

AZ4620 Resist Photolithography (50 um)

INRF application note
Process name: AZ4620REPHOTO

Overview

This note is described here to realize thick (50 um) AZ4620 resist molds, which can be used for electroplating, with good resolution and reproducibility. The patterning of AZ4620 photoresist is performed by using a mask and a UV light contact aligner. This is a level-2 process; it requires super user instruction

Time needed

The baking step takes 1 hour, the exposure 12 minutes, and the development 10 minutes. The entire process needs approximately 1.5 hours.

Materials needed

AZ4620 photoresist
Mask
Developer solution
Glass container

Preparation

Make developer solution of 1 part AZ400KI and 4 parts DI water (by volume).

Procedure

The spin procedure is repeated three times to layer up a total thickness of 50 um

Place substrate on spinner chuck. Pour a puddle of AZ4620 on the center of the substrate to be coated

Spin on thick AZ4620 photoresist coatings on substrate by a one step spin process
At 1400 rpm for 40 seconds with an acceleration of 425 rpm/s

Bake the resist coatings at 90 deg C in an oven for 1 hour

Expose AZ4260 photoresist for 12 minutes using the Karl Suss aligner

Develop AZ4620 photoresist coatings for approximately 10 minutes. It is important to keep watching in order to avoid over-developing. Rinse the substrate completely with DI water followed by blow drying. Post-bake is not recommended since it causes distortion of the patterns due to reflow

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Inspect the patterned wafer to ensure that there is no residue and that all features have patterned properly

Clean up

Dispose the developer waste in a labeled container. Rinse all glassware with DI water. Spray the interior of the spinner with acetone. Wipe down the spinner with lint-free wipes, paying attention to the lid and the chuck.

Safety and emergency

All UNRF safety and procedural regulations must be followed. Review the INRF Standard Operating Procedures for fire, chemical spill, and chemical exposure. Photoresist and acetone are flammable chemicals. Do not store the photoresist or acetone near the hotplate or any other source of heat. Any small spills should be wiped up immediately with wipes. Dispose of the wipes in the flammable waste container.

In case of exposure to skin or eyes, flush immediately with water for 15 minutes. Remove all clothing that are exposed and flush with water. Report to INRF staff or EH&S. Seek medical attention to ensure that the burns are minimal. In case of large spill, follow the INRF Standard Operating Procedure for chemical spills.

References

Clairant product literature

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Checklist

The following checklist is designed to aid the researcher when performing this process.

Spin photoresist at 1400 rpm, 425 rpm/s for 40 seconds

Bake in 90 deg C oven for 2 minutes before next spin

Repeat for three total spins to get 50 um thickness

Bake photoresist at 90 deg C in an oven for 1 hour

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Expose photoresist for 12 minutes.

Develop photoresist for approximately 10 minutes in a developer solution of 1 part AZ400k and 4 parts DI water (by volume).

DI rinse and blow dry then inspect.

Clean up and dispose waste.