Thermostable Positive Photoresist SX AR-P 3500/8

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

Experimental sample/custom-made product

Characterisation

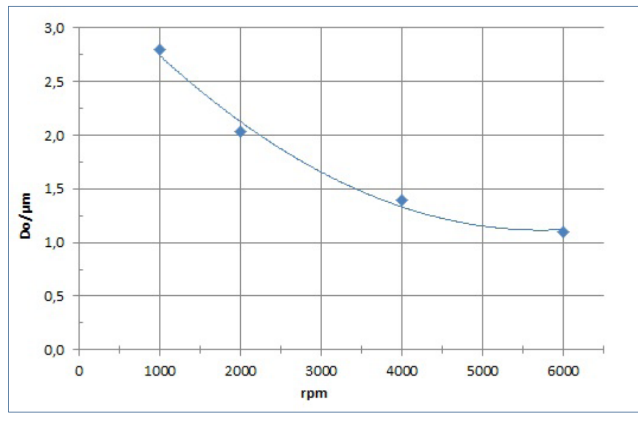
- broadband, i-line, g-line
- high plasma resistant, thermally stable up to 300 °C
- suitable for:
  high-temperature 2-layer lift-off processes as well as plasma etching and implantation processes
- combination of poly(hydroxystyrene-co-MMA)-naphthoquinone diazide
- safer solvent PGMEA

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 temperature (°C)*	10 - 18

* Products have a guaranteed shelf life of temperatures from the date of sale if stored correctly and can also be used without guarantee until the date indicated on the label.

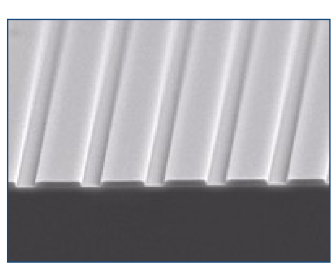
Spin curve



Properties II

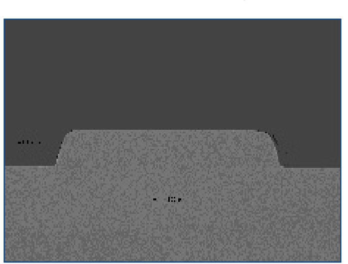
Glass transition temperature (°C)	120	
Dielectric constant	3.1	
Cauchy coefficients	N_0	1.559
	N_1	144.0
	N_2	13.6
Plasma etching rates (nm/min)	Ar-sputtering	10
(5 Pa. 240-250 V Bias)	O_2	
	CF_4	
	80 CF_4 + 16 O_2	120

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

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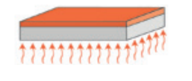
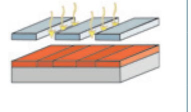
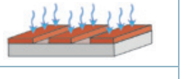
Process conditions

This diagram shows exemplary process steps for resist SX AR-P 3500/8 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".

Step		Conditions
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