Description

- Negative Resist NR9-1500PY 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, NR9-1500PY exhibits a negative-sloping resist sidewall profile, which facilitates a simple resist lift-off process.
- These are the advantages of NR9-1500PY 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
  - superior selectivity in RIE process
  - shelf life exceeding 3 years at room temperature storage.
- The formulation and processing of NR9-1500PY were designed with regard to occupational and environmental safety. The principal solvent in NR9-1500PY is cyclohexanone and development of NR9-1500PY is accomplished in a basic water solution.

Properties

- Solids content (%) 24-28
- Principal solvent cyclohexanone
- Appearance light yellow liquid
- Coating characteristic very uniform, striation free
- Film thickness after 150°C hotplate bake for 60 s. Coating spin speed, 40 s spin (rpm): (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/cm² for 1µm thick film) 190
- 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, including overdevelopment for 1.5 µm thick film, for example, is 12 s. To increase develop time to 60 s combine RD6/water 3:1.

7. Resist rinse in deionized water until water resistivity reaches prescribed limit.


9. Removal of resist in Resist Remover RR5 at room temperature.

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 NR9-1500PY 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.