

XHRiC

I-Line Anti-Reflective Coating

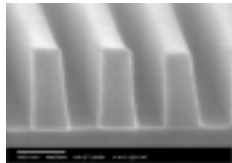
The XHRiC series of anti-reflective coatings has been specifically designed for advanced i-line dry patterning processes. The materials are highly absorbent with n-values of 1.81 and k-values of 0.34, providing excellent CD control by eliminating standing waves and reflective notching. These highly robust products have been successfully utilized in a wide range of processes at poly, gate and metalization levels for 0.25µm design rules.

XHRiC Features

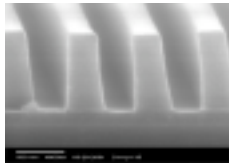
- Proven compatibility with nearly all i-line resists
- Demonstrated with the newest generation of resists
- Planar, thermal crosslinking BARC
- Spin bowl, drain compatible with EBR processes
- Optical properties are optimized for i-line performance
- Ultra low particle counts
- Low metal ions.

Optical Properties

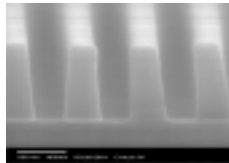
units measured in microns
 $n = 1.81$ $k = 0.34$
 Cauchy
 $A = 1.618$ $B = 9.08E-3$ $C = 2.9E-3$



