Copolymer P(MMA-MAA)

Copolymer, P(MMA-MAA), offers a higher sensitivity than PMMA, (thus can be exposed at a lower dose, thus faster), with a tradeoff in contrast.

It is most useful in bi-level resists with PMMA, to produce good undercut profiles for liftoff processing.

Characteristics:

- Positive tone
- Low resolution, low contrast
- Poor dry etch resistance
- No shelf life or film life issues
- Not sensitive to white light
- Developer mixtures can be adjusted to control contrast and profile

Basic Processing:

Resist available at TNFC	MMA (8.5) MAA EL11
Storage	10-27 ºC
Surface Preparation	In general, no surface preparation aside from normal cleaning is necessary. Good adhesion to most surfaces.
Spin	Speed 1000-5000 rpm, 60 sec. (500-1000 nm)
Pre-bake	180°C hotplate, 3 min. May also be oven baked at 170°C for 30 min.
Expose	Dose around 330 μC/cm^2 at 100 kV.
Develop	MIBK:IPA 1:3, 1 minute
Rinse	IPA, 30 sec
Dry	By dry N_2
Post-Bake	Not normally necessary. Flow can begin as low as 120°C. Does not seem to noticeably improve adhesion or etch resistance.
Descum	Light! PMMA etches very fast in oxygen. In an oxygen plasma asher, times can be around 1 minute, but beware! Do not preheat the PMMA. Removal rates increase dramatically with temperature.
Stripping	Most solvents, including acetone and methylene chloride will strip copolymer, as will NMP (Remover 1165). It is removed very well by strong bases (KOH), and by acid normally hostile to organics, such as NanoStrip. Oxygen plasmas etch copolymer very well.

Link to Copymer manufacturer's data sheet:

https://kayakuam.com//wp-content/uploads/2019/09/PMMA_Data_Sheet.pdf