TECHNICAL INFORMATION

Futurrex
Productivity Tools

FUTURREX, INC.
12 Cork Hill Road
Franklin, NJ 07416

Tel: (973) 209-1563
Fax: (973) 209-1567
E-Mail: info@futurrex.com
www.futurrex.com

NEGATIVE RESIST NR9-1500PY

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

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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.
8. Drying of resist.
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.