Brewer Science ARC®DS-K101 Coating

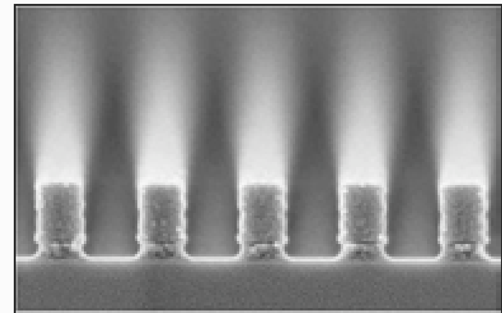
Developer Soluble 248nm Anti-Reflective Coating

Brewer Science ARC®DS-K101 anti-reflective coating is a second-generation developer-soluble bottom anti-reflective coating (BARC) from Brewer Science. It is specially formulated to meet the needs of KrF photolithography for a BARC and to augment the effectiveness of the thin photoresist used in implant applications. The use of a developer-soluble BARC can improve throughput while reducing the cost of ownership of DUV processing.

ARC®DS-K101 Coating Features

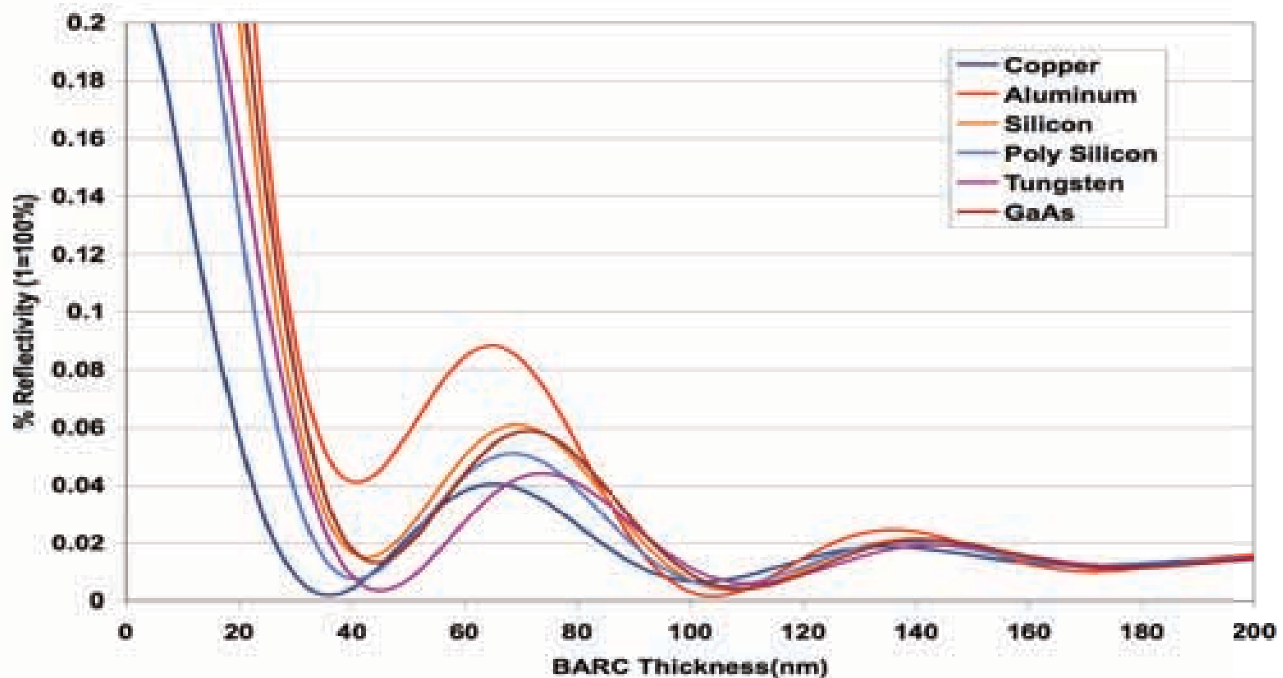
- Soluble in standard 2.38% TMAH developer
- Compatible with ESCAP and acetal photoresist
- Very low sublimation/outgassing - 50% less than conventional DUV BARC
- Demonstrated performance at 0.18-µm design rules.

