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## NEGATIVE RESIST NR2-8000P

### NEGATIVE RESIST NR2-8000P

#### Description

- Negative Resist NR2-8000P is a negative tone photoresist designed for thick film applications and is compatible with UV exposure tools emitting at the 365 nm exposure wavelength, including wafer steppers, scanning projection aligners, proximity printers and contact printers.
- The following are the advantages of NR2-8000P over other resists:
  - superior resolution capability
  - high photospeed which translates into high exposure throughput
  - fast develop time
  - superior adhesion in plating and wet etching
  - easy resist removal in Resist Remover RR41
  - shelf life exceeding 1 year at proper storage temperatures.
- The formulation and processing of NR2-8000P were designed with regard to occupational and environmental safety. The principal solvent in NR2-8000P is gammabutyrolactone and development of NR2-8000P is accomplished in a basic water solution.

#### Properties

- ◆ Solids content (%) 45-50
- ◆ Principal solvent gammabutyrolactone
- ◆ Appearance light yellow liquid
- ◆ Coating characteristic uniform, striation free
- ◆ Film thickness:

Coating Spin Speed (rpm)	Spin Time (s)	1 <sup>st</sup> Soft Hotplate Bake Time (s) 80°C	2 <sup>nd</sup> Soft Hotplate Bake Time (s) 150°C	Post-Exposure Hotplate Bake Time (s) 80°C	Film Thickness (nm)
500	5	300 followed by 450		600	95000-105000
1000	5	300 followed by 120		300	47000-53000
2000	5	0	60	300	18000-22000
2500	40	0	60	180	9000-10000
3000	40	0	60	180	8000-8300
4000	40	0	60	180	6500-6800

- ◆ Sensitivity at 365 nm exposure wavelength (mJ/cm<sup>2</sup> for 1 µm thick film): 46
- ◆ Guaranteed shelf life at 5°C storage (years): 1

## Processing

1. Application of resist by spin coating at a selected spin speed for a time designated in film thickness vs. spin speed table on page 1.
2. Softbake procedure is determined by film thickness. Please refer to bake instructions on page 1.
3. Resist exposure in a tool emitting 365 nm wavelength. Please determine 365 nm exposure light intensity ( $\text{mW}/\text{cm}^2$ ) with a proper gauge. Multiply resist thickness ( $\mu\text{m}$ ) by  $46 \text{ mJ}/\text{cm}^2$  to obtain exposure dose. Divide exposure dose ( $\text{mJ}/\text{cm}^2$ ) by light intensity ( $\text{mW}/\text{cm}^2$ ) at 365 nm wavelength to obtain exposure time (s) on silicon substrates.
4. Post-exposure bake on hotplate at  $80^\circ\text{C}$  for a time depending on a film thickness. Please refer to bake instructions on page 1.
5. Resist development in Resist Developer RD6 by spray or immersion at  $20\text{--}25^\circ\text{C}$ . Please ensure that there is no exposed resist thickness loss during development. Exposed resist thickness loss during development would indicate improper exposure energy and/or bake conditions.
6. Resist rinse in deionized water until water resistivity reaches prescribed limit.
7. Drying of resist.
8. Removal of resist in Resist Remover RR41.

The above procedure refers to substrates that are good conductors of heat such as silicon, GaAs, InP, etc. Hotplate temperatures need to be adjusted such that surface temperature of substrates that are poor conductors of heat reach designated temperatures for softbake and post-exposure bake. Always use external thermocouples when measuring surface temperatures.

## Handling Precautions

Negative Resist NR2-8000P is a flammable liquid. Handle it with care. Keep it away from heat, sparks and flames. Use adequate ventilation. It may be harmful if swallowed or touched. Avoid contact with liquid, vapor or spray mist. Wear chemical goggles, rubber gloves and protective coating.