ALLRESIST

Innovation
Creativity
Customer-specific solutions

Thermostable Positive Photoresist SX AR-P 3500/8

Experimental sample

Positive photoresist for high-temperature application up to 300 °C

Experimental sample/custom-made product

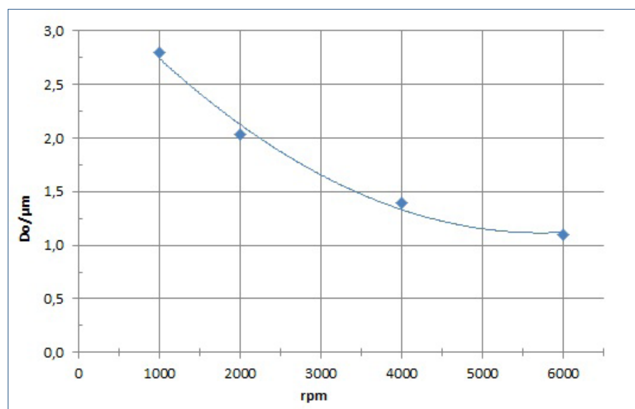
Characterisation

- broadband, i-line, g-line
- high plasma resistant, thermally stable up to 300 °C
- suitable for:
  high-temperature 2-layer lift-off processes as well as plasma etching and implantation processes
- combination of poly(hydroxystyrene-co-MMA)-naphthoquinone diazide
- safer solvent PGMEA

Properties I

Parameter / SX AR-P	3500/8
Solids content (%)	27
Viscosity 25 °C (mPas)	20
Film thickness/4000 rpm (µm)	1.4
Resolution (µm)	0.8
Contrast	3.0
Flash point (°C)	42
Storage 6 month (°C)	10 - 18

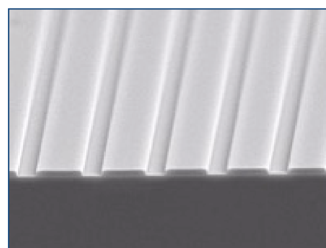
Spin curve



Properties II

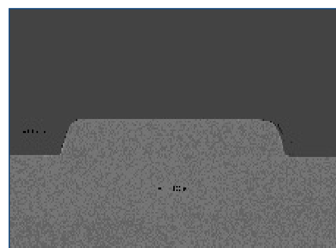
Glass transition temperature (°C)	120	
Dielectric constant	3.1	
Cauchy coefficients	N_0	1.559
	N_1	144.0
	N_2	13.6
Plasma etching rates (nm/min)	Ar-sputtering	10
(5 Pa. 240-250 V Bias)	O_2	
	CF_4	
	80 CF_4 + 16 O_2	120

Resist structures



7 µm trenches with SX AR-P 3500/8

Resist structures (thermally stable)



10 µm webs of SX AR-P 3500/8 after a hard bake of 280 °C

Process parameters

Substrate	Si 4“ wafer
Tempering	95 °C, 2 min, hot plate
Exposure	i-line stepper (NA: 0,65)
Development	AR 300-47, 1 : 1, 1 min, 22 °C

Process chemicals

Adhesion promoter	AR 300-80 new
Developer	AR 300-47
Thinner	AR 300-12
Remover	AR 300-76, AR 600-70

Thermostable Positive Photoresist SX AR-P 3500/8

Process conditions

This diagram shows exemplary process steps for resist SX AR-P 3500/68 All specifications are guideline values which have to be adapted to own specific conditions. For further information on processing ☞ "Detailed instructions for optimum processing of photoresists". For recommendations on waste water treatment and general safety instructions ☞ "General product information on Allresist photoresists".

Process step	SX AR-P 3500/8
Coating	4000 rpm, 60 s 1,4 µm
Tempering (± 1 °C)	100 °C, 2 min, hot plate 95 °C, 30 min, convection oven
UV exposure	Broadband UV Exposure dose (E_0, BB-UV stepper) 200 mJ/cm²
Development (21-23 °C ± 0.5 °C) puddle	AR 300-47, 1 : 1 60 s
Rinse	DI-H_2O, 30 s
Customer-specific technologies	Generation of e.g. semi-conductor properties
Removal	AR 300-76 or O_2 plasma ashing

Development recommendations

Resist / Developer	AR 300-35	AR 300-47
SX AR-P 3500/8	1 : 1	1 : 1

Experimental sample