

Sumika NEB-31

High resolution chemically amplified negative resist with high sensitivity and contrast

Characteristics:

- Negative tone
- Very high resolution (40 nm demonstrated), high contrast
- Dry etch resistance comparable to most photo resists
- Several dilutions available, allowing a wide range of resist thickness
- No shelf life issues for resist solution if stored at room temperature
- Film life issues
- Sensitive to white light

Basic Processing:

Surface Preparation	In general, no surface preparation (aside from normal cleaning) is necessary. Excellent adhesion to most surfaces. For metals, particularly noble metals, dehydration bake @ 170°C for 15 minutes and apply P2 liquid prime or HMDS vapor prime.
Spin	Speed 1000-5000 rpm, 60 sec. (100-1000 nm) Coated samples may be stored up to 2 weeks prior to exposure.
Pre-bake	110°C vacuum hotplate (Brewer) for 2 minutes.
Expose	Dose around 80 $\mu\text{C}/\text{cm}^2$ at 100 kV; 10% of PMMA dose requirement.
Post-Bake	95°C vacuum hotplate (Brewer) for 4 minutes - PEB should occur within 24 hours of exposure.
Develop	MF-321; 10 seconds / 100nm resist thickness.
Rinse	DI water
Dry	By spinning or dry N_2
Descum	RIE conditions: 30 sccm O_2 , 30 mTorr total pressure, 90 W ($0.25 \text{ W}/\text{cm}^2$), 5 sec. or: Descum in barrel etcher, 0.6 Torr of oxygen, 150W, 1 min.
Stripping	Remover 1165 overnight @ RT, or 1165 @ 70°(bath in PG room) for ~ 30 minutes. O_2 plasma etches NEB very well.

Reprinted from Cornell Center for Nanofabrication website

(http://www.cnf.cornell.edu/cnf_process_ebl_resists.html)