AZ® 9200

Thick Film Photoresist

Description

AZ® 9200 thick film photoresist is designed for the more demanding higher-resolution thick resist requirements. It provides high resolution with superior aspect ratios, as well as wide focus and exposure latitude and good sidewall profiles.

AZ 9200 photoresist is available in four viscosity grades for film thicknesses of 2 to 24 µm. It is sensitive in both h- and i-line, so it can be used with broadband and i-line steppers. Critical dimension resolutions range from less than 1 µm lines and spaces at a film thickness of 4.6 µm, to 3.5 µm lines and spaces at a film thickness of 24 µm on silicon using broadband tools. Aspect ratios of 8:1 can be achieved in i-line exposure.

Under the guidance of leading thin film recording head manufacturers, AZ 9200 photoresist has been optimized for both coil plating and top pole thin film recording head applications. It is also suitable for many IC device processes, including metal etch mask and pad layer applications.

AZ 9200 photoresist can be used as a higher resolution replacement for AZ P4000 photoresist. It can be processed on the same exposure tools using similar processing conditions. It is developed from the same chemistry and has similar curing, electrical, and thermal properties.

Companion Products

Developers

Inorganic developers based upon potassium hydroxide are recommended. The preferred developer is AZ® 400K developer 1:4, which is buffered and designed to maximize bath life and process stability. It can be used for both spray and immersion processes. For IC applications, TMAH developers such as AZ® 300 MIF developer can be used.

Features	Benefits
Superior resolution with high aspect ratios	• Achieve sub-micron critical dimensions with aspect ratios of 6:1 in broadband exposure and 8:1 in i-line exposure
Excellent focus and exposure latitude	• Improved process yields • Reduced rework
Available in viscosities that allow coating thicknesses up to 24 µm	• Single resist series that applies to wide range of applications
Formulated from AZ Electronic Materials' extensive photoresist chemistries	• Coat, bake, and develop using AZ® P4000 photoresist-type processes • Provides stable films with excellent adhesion for plating and wet etch applications
Cast in PGMEA "safer" solvent with no co-solvent	• Toxicity hazard is extremely low • Provides excellent coating properties

Example of a Recommended Process (6 µm Lines and Spaces in 24 µm Photoresist Thickness on Silicon)

First Coat	Target 10 µm film thickness
First Softbake	110°C, 80 sec
Second Coat	Target 24 µm total film thickness
Second Softbake	110°C, 160 sec
Exposure Dose (10% bias)	2100 mJ/cm^2, Ultratech Stepper® model 1500
Post-Exposure Bake	Not necessary in most applications
Developer	AZ® 400K developer 1:4
Develop Cycle	260 sec spray, 27°C

Recommendations on a single-coat 24 µm process are also available.

Example of a Recommended Process (1.4 µm Lines and Spaces in 4.6 µm Photoresist Thickness on Silicon)

Softbake	110°C, 120 sec
Exposure Dose (10% Bias)	1100 mJ/cm^2, Ultratech Stepper® model 1500
Post-Exposure Bake	Not necessary in most applications
Developer	AZ® 400K developer 1:4
Develop Cycle	180 sec spray, 27°C

Strippers
AZ® 400T and 300T strippers are recommended for removal of AZ® 9200 photoresist. AZ® S-46 stripper is a non-NMP solvent stripper particularly suited to thin film recording head applications.

Edge Bead Removers
AZ® EBR 70/30 and AZ® EBR solvent are recommended for both front- and back-side edge bead removal.

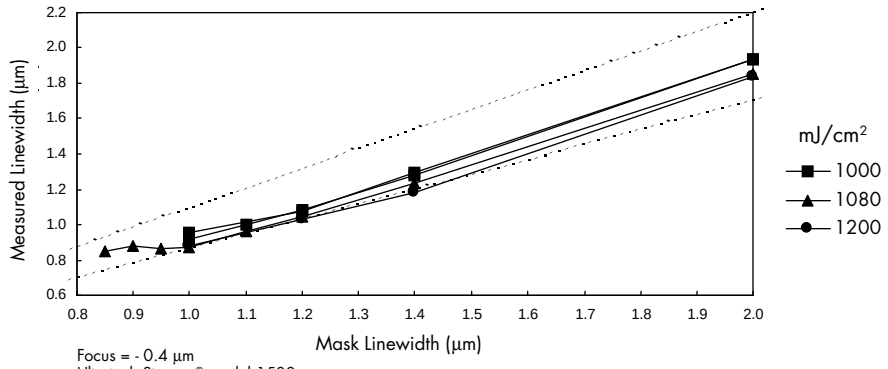
Solvent Safety
AZ 9200 photoresist is formulated with propylene glycol monomethyl ether acetate (PGMEA), a safer solvent patented by Clariant AG for use in photoresists (U.S. patent number 4,550,069). This is one of the safest and most thoroughly tested solvents in the industry.

