

## NEGATIVE RESIST NR9-1500P

### Description

- Negative Resist NR9-1500P is a negative tone photoresist designed for 365 nm wavelength exposure, using tools such as wafer steppers, scanning projection aligners, proximity printers and contact printers.
- These are the advantages of NR9-1500P over other resists:
  - superior resolution capability
  - fast photospeed
  - fast develop time
  - temperature resistance of up to 100°C
  - superior adhesion to substrates
  - easy resist removal in Resist Remover RR4
  - shelf life exceeding 3 years at room temperature storage.
- The formulation and processing of NR9-1500P were designed with regard to occupational and environmental safety. The principal solvent in NR9-1500P is cyclohexanone and development of NR9-1500P is accomplished in a basic water solution.

### Properties

- |   |                                 |
|---|---------------------------------|
| ◆ Solids content (%)  | 24-28                           |
| ◆ Principal solvent   | cyclohexanone                   |
| ◆ Appearance  | light yellow liquid             |
| ◆ Coating characteristic  | very uniform,<br>striation free |
| ◆ Film thickness after 150°C hotplate bake for 60 s.<br><u>Coating spin speed, 40 s spin (rpm):</u> | (nm)                            |
| 800   | 2850-3150                       |
| 1000  | 2565-2835                       |
| 2000  | 1805-1995                       |
| 3000  | 1425-1575                       |
| 4000  | 1235-1365                       |
| 5000  | 1140-1260                       |
| ◆ Sensitivity at 365 nm exposure wavelength (mJ/cm <sup>2</sup> for 1µm thick film)                 | 21                              |
| ◆ Guaranteed shelf life at 25°C storage (years)   | 3                               |

## Processing

1. Application of resist by spin coating at selected spin speed for 40 s.
2. Begin dispensing Edge Bead Remover EBR2 simultaneously onto the top and bottom surfaces of the spinning, coated substrate through nozzles 0.5-1.0 cm from the edge of the substrate as soon as edge bead forms (3-5 s after ceasing resist dispense). Stop dispensing EBR2 5 seconds prior to completion of spin coating cycle.
3. 150°C hotplate bake for 60 s. (softbake).
4. Resist exposure in a tool emitting 365 nm wavelength.
5. 100°C hotplate bake for 60 s. (post-exposure bake).
6. Resist development in Resist Developer RD6 by spray or immersion.  
Develop time for 1.5  $\mu\text{m}$  thick film, for example, is 12 s.  
To increase development time to 60 s combine RD6/water 3:1.
7. Resist rinse in deionized water until water resistivity reaches prescribed limit.
8. Drying of resist.
9. Removal of resist in Resist Remover RR4 at 110°C or in acetone.

Note: The above procedure refers to substrates, which are good conductors of heat such as silicon, GaAs etc. Bake times need to be increased by a factor of 3.5 for substrates that are poor conductors of heat such as glass.

## Handling Precautions

Negative Resist NR9-1500P 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.