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NEGATIVE RESIST NR21-20000P

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Description

- Negative Resist NR21-20000P is a negative tone photoresist designed for thick film applications and is compatible with UV exposure tools emitting at the 365 nm wavelength, including wafer steppers, scanning projection aligners, proximity printers and contact printers.
- The following are advantages of NR21-20000P over other resists:
 - superior resolution capability
 - fast development time
 - superb adhesion in plating
 - easy resist removal using Resist Remover RR41
- The formulation and processing of NR21-20000P were designed with regard to occupational and environmental safety. The principal solvent in NR21-20000P is gammabutyrolactone and development of NR21-20000P is accomplished in basic water solution.

Properties

- ♦ Solids content (%) 50-56
- ♦ Principal solvent gammabutyrolactone
- ♦ Appearance light yellow liquid
- ♦ Coating characteristic uniform, striation free
- ♦ Film thickness:

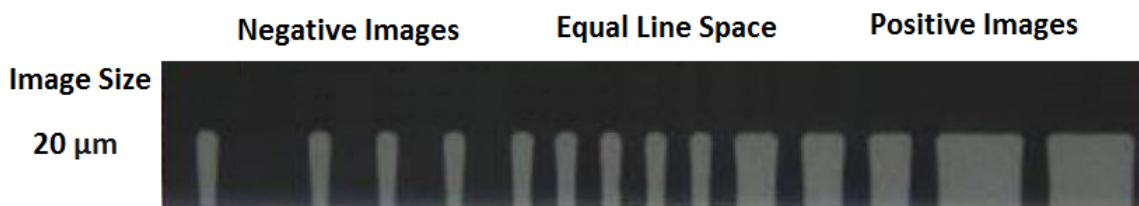
Coating Spin Speed (rpm)	Coating Time (s)	Softbake Hotplate Bake Time (s) 80°C	Softbake Hotplate Bake Time (s) 150°C	Post-Exposure Hotplate Bake Time (s) 80°C	Film Thickness (nm)
1050	10	600	300	600	115000-125000
1200	10	600	300	600	95000-105000
1500	10	-	180	300	48000-52000
3150	10	-	180	300	38000-42000
3000	40	-	120	300	18000-22000

- ♦ Sensitivity at 365 nm exposure wavelength (mJ/cm² for 1 µm thick film): 46
- ♦ Guaranteed shelf life at 5°C storage (years): 1

Processing

1. Application of resist by spin coating at a selected spin speed for a time designated in film thickness vs. spin speed table on page 1.
2. Softbake procedure is determined by film thickness. Please refer to bake instructions on page 1.
3. Resist exposure in a tool emitting 365 nm wavelength. Please determine 365 nm exposure light intensity (mW/cm^2) with a proper gauge. Multiply resist thickness (μm) by $46 \text{ mJ}/\text{cm}^2$ to obtain exposure dose. Divide exposure dose (mJ/cm^2) by light intensity (mW/cm^2) at 365 nm wavelength to obtain exposure time (s).
4. Post-exposure bake on hotplate at 80°C for a time depending on a film thickness. Please refer to bake instructions on page 1.
5. Resist development in Resist Developer RD6 by spray or immersion at $20\text{--}25^\circ\text{C}$. Please ensure that there is no exposed resist thickness loss during development. Exposed resist thickness loss during development would indicate improper exposure energy and/or bake conditions.
6. Resist rinse in deionized water until water resistivity reaches prescribed limit.
7. Drying of resist.
8. Removal of resist in Resist Remover RR41.

The above procedure refers to substrates that are good conductors of heat such as silicon, GaAs, InP, etc. Hotplate temperatures need to be adjusted such that surface temperature of substrates that are poor conductors of heat reach designated temperatures for softbake and post-exposure bake. Always use external thermocouples when measuring surface temperatures.



*Patterned images of $70 \mu\text{m}$ thick Negative Resist NR21-20000P.
Exposure Tool: MA 200 SUSSMicroTec with $100 \mu\text{m}$ proximity gap.*

Handling Precautions

Negative Resist NR21-20000P 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.