

AZ[®] 3300 Series Crossover Photoresists

Description

AZ[®] 3300 series positive photoresists are designed to meet the industry's need for high performance g- and i-line crossover capabilities. They exhibit excellent depth of focus, linearity, and photospeed for all crossover applications. They are thermally stable up to 125°C and provide wide process latitudes for trouble-free lithography.

The photoresist series is manufactured under stringent controls resulting in extremely low trace metals and particulate levels. Performance enhancement can be achieved in combination with AZ[®] 917 MIF developer.

Various viscosity grades are available to accommodate a wide variety of demanding applications.

Features

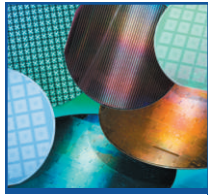
- Sensitive to g-,h-, and i-line wavelengths
- Wide process latitude; relative insensitivity to bake conditions, develop times, and develop temperatures
- Compatible with inorganic and organic developer (with and without surfactants)
- Thermally stable to 125°C
- Good depth of focus, linearity, and photospeed for crossover applications
- Excellent value (low cost of ownership) for high performance

Product Line Overview

- AZ[®] 3312 Photoresist (18 cps)
 - ✦ High performance in g-and i-line
 - ✦ High thermal stability
 - ✦ Excellent adhesion in wet etch processes
- AZ[®] 3318-D Photoresist (30 cps)
 - ✦ Variety of g-line, i-line, and broadband applications on reflective substrates
 - ✦ Excellent performance for geometries > 0.50 μm
 - ✦ Performance enhanced with AZ[®] 917 MIF developer double puddle process
 - ◆ Depth of focus increased by 30%
 - ◆ Exposure latitude increased by 25%

Recommended Process

Softbake:	90 - 110°C, 60 - 90 sec
Exposure:	g-, h-, and i-line stepper or broadband exposure source
Post-Exposure Bake: (Where Necessary)	110°C, 60 - 90 sec
Develop Cycle:	Spray/Puddle Process—AZ [®] 300 MIF Developer, 60 sec spray/puddle Double Puddle Process—AZ [®] 917 MIF Developer, 52 sec double puddle



AZ[®] 3300 Series Crossover Photoresists



Modeling Parameters

AZ[®] 3312 Photoresist (18 cps)

Refractive Index	365 nm	405 nm	435 nm
Unbleached			
n	1.7082	1.6888	1.693
k	0.0333	0.0336	0.0217
Bleached			
n	1.6906	1.6655	1.6514
k	0.0013	0.0003	0.0006
Cauchy Coefficients	A	B	C
Unbleached	1.6005	0.011334 μm^2	7.43 x 10 ⁻⁴ μm^4
Bleached	1.5869	0.011818 μm^2	3.90 x 10 ⁻⁶ μm^4
Dill Parameters	A	B	C
i-line	1.139 μm^{-1}	0.0762 μm^{-1}	0.0264 cm^2/mJ
g-line	0.6695 μm^{-1}	0.0172 μm^{-1}	0.0186 cm^2/mJ

AZ[®] 3318-D Photoresist (30 cps)

Refractive Index	365 nm	405 nm	435 nm
Unbleached			
n	1.7047	1.6863	1.6910
k	0.03583	0.03587	0.02420
Bleached			
n	1.6972	1.6704	1.6567
k	0.00368	0.00348	0.00433
Cauchy Coefficients	A	B	C
Unbleached	1.6018	0.00709 μm^2	0.0021558 μm^4
Bleached	1.6003	0.00177 μm^2	0.0032067 μm^4
Dill Parameters	A	B	C
i-line	1.1237 μm^{-1}	0.1346 μm^{-1}	0.0270 cm^2/mJ
g-line	0.6329 μm^{-1}	0.1348 μm^{-1}	0.0189 cm^2/mJ



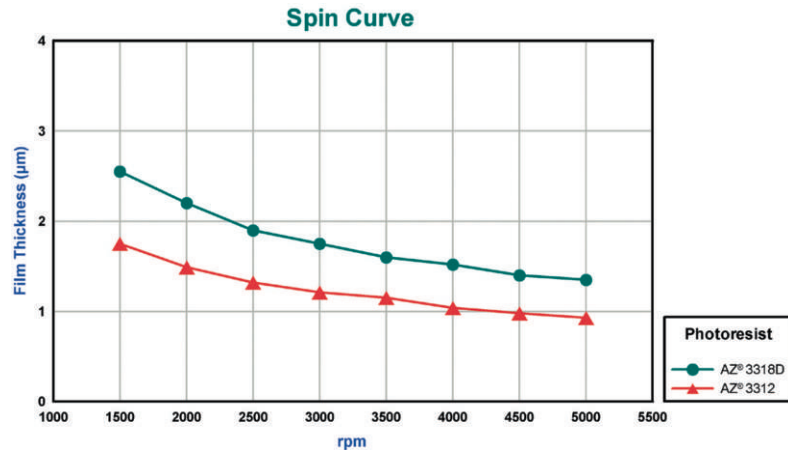
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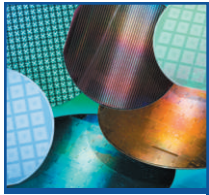


