ARC i-CON®
365nm Anti-Reflective Coating

The i-CON series of anti-reflective coatings have been specifically designed for superior coverage over high topography. The materials have excellent optical properties for the control of substrate reflectivity and the enhancement of CD resolution and control. i-CON can be used to achieve feature sizes of < 0.25\(\mu m\).

i-CON’s formulation combines the features of high conformality and fast etch rates. It has about a 30% faster etch rate than most advanced i-line photoresists.

**ARC i-CON Features**
- Reflectance on Poly Silicon with 70nm coating - ~ 1.0%
- 20°C bake range (170-190°C)
- Spin bowl compatible BARC
- ≤300nm - 350nm resolution nodes
- Highly conformal on 5,000Å and 7,000Å topography

**Optical Properties @ 365nm**
Units measured in microns

\[
\begin{align*}
    n & = 1.81 \\
    k & = 0.37 \\
    \text{Cauchy’s Coefficient} & = 1.587 \\
    A & = 1.3E-02 \\
    B & = 1.8E-03
\end{align*}
\]

Sub = i-CON –16 1600Å
Resist = Sumitomo PFI-88
PAB = 90° C/ 60 sec
PEB = 110° C / 60 sec
Expo = NA = .57, s = 0.6
Dev = SOPD, 60 sec
SEMS compliments of Sumitomo Chemical Co., Ltd.
ARC i-CON® Reflectivity Curve

ARC i-CON® Spin Speed Curve
**ARC i-CON® Processing Conditions**

- Coat: i-CON is applied by a spin coat process. Apply with dynamic dispense at 700 rpm and immediately (no spread spin) ramp to final 2500 rpm spin 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 range of 170°C to 190°C for 60 seconds.
- Resist Coat: Resist can be applied over i-CON without any modification to the standard resist spin or bake process. Adhesion promoter is not recommended.
- Exposure: Standard exposure conditions for i-line photoresists.
- Resist Development: Use a standard photoresist development process.
- Dry Etch: i-CON can be dry etched using a number of plasma etch methods; including: O₂, O₂/CHF₃/Ar, C₂F₆, Cl₂, or HCl.
- i-CON can be removed by an oxidizing plasma or an oxidizing solvent strip process.

**ARC i-CON® Etch Rate Graph**

**ARC i-CON® Typical Properties**

**Generic Properties:**
- Ions (Al, Cu, Mg, Mn, K) <25ppb
- Ions (Ca, Fe, Na) <50ppb
- Shelf Life @ 21°C ± 5°C 12 months
- Percent Water ≤0.1%
- Liquid Particles 0.3mm/ml ≤20/ml

**Product Specific Properties**

<table>
<thead>
<tr>
<th>Thickness (Å) @ 2500 rpm</th>
<th>ARC i-CON-7</th>
<th>ARC i-CON-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bake range 170 - 190°C</td>
<td>700Å</td>
<td>1600Å</td>
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</tbody>
</table>

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