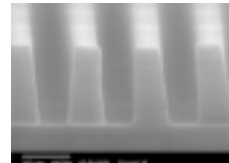
0.0 Focus



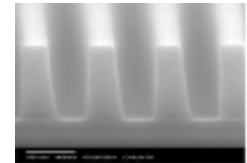
+0.1 Focus



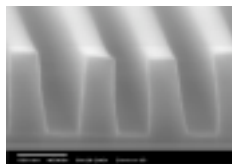
+0.2 Focus



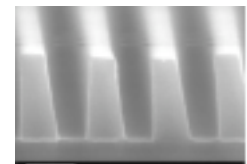
+0.3 Focus



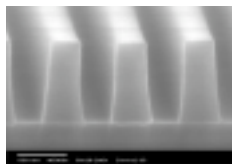
+0.4 Focus



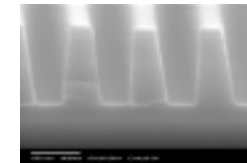
-0.1 Focus



+0.5 Focus



-0.2 Focus



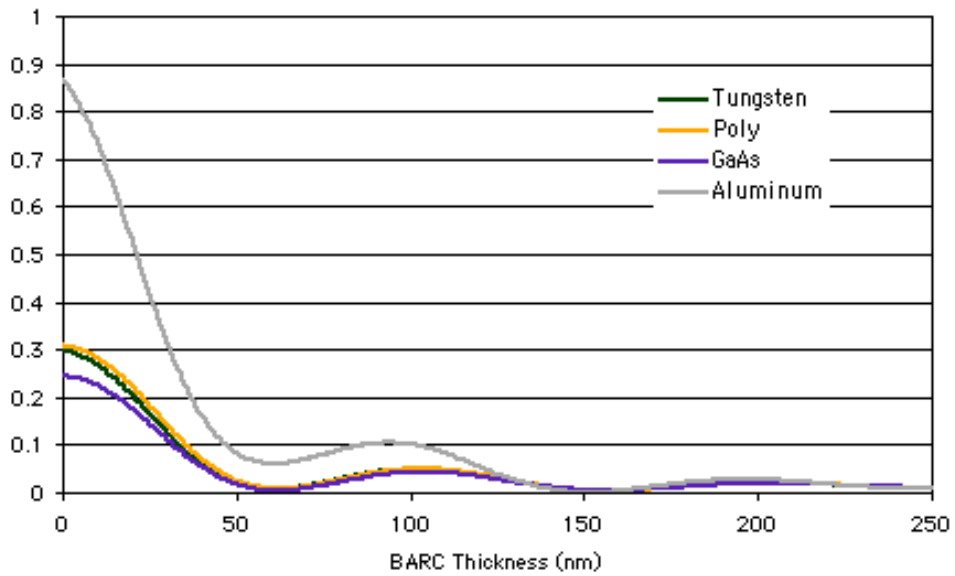
+0.6 Focus

Processing Conditions

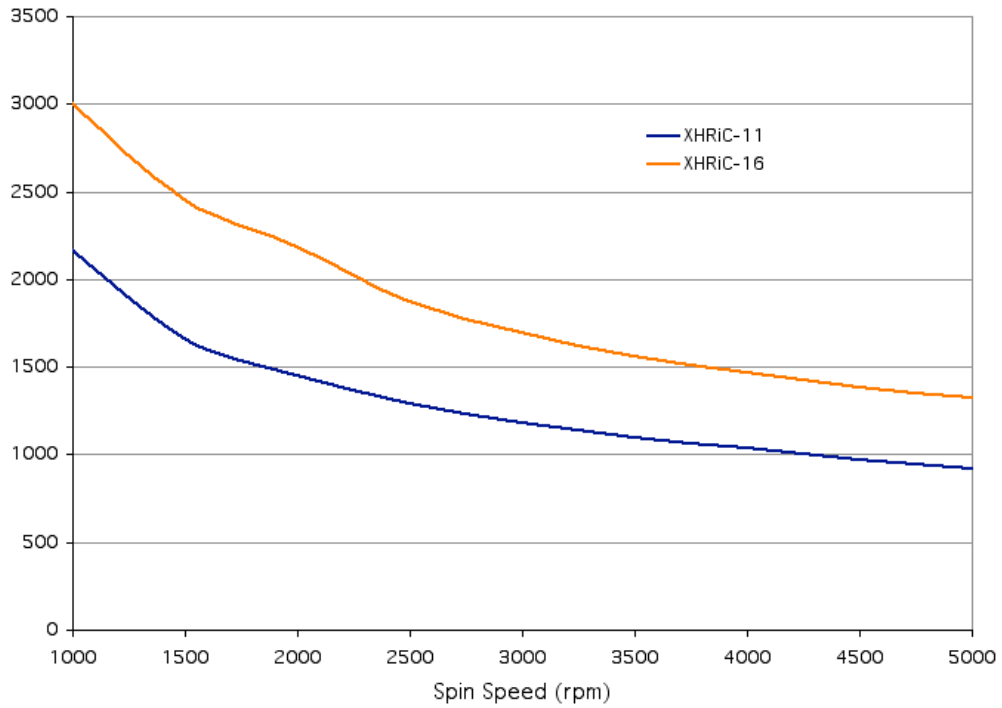
BARC Thickness: 160nm
 BARC Bake: 175°C/ 60sec
 Exposure: 220mJ/cm²
 Photoresist: Arch Chemical@OiR620
 Photoresist Thickness: 990nm

XHRiC Reflectivity Curve

Reflectivity
(0.1 = 10%)



XHRiC Spin Speed Curve



XHRiC Typical Properties

Generic Properties:	XHRiC-11	XHRiC-16
Thickness (Å) @3500rpm, 175°C	1100±50	1600±50
Normalized Film Absorbance	0.59±0.05	0.85±0.06
Ions (Al, Cu, K)	<20ppb	<25ppb
Ions (Ca, Fe, Na)	<50ppb	<50ppb
Shelf Life @21°C	1 year	1 year

XHRiC Processing Conditions

- XHRiC is applied by a spin coat process. Apply with dynamic pump dispense in a range from 2600 - 2900 rpm and immediately (no spread spin) ramp to final 2000-5000 rpm spin for 30 seconds. Use standard EBR and backside process at 1500 rpm or less with and standard photoresist EBR solvent.
- Bake: Single stage hotplate bake at 175°C ± 20°C for 60 seconds.
- Resist Coat: Resist can be applied over XHRiC without any modification to the standard resist spin or bake process. Adhesion promoter is not recommended.
- Exposure: In most applications, exposure dose may need to be increased from that of a stand alone resist process by 20-50% due to a reduction in reflected light.
- Resist Development: Use a standard photoresist development process.
- Dry Etch: XHRiC can be dry etched using a number of plasma etch methods; including:
O₂, O₂/CHF₃/Ar, C₂F₆, Cl₂, N₂/O₂, O₂/HBr and HCl.
- Stripping: XHRiC can be removed by an oxidizing plasma or an oxidizing solvent strip process.

Brewer Science Contact Information

2401 Brewer Drive
Rolla, Missouri 65401 U.S.A.
t. 573.364.0300 f. 573.364.6880
www.brewerscience.com

Brewer Science, Ltd.
Wells House, Stephenson's Way
Wyvern Business Park
Derby, DE21 6LY - England
t. 44.1332.545888 f. 44.1332.545878

Brewer Science Asia, Ltd.
1902A, The Centrium
60 Wyndham Street, Central
Hong Kong, SAR - China
t. 852.2501.4322 f. 852.2501.4311

All statements, technical information and recommendations contained herein are based on tests we believe to be accurate, but the accuracy or completeness thereof is not guaranteed and the following is made in lieu of warranty expressed or implied. Neither the seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising from the use or inability to use the product. Before using, user shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of the seller and manufacturer.

ARC®, I-CON® are registered trademarks of Brewer Science, Inc.®, Rolla, Missouri, USA, WIDE, Wet i, IMBARC, NEXT and Wet I applications are pending.

F.6.6.0019.C1
Effective Date 08/17/2009

www.brewerscience.com

ARC
Page 3