Performance Summary

	AZ [®] 3312 Photoresist		AZ [®] 3318-D Photoresist	
	i-line	g-line	i-line	g-line
Exposure				
Film Thickness (μm)	1.076	1.17	1.83	1.749
Resolution (μm)	0.55	0.7	0.55	0.7
Focus Latitude (μm)	>1	>1.8	0.8	1.8

Performance

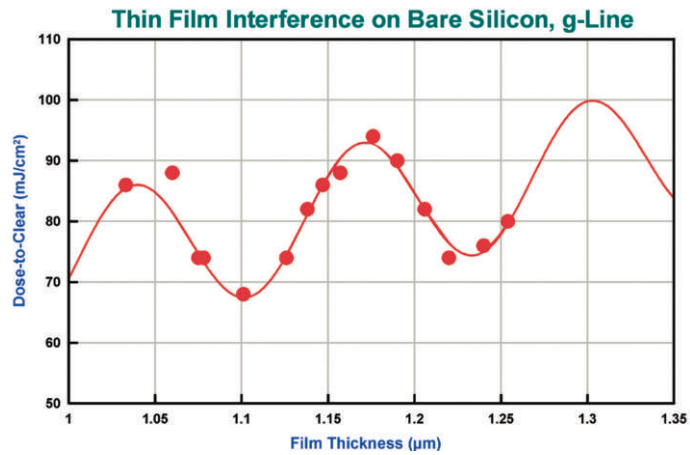
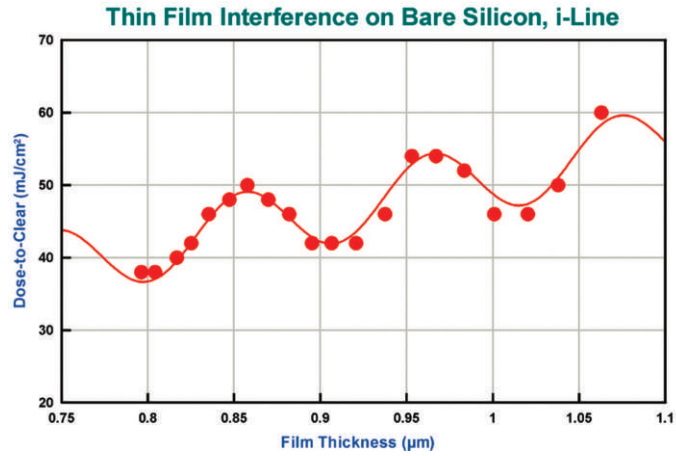


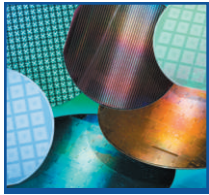


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Performance of AZ[®] 3312 Photoresist (18 cps)





AZ[®] 3300 Series Crossover Photoresists

Companion Products

Wafer Prime:	AZ [®] Adhesion Promoter
Antireflective Coating:	AZ [®] BARLi [®] II and AZ [®] HERB [™] Bottom Antireflective Coatings
Edge Bead Process:	AZ [®] EBR 70/30 Edge Bead Remover
Develop Cycle:	AZ [®] 300 MIF, 917 MIF, and 726 MIF Developers
Stripping:	AZ [®] 300T and 400T Strippers

Solvent Safety

AZ[®] 3300 series photoresists are formulated using a mixture of propylene glycol monomethyl ether acetate (PGMEA) and ethyl lactate solvents. PGMEA is patented for use in photoresists by AZ Electronic Materials (U.S. patent numbers 4,550,069; 5,006,651; and 5,143,814 as well as foreign patents).

Equipment Compatibility

AZ 3300 series photoresists are compatible with all commercially available wafer and photomask processing equipment. Recommended materials of construction include stainless steel, glass, ceramic, PTFE, polypropylene, and high density polyethylene.

Storage

Keep in sealed original containers away from oxidants, sparks, and open flames. Protect from light and heat. Keep refrigerated. Empty container may contain harmful residue and vapors.

Handling Precautions/First Aid

Refer to the current Material Safety Data Sheet (MSDS) for detailed information prior to handling.



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