



Polyimide Resist SX AR-PC 5000/80.2

Photoresists

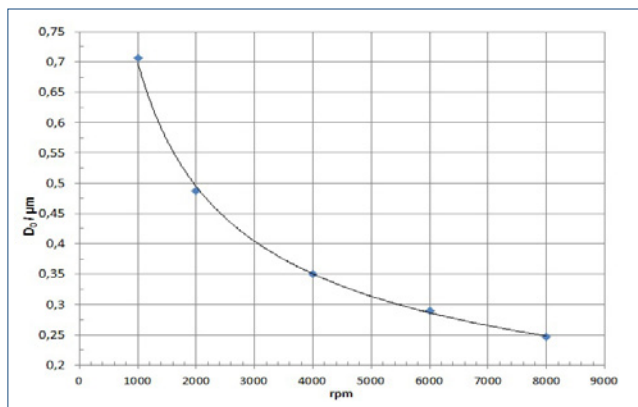
Thermally stable resist, also applicable as protective coating

Experimental sample/custom-made product

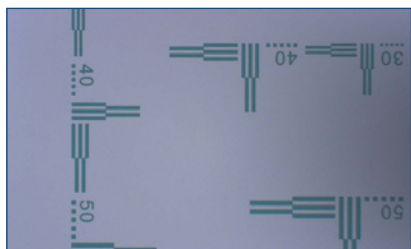
Characterisation

- not light-sensitive > 300 nm, no yellow light required
- thin protective film for surface protection
- plasma etching resistant, thermally stable up to 450 °C
- applicable as sensor material or insulating layer
- structurable in two-component system with AR-P 3500 T
- polyimide
- safer solvent PGMEA and N-methyl pyrrolidone

Spin curve



Resist structures



Resist structures of AR-PC 5000/80.2 After processing in two-component system with AR-P 3510 T

Properties I

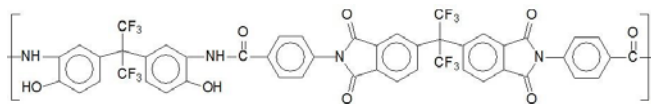
Parameter / AR-PC	5000/80.2
Solids content (%)	10
Viscosity 25°C (mPas)	19
Film thickness/4000 rpm (µm)	0.4
Resolution (µm)	-
Contrast	-
Flash point (°C)	52
Storage temperature (°C)*	8 - 12

* 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.

Properties II

Glass transition temperature °C	170	
Dielectric constant	2.9	
Cauchy-Koeffizienten	N ₀	1.581
	N ₁	146.7
	N ₂	0
Plasma etching rates (nm/min) (5 Pa, 240-250 V Bias)	Ar-sputtering	5
	O ₂	208
	CF ₄	43
	80 CF ₄ + 16 O ₂	186

Structural formula



Process parameters

Substrat	Si 4" wafer
Soft bake	150 °C, 2 min, hot plate

Process chemicals

Adhesion promoter	AR 300-80 new
Developer	1-layer system: - 2-layer system: AR 300-46
Thinner	X AR 300-12/3
Remover	AR 300-76, 300-47

As of: April 2019

Polyimide Resist SX AR-PC 5000/80.2

Process conditions - One-layer process

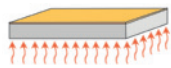
This diagram shows exemplary process steps for resist SX AR-PC 5000/80.2. All specifications are guideline values which have to be adapted to own specific conditions.

Pre-coating with
AR 300-80



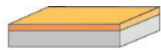
Adhesive bonding at 2000 rpm, resulting film thickness 15 nm

1. Soft bake



180 °C, 2 min hot plate or
180 °C, 25 min convection oven

Coating protective film
with SX AR-PC 5000/80.2



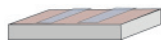
1000 rpm, 60 s, 0.8 µm

2. Soft bake (± 1 °C)



100 °C, 2 min hot plate or
95 °C, 30 min convection oven

Removal AR-PC 5000/80.2
(optional)



AR 300-76 or O₂ plasma ashing

Processing instructions

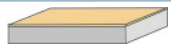
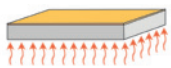
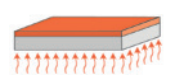
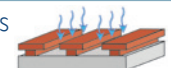

If SX AR-PC 5000/80.2 is only required as protective coating, as sensor material or for insulation purposes, the process is finished after the 2nd tempering step.



Polyimid Photoresist SX AR-PC 5000/80.2

Process conditions - Two-layer process

Dieses Schema zeigt ein Prozessierungsbeispiel für den Resist SX AR-PC 5000/80.2. Die Angaben sind Richtwerte, die auf die eigenen spezifischen Bedingungen angepasst werden müssen.

Pre-coating with AR 300-80		Adhesive bonding at 2000 rpm, resulting film thickness 15 nm
1. Soft bake		180 °C, 2 min hot plate or 180 °C, 25 min convection oven
Coating protective film with SX AR-PC 5000/80.2		1000 rpm, 60 s, 0.8 µm
2. Soft bake (± 1 °C)		100 °C, 2 min hot plate or 95 °C °C, 30 min convection oven
Coating AR-P 3540 T		4000 rpm, 1.4 µm
3. Soft bake (± 1 °C)		100 °C, 2 min hot plate or 95 °C, 30 min convection oven
UV exposure		Broadband UV, 365 nm, 405 nm, 436 nm Exposure dose (E_0 , BB-UV stepper): 120 mJ/cm ² , 1,4 µm
Development of both resist films (21-23 °C ± 0.5 °C) puddle		AR 300-46, 40 s
Rinse		DI-H ₂ O, 30 s
Flood exposure		Broadband UV, 240 mJ/cm ²
Removal AR-P 3540 T		AR 300-47, 20 s Only polyimide structures remain
Removal AR-P 5000/80.2 (optional)		AR 300-76 or O ₂ plasma ashing

Processing instructions

For a two-component structuring however, an additional coating with photoresist is necessary. The two-component system can be developed in one step after exposure.

Developer AR 300-46 begins to dissolve exposed areas of AR-P 3540 T as usual and then attacks the underlying polyimide in anisotropic manner, i.e. the structures in polyimide widen only marginally. A prolonged exposure (> 1.5 min) however results in a pronounced undercut.