
Developer:	TMAH-based
Remover:	NMP, DMSO at 50–80°C
Products:	KL7002-TF, KL7005, KL7010, KL7015, KL7020



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

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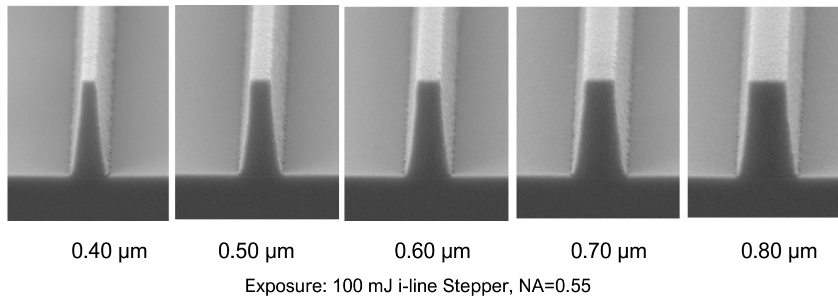
PROCESSING GUIDELINES

<table>
<tr><th>Product</th><th>Film Thickness Range (microns)</th><th>Softbake</th><th>Exposure
Broadband/NUV on Si</th><th>Post Exposure Bake (PEB)</th><th>Develop
0.26N TMAH</th><th>Hardbake
Recommended</th></tr>
<tr><td>KL7002-TF</td><td>0.15 - 0.30 µm</td><td rowspan="5">105°C for 1 min</td><td>50 mJ/cm^2</td><td rowspan="5">115°C for 1 min</td><td rowspan="5">30 secs immersion</td><td rowspan="5">110°C for 1 min</td></tr>
<tr><td>KL7005</td><td>0.4 -1.0 µm</td><td>40 mJ/cm^2</td></tr>
<tr><td>KL7010</td><td>0.7 – 1.5 µm</td><td>35 mJ/cm^2</td></tr>
<tr><td>KL7015</td><td>1.2 – 2.5 µm</td><td>30 mJ/cm^2</td></tr>
<tr><td>KL7020</td><td>1.5 – 3.0 µm</td><td>50 mJ/cm^2</td></tr>
</table>



0.40 µm 0.50 µm 0.60 µm 0.70 µm 0.80 µm

Exposure: 100 mJ i-line Stepper, NA=0.55

SUBSTRATE PREPARATION

For maximum adhesion, substrates should be clean and dry prior to applying the KL7000 photoresist. HMDS primer is recommended with oxide-forming substrates (Si, etc.). Vapor Prime or use KemLab KL Spin-on Primer 80/20.

KL7000 adheres to a variety of substrates; including silicon, copper, gold, glass, aluminum, and chromium.

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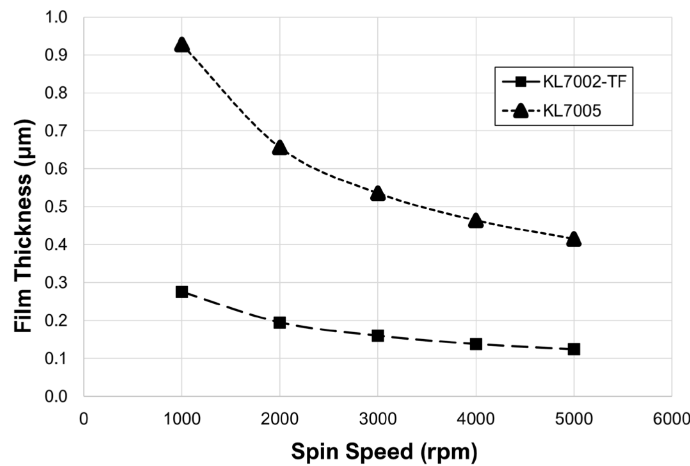
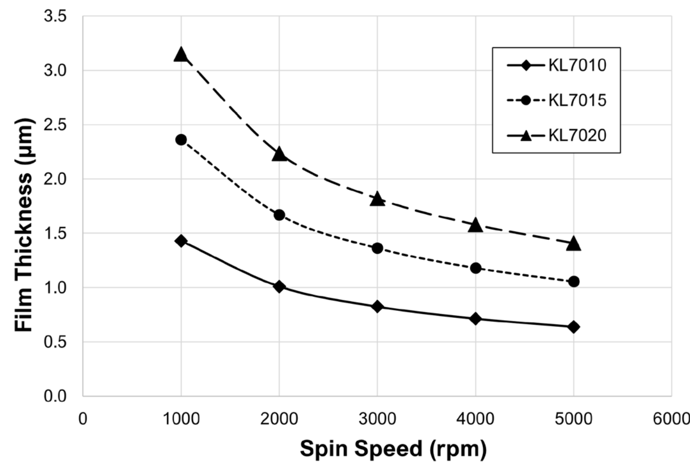
COAT

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 KL7000 photoresist.