Equipment Compatibility
AZ 9200 photoresist is 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 container. Protect from light and heat. Store between 30 and 75°F (-1 and 24°C). Refrigerate whenever possible. Refrigeration may extend shelf life. Empty container may contain harmful residue and vapors.

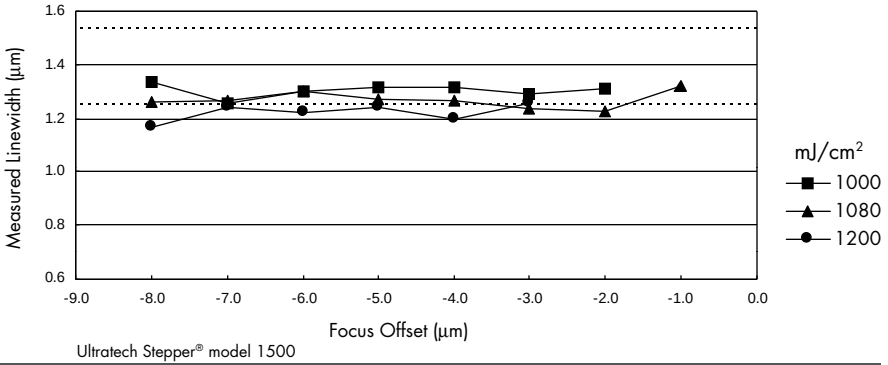
Handling Precautions/First Aid
Refer to the current Material Safety Data Sheet (MSDS) for detailed information prior to handling.

Mask Linearity on Silicon
4.6 µm Thickness



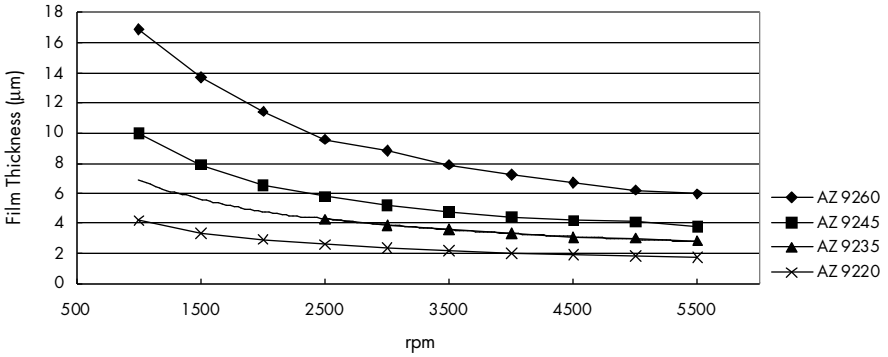
Focus = - 0.4 µm
Ultratech Stepper® model 1500

Focus Latitude on Silicon
4.6 µm Film Thickness
1.4 µm Lines and Spaces



Ultratech Stepper® model 1500

Spin Curve



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Tokyo 81-3-5977-7937

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Product List

Product Code	Product Name	Package
702L3021	AZ® 9260 Photoresist 520 cp	poly gallon bottles
702L4911	AZ® 9260 Photoresist 520 cp	10-liter NOWPAK® containers
702M3021	AZ® 9245 Photoresist 220 cp	poly gallon bottles
702M4911	AZ® 9245 Photoresist 220 cp	10-liter NOWPAK® containers
704A3021	AZ® 9235 Photoresist 115 cp	poly gallon bottles
704A4911	AZ® 9235 Photoresist 115 cp	10-liter NOWPAK® containers
703F3021	AZ® 9220 Photoresist 50 cp	poly gallon bottles
703F4911	AZ® 9220 Photoresist 50 cp	10-liter NOWPAK® containers