

AZ4620 Resist Photolithography (12 um)

INRF application note
Process name: AZ4620REPHOTO12

Overview

The process described here is to deposit thick (12 um) AZ4620 resist, which can be used as electroplating molds, 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 spin steps take approximately 20 minutes. The lithography (exposure and develop) take approximately 10-15 minutes. The entire process needs approximately half an hour.

Materials needed

AZ4620 photoresist
Mask
Developer solution
Glass container

Preparation

Make developer solution of 1 part AZ400K and 4 parts DI water (by volume)

Procedure

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

Spin on thick AZ4620 photoresist coatings on substrate by a one-step spin process at 2000 rpm for 40 seconds with an acceleration of 425 rpm/s to achieve approximately a thickness of 12 um. Bake the resist coatings at 90 deg C in an oven for 30 minutes.

Expose AZ4620 photoresist coatings for 1.5 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 at 90 deg C is optional. It is not recommended for thick films since it causes distortion of the patterns due to reflow.

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

Clean up

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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 INRF 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 hotplate or any other source of heat. Any small spills should be wiped up immediately with wipes. Dispose 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 spill.

References

Clariant product literature

AZ4620 Resist Photolithography

Checklist

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

Spin photoresist at 2000 rpm, 425 rpm/s for 40 seconds

Bake photoresist at 90 deg C in an oven for 30 minutes

Expose photoresist for 1.5 minutes

Develop photoresist for approximately 1.5 minutes in a developer solution of 1 part AZ400K and 4 parts DI water (by volume)

DI rinse and blow dry

Clean up and dispose of waste