

# micro resist technology

Gesellschaft für chemische Materialien spezieller Photoresistsysteme mbH

## Positive Photoresists



- ma-P 1200 series
- Thick resists ma-P 1275, ma-P 1275 HV

### Unique features of the positive photoresists

- Sensitivity to g-line, i-line or broadband exposure
- No post exposure bake
- Easy removal
- Ready-to-use resist solutions in a variety of viscosities
- Broad process window and easy to handle



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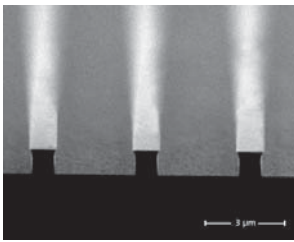
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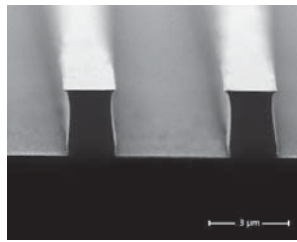
## Positive Photoresist Series

Resist		ma-P 1205	ma-P 1210	ma-P 1215	ma-P 1225	ma-P 1240	ma-P 1275
Film thickness	µm	0.5	1.0	1.5	2.5	4.0	7.5
Spin coating	rpm s	3000 30					
Dose @ 365 nm (broadband exposure)	mJ cm <sup>-2</sup>	35	35	45	55	110	210

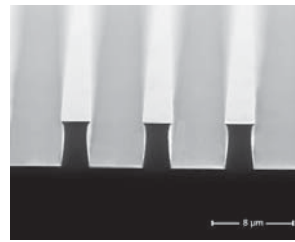
### Resist patterning with mask aligner broadband exposure



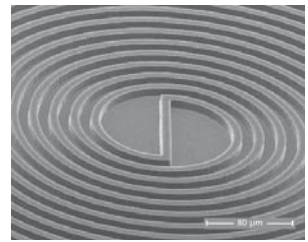
1 µm ma-P 1210,  
1 µm lines/ 3 µm spaces



2.5 µm ma-P 1225,  
2 µm lines/ 4 µm spaces



4 µm ma-P 1240,  
3 µm lines/ 5 µm spaces

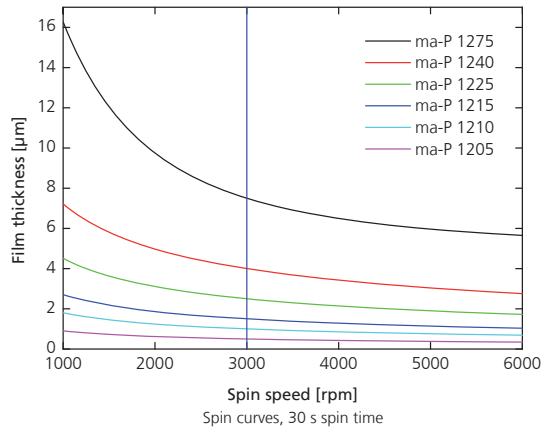


7.5 µm ma-P 1275,  
coil, 10 µm trace with

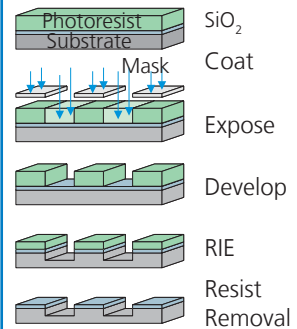
### ma-P 1200 series

#### for microelectronics and microsystems technology

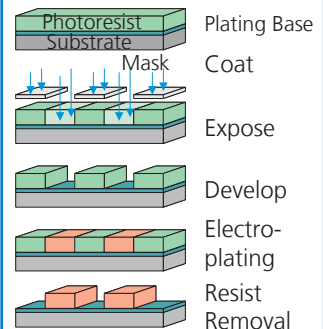
ma-P 1200 is a positive tone photoresist series designed for the use in microelectronics and microsystems technology. The resists are available in a variety of viscosities for film thicknesses of 0.3 – 40 µm in one spin-coating step.



