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 Reflectivity
**Brewer Science ARC®DS-K101 Coating Spin Speed Curves**

185°C Bake / 60 sec.

**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
- 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.*