Protective Coatings AR-PC 500 series

adhesion-enhanced KOH-resistant resists

Wafer backside protection coating for the application of deep trench

AR-PC 500 series 產品說明

AR-PC 500 series 系列產品為保護型塗佈,耐氫氧化鉀,適合濕蝕刻製程晶背保護.

系列產品目前有:

AR-PC 503 ：PMMA高分子，溶劑為氯苯（chlorobenzene）。
成份中參雜深色染料以保護敏感元件。

AR-PC 504 ：PMMA高分子，溶劑為氯苯。

AR-PC 5040：PMMA高分子，溶劑採用較安全的甲氧苯（anisole）。

產品包裝：

- ✅ 250ml/瓶
- ✅ 1 L/瓶

其它包裝可研擬增加

產品出貨：

- ✅ 2 - 4 週. 德國運出
- ❌ 1 週. 國內庫存

產品目前無國內庫存

✏️ 價格詢問　✏️ 其它諮詢

📥 AR-PC 504 GHS標識

📥 AR-PC 5040 GHS標識

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AR-PC 504 Properties 產品物性

film thickness	**2 um @ 4000rpm**
flash point	28 °C
storage 6 months	18 – 25 °C

* Product is guaranteed 6 months shelf life from the data of sale if stored correctly.
在正確的儲存條件下,產品保證的有效期為銷售日起6個月

* Product can also be used without guarantee until the date indicated on the label.
在無提供保證的情況下,產品可使用至標籤上所示的有效期.

AR-PC 504 Characterization 產品特性

- not light-sensitive > 300 nm, no yellow light required
  對波長> 300nm無反應,無需於黃光區作業
- protection of wafer backside when etching the front side
  晶圓蝕刻時做為晶背保護塗佈
- offer reliable protection against mechanical damage during handling and transport.
  也可在作業或運輸時提供晶圓保護以避免破壞
- temperature-stable up to 250°C
  高溫達250°C仍可保持穩定
- PMMA with different molecular weights, AR-PC 503 in addition dyed dark
  成份含不同分子量的聚甲基丙烯酸甲酯(PMMA),AR-PC 503另添加黑色染料
- solvent 503, 504 chlorobenzene
  使用氯苯為溶劑.

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Property I				
Parameter		AR-PC 503	AR-PC 504	AR-PC 5040
Solids content	%	10	13	17
Viscosity@25°C	mPa.s	190	350	550
Film thickness@4000rpm	um	1.0	2.2	2.8
Resolution	um	- -	- -	- -
Contrast		- -	- -	- -
Flash point	°C	28	28	42
Storage 6 months	°C	10 - 25		

Property II			
Glass trans. temperature	°C	105	
Dielectric constant		2.6	
Cauchy coefficients (AR-PC 503)	N_0	1.528	
	N_1	34.6	
	N_2	0	
Plasma etching rate 5 Pa, 240-250 V Bias	nm/min	Ar-sputtering	20
		O_2	340
		CF_4	61
		80 CF_4 +16 O_2	160