ARC®DS-K101 Coating ESCAP Photoresist

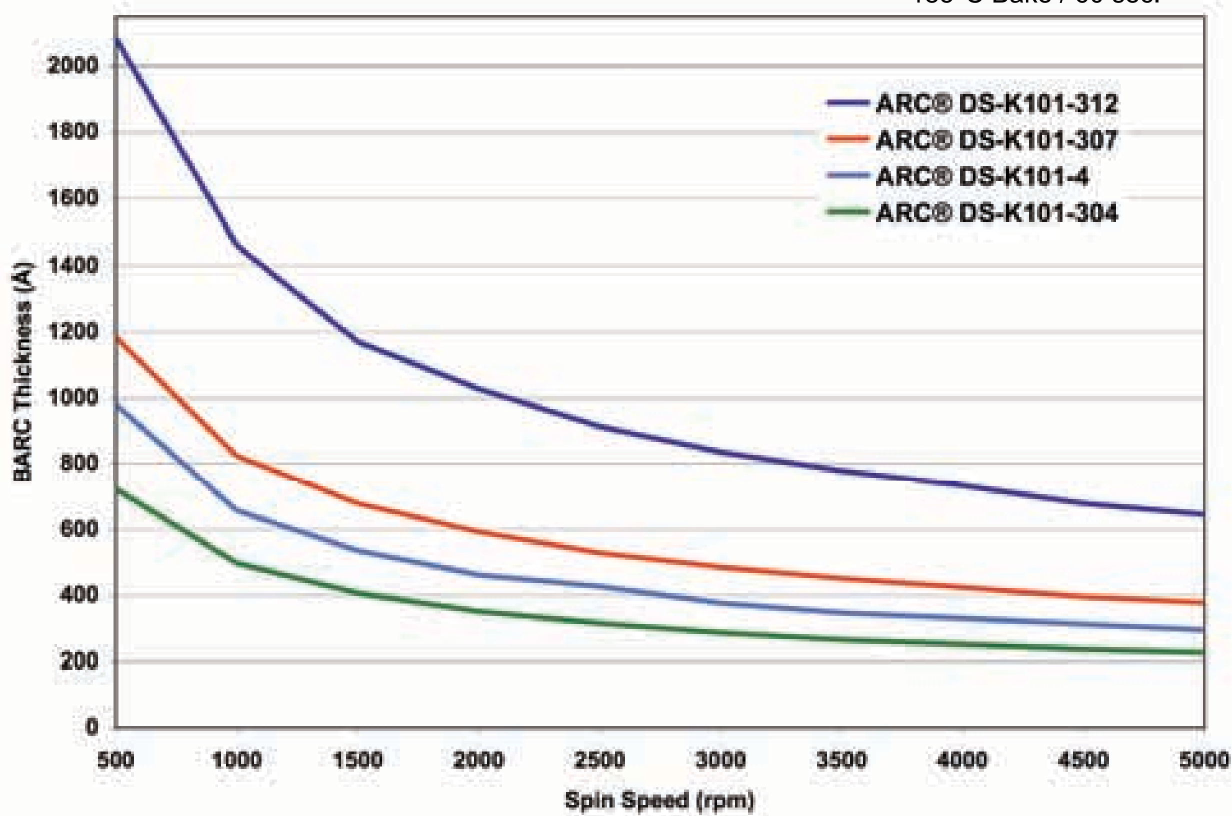


Photoresist: M230Y
220nm, 21mJ, 0.0 Focus
0.18µm Feature Size

ARC®DS-K101 Coating Reflectivity



Brewer Science ARC®DS-K101 Coating Spin Speed Curves



Thickness at 185°C/60 seconds

ARC®DS-K101-312 coating:	1200 Å at 1500 rpm
ARC®DS-K101-307 coating:	700 Å at 1500 rpm
ARC®DS-K101-304 coating:	400 Å at 1500 rpm
ARC®DS-K101-4 coating:	400 Å at 2500 rpm

Brewer Science ARC®DS-K101 Coating Properties

Optical Properties:

n at 248 nm	1.76
k at 248 nm	0.42
n at 633 nm	1.60
Cauchy A	1.56
Cauchy B	1.86E-2
Cauchy C	0

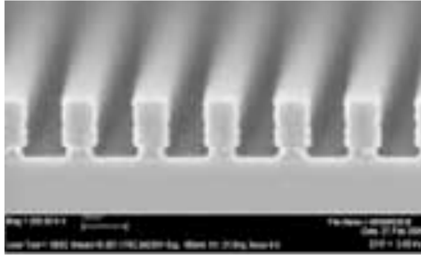
Ions: AL, K, CU, Mg, Mn	<25 ppb
Ions: Fe, Ca, Na	<50 ppb

Shelf Life: 365 days at -2°C

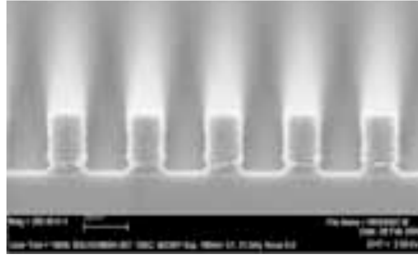
Flash Point: 32°C (90°F)

Brewer Science ARC® DS-K101 Coating Lithography with M230Y

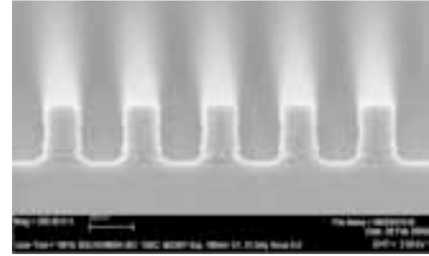
Bake Matrix: Best dose to size, 180-nm L/S, 0.0 focus, 60-second develop



180˚C



185˚C



190˚C

Resist thickness: 220 nm; PEB/PAB:130°C for 60 seconds; BARC thickness: 0 nm

Processing Conditions

Coat: ARC®DS-K101 coating is applied by a spin-coating process. Apply with dynamic dispense at 700 rpm and immediately (no spread spin) ramp to final spin speed of 1500 or 2500 rpm for 60 seconds. Use standard EBR and backside process at 1500 rpm or less with a standard photoresist and EBR solvent.

Bake: Single-stage hotplate bake at 175°C to 190°C for 60 seconds.

Resist Coat: Resist can be applied over ARC®DS-K101 coating without any modification to the standard resist spin or bake process. Adhesion promoter is not recommended.

Exposure: Standard exposure conditions for DUV photoresists.

Resist Development: Use a standard photoresist development process. ARC®DS-K101 coating can be developed with the photoresist.

Note: All processes need to be optimized for your conditions and applications.

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