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 NR9-8000

Description

- Negative Resist NR9-8000 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.
- These are the advantages of NR9-8000 over other resists:
  - superior resolution capability
  - high photospeed which translates into high exposure throughput
  - fast develop time
  - superior temperature resistance of up to 100°C
  - superior selectivity in RIE process
  - easy resist removal in Resist Remover RR4
  - shelf life exceeding 3 years at room temperature storage.
- The formulation and processing of NR9-8000 were designed with regard to occupational and environmental safety. The principal solvent in NR9-8000 is cyclohexanone and development of NR9-8000 is accomplished in a basic water solution.

Properties

- ♦ Solids content (%) — 39-43
- ♦ Principal solvent — cyclohexanone
- ♦ Appearance — light yellow liquid
- ♦ Coating characteristic — very uniform, striation free
- ♦ Film thickness:

Coating Spin Speed (rpm)	Spin Time (s)	1st Soft Hotplate Bake Time (s) 70°C	2nd Soft Hotplate Bake Time (s) 150°C	Post-Exposure Hotplate Bake Time (s) 100°C	Film Thickness (nm)
210	30	360 followed by 180		120	95000-105000
320	30	360 followed by 120		60	55000-65000
750	40	180 followed by 120		60	30000-35000
1000	40	0	120	60	16500-17500
2000	40	0	120	60	9000-10000
3000	40	0	120	60	8000-8300
4000	40	0	120	60	6500-6800

- ♦ Sensitivity at 365 nm exposure wavelength (mJ/cm² for 1 µm thick film) — 21
- ♦ Guaranteed shelf life at 25°C storage (years) — 3

Futurrex, Inc.
12 Cork Hill Road
Franklin, NJ 07416
www.futurrex.com
Tel: (973) 209-1563
Fax: (973) 209-1567
E-Mail: info@futurrex.com

Processing

1. Application of resist by spin coating at a selected spin speed for a time designated in a film thickness vs. spin speed table on page 1.
2. Start dispensing Edge Bead Remover EBR2 simultaneously on top and bottom surface of spinning coated substrate through nozzles 0.5-1.0 cm from an edge of a substrate as soon as edge bead forms (3-5 s after ceasing resist dispense).
3. Softbake procedure is determined by film thickness. Please refer to bake instructions on page 1.
4. Resist exposure in a tool emitting light at 365 nm wavelength. Please determine 365 nm exposure light intensity (mW/cm²) with a proper gage. Multiply resist thickness (μm) by 21 mJ/cm² to obtain exposure dose. Divide expose dose (mJ/cm²) by light intensity (mW/cm²) at 365 nm wavelength to obtain exposure time (s).
5. 100°C hotplate bake for a time depending on a film thickness. Please refer to bake instructions on page 1.
6. Resist development in Resist Developer RD6 by spray or immersion at 20-25 °C. Development time for an 8 μm thick film is 40 s and for 100 μm thick film is 330 s.
7. Resist rinse in deionized water until water resistivity reaches prescribed limit.
8. Drying of resist.
9. Removal of resist in Resist Remover RR4 or in acetone.

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

Handling Precautions

Negative Resist NR9-8000 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.