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

Product	Film Thickness Range (microns)	Viscosity (cst)
KL7002-TF	0.15 - 0.3	~2
KL7005	0.4 – 1.0	~ 4
KL7010	0.7 -1.5	~ 7
KL7015	1.2 - 2.5	~14
KL7020	1.5 – 3.0	< 30





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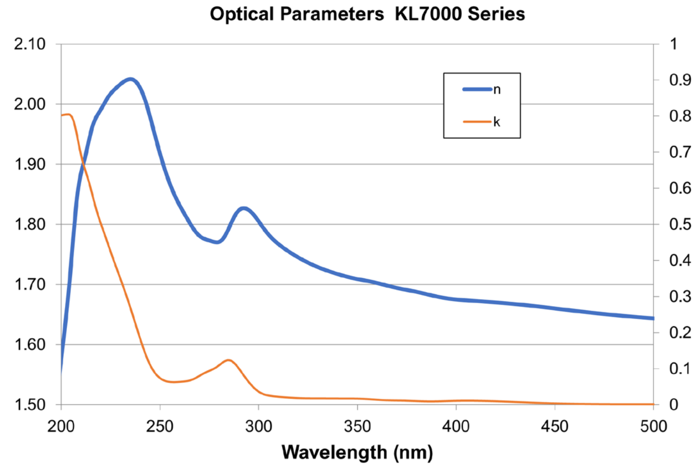
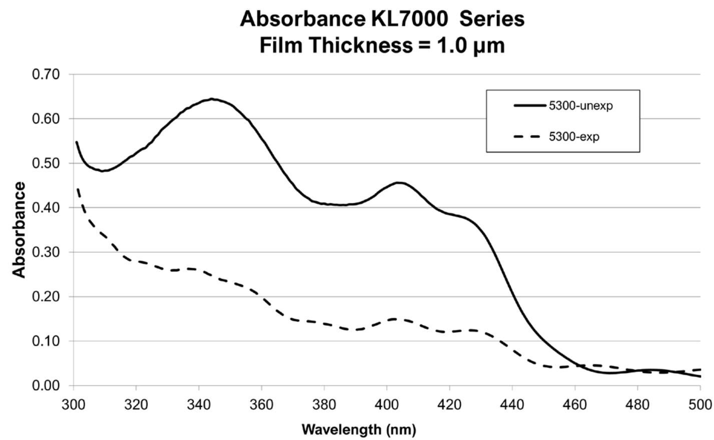
SOFTBAKE

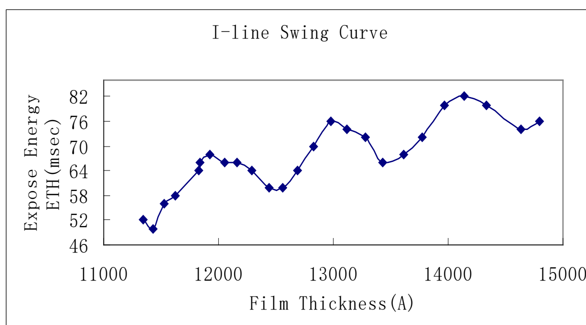
Recommended softbake contact hotplate temperature is 90-105°C. Typical bake time is 60 seconds.

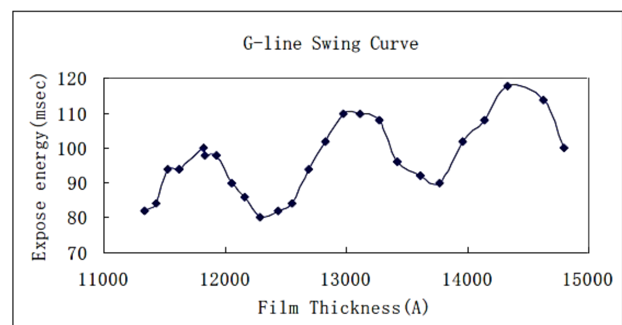
EXPOSURE & OPTICAL PARAMETERS

KL7000 is suitable for i-line, h-line, g-line exposure, broadband, and NUV. Refractive index, swing curves and absorbance are shown below.









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POST-EXPOSURE BAKE (PEB)

Recommended bake on contact hotplate at 115ºC for 60 seconds for optimal lithographic results.

DEVELOP

KL7000 is optimized for use with 0.26N TMAH developer. KL7000 Series can be used with Metal Ion Free (MIF) and Metal Ion Bearing (MIB) developers.

RESIST REMOVAL

KL7000 PFAS-free photoresist can be removed using a wide variety of industry standard removers (such as NMP / DMSO / KL Photoresist Remover).

STORAGE

Avoid light and store in an upright airtight container at 4–21ºC or room temperature. If refrigerated, bring up to room temperature before opening. Keep resist away from oxidizers, acids, bases and sources of ignition.

HANDLING & DISPOSAL CONSIDERATIONS

Consult the SDS for handling and appropriate PPE. KL7000 photoresist contains a combustible liquid; keep away from ignition sources, heat, sparks and flames. This KL7000 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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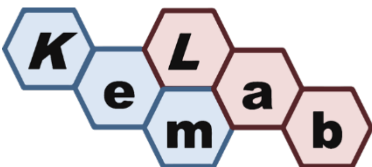

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