#### Process flow RIE



#### Process flow Electroplating



- Outstanding pattern stability in wet etch processes and acid and alkaline plating baths
- Highly stable in dry etch processes e.g. CHF<sub>3</sub>, CF<sub>4</sub>, SF<sub>6</sub>
- Aqueous alkaline development
- Resists available in a variety of viscosities

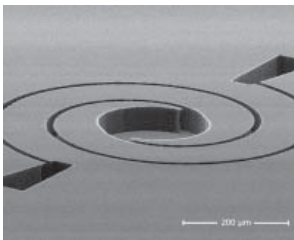
#### Main applications

- Mask for etching e.g. Si, SiO<sub>2</sub>, Other semiconductors, Metals
- Mask for ion implantation
- Mould for electroplating

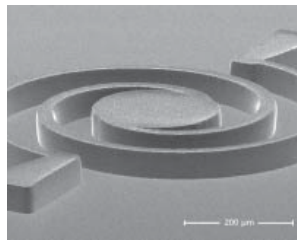
# Thick Positive Photoresists

Film thickness		7.5 $\mu\text{m}$	11 $\mu\text{m}$	20 $\mu\text{m}$	30 $\mu\text{m}$	40 $\mu\text{m}$	50 $\mu\text{m}$
ma-P 1275	rpm s	3000 30	-	500 60	350 60	250 60	-
ma-P 1275 HV	rpm s	-	3000 30	1100 60	700 60	500 60	400 60

## Electroplating

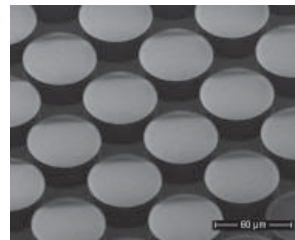


50  $\mu\text{m}$  ma-P 1275 HV mould

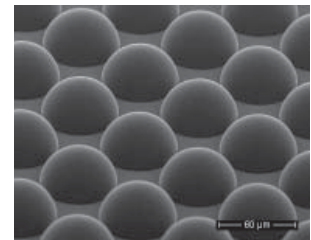


40  $\mu\text{m}$  electroplated Ni

## Resist pattern reflow



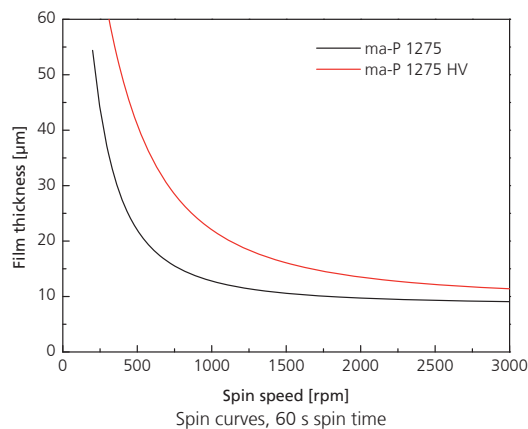
20  $\mu\text{m}$  ma-P 1275, 60  $\mu\text{m}$  diameter pillar



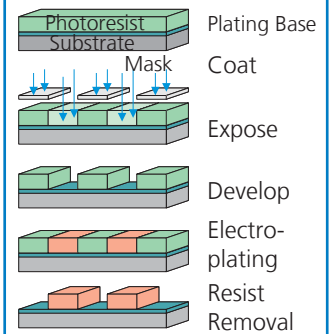
30  $\mu\text{m}$  reflowed ma-P 1275, 60  $\mu\text{m}$  diameter

## ma-P 1275 & ma-P 1275 HV for microsystems technology

ma-P 1275 & ma-P 1275 HV are high viscosity positive tone photoresists for film thicknesses of up to 60  $\mu\text{m}$  designed for electroplating structures in microsystems technology and excellently suited for the use as etch mask.



### Process flow Electroplating

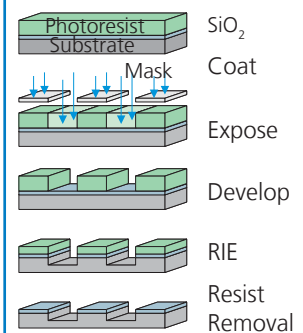


- Specifically designed for electroplating of structures in microsystems technology
- High stability in acid and alkaline plating baths
- Very well suitable also for the use as an etch mask exhibiting high dry and wet etch resistance
- Good thermal stability of the resist patterns attainable
- Aqueous alkaline development
- Side wall angle up to 87° with mask aligner broadband exposure

### Main applications

- Mould for electroplating – e.g. for micro coils, micro springs, micro optical components
- Etch mask for metal and semiconductor substrates – e.g. microlenses from reflowed patterns
- Mask for ion implantation

### Process flow RIE



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