

## NEGATIVE RESIST NR9-1000PY

### Description

- Negative Resist NR9-1000PY is a negative tone photoresist designed for 365nm wavelength exposure using tools such as wafer steppers, scanning projection aligners, proximity printers and contact printers.
- After resist development, NR9-1000PY exhibits a negative-sloping resist sidewall profile, which facilitates a simple resist lift-off process.
- These are the advantages of NR9-1000PY over other resists:
  - superior resolution capability
  - fast develop time
  - easy adjustment of the degree of resist undercut as a function of exposure energy
  - temperature resistance of up to 100°C
  - shelf life exceeding 3 years at room temperature storage.
- The formulation and processing of NR9-1000PY were designed with regard to occupational and environmental safety. The principal solvent in NR9-1000PY is cyclohexanone and development of NR9-1000PY is accomplished in a basic water solution.

### Properties

◆ Solids content (%)	19-23
◆ Principal solvent	cyclohexanone
◆ Appearance	light yellow liquid
◆ Coating characteristic	very uniform, striation free
◆ Film thickness after 150°C hotplate bake for 60 s. <u>Coating spin speed, 40 s spin (rpm):</u>	(nm)
800	1900-2100
2000	1170-1290
3000	950-1050
4000	817-903
5000	712-788
◆ Sensitivity at 365 nm exposure wavelength (mJ/cm <sup>2</sup> for 1 μm thick film)	390
◆ 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 with 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. Development time for 1  $\mu\text{m}$  thick film, for example, is 10 s. To slow down development rate combine RD6/water 3:1 to achieve 55 s develop time for 1  $\mu\text{m}$  thick film.
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 NR9-1000PY 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.