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AR-PC 500 series Spin curve

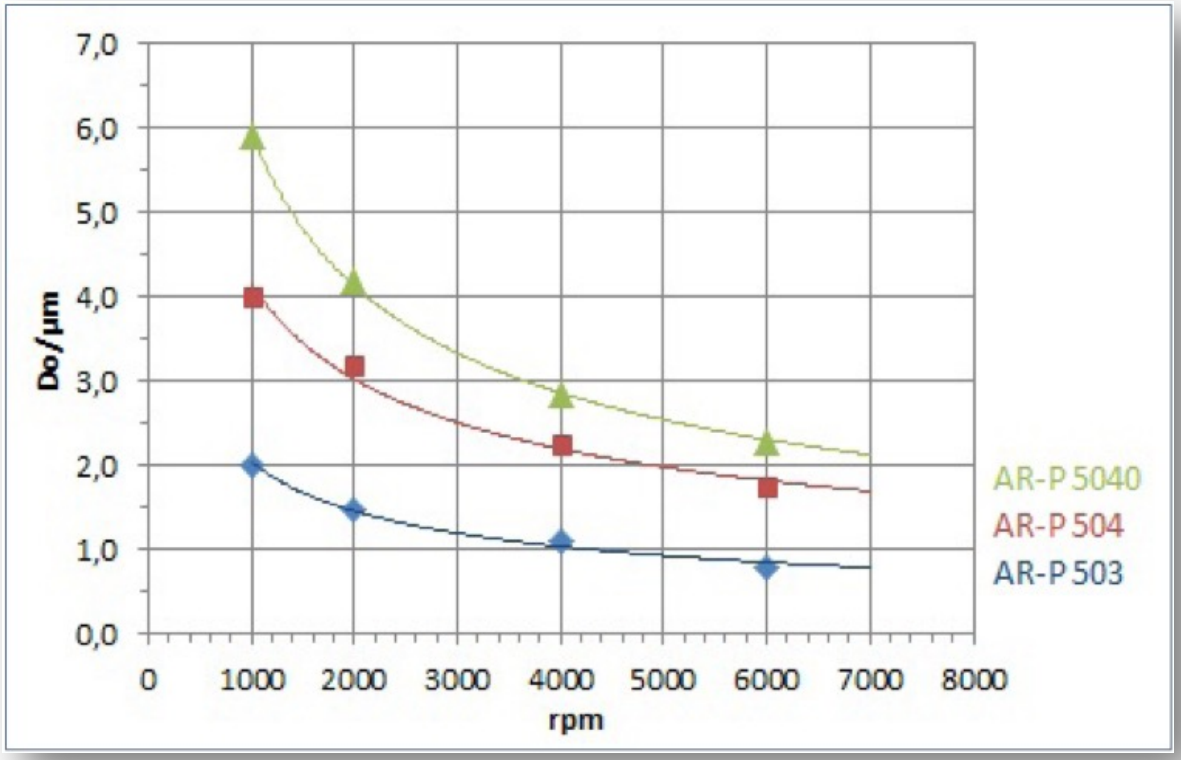

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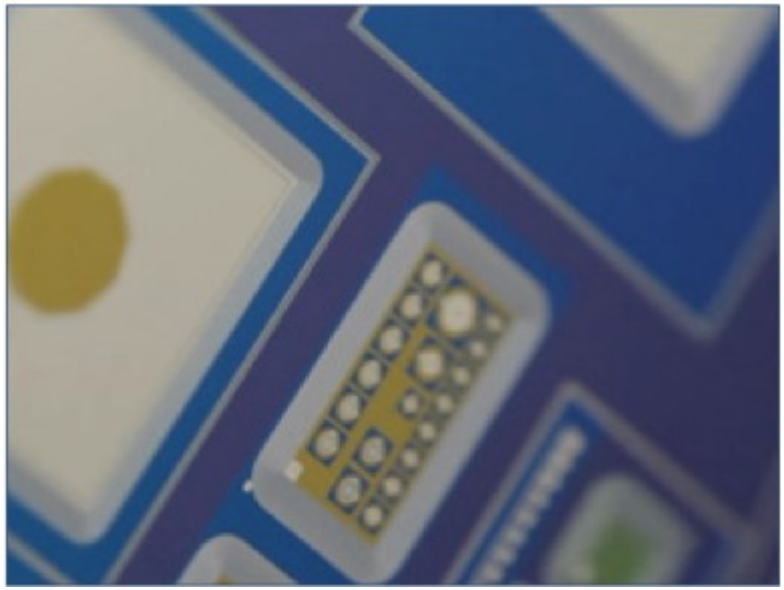
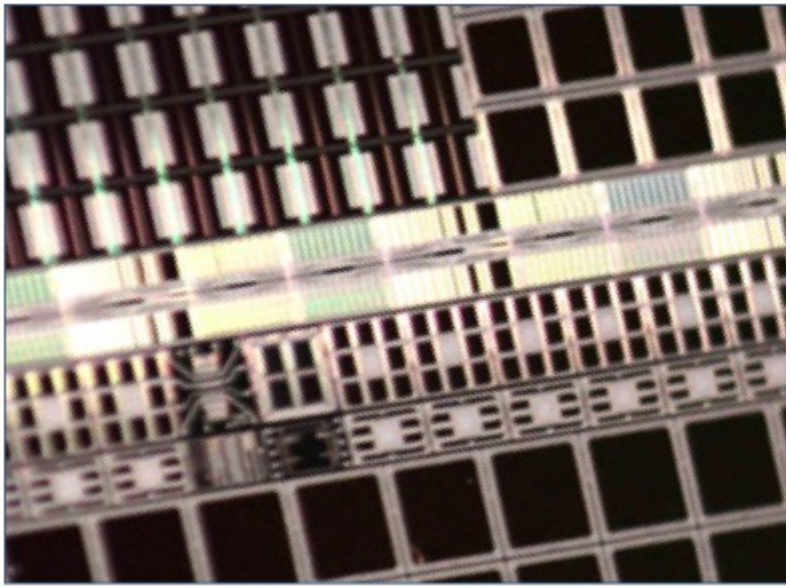
Photo of coated wafer

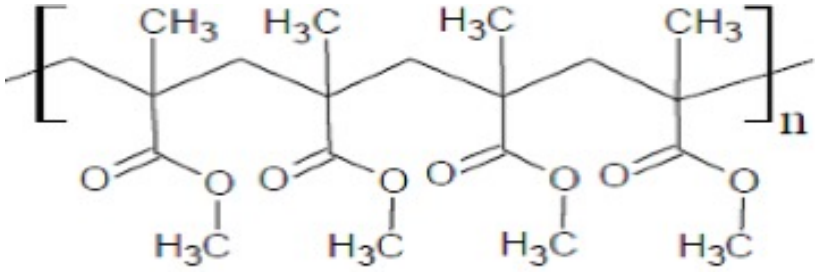


Protective coating AR-P 503 covering sensitive structures

Topology of the backside



Structural formula poly(methyl methacrylate)



Process chemicals

Adhesion promoter	AR 300-80
Developer	- -
Thinner	AR 600-01
Remover	AR 300-76, AR 600-71

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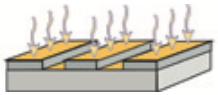
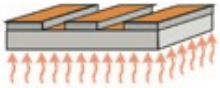
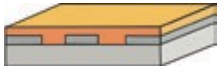
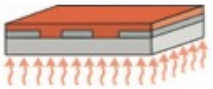
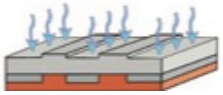
This diagram shows exemplary process steps for AR-PC 500series resists. All specifications are guideline values which must be adapted to own specific conditions. For further information on processing, 👉 “ Detailed instructions for optimum processing of photoresists”. For recommendations on wastewater treatment and general safety instructions, 👉 ”General product information on Allresist photoresists”.

圖示AR-PC 500系列產品製程參數的範例. 所有參數為參考值,使用者應依設備環境實際狀況加以調整

Adhesion promoter AR 300-80 coating 	Adhesive bonding, resulting film thickness 15 nm	
1st Soft bake 	180°C x 2 min, hot plate. or,	
	180°C x 25 min, convection oven	
Protective coating 	AR-PC 503	AR-PC 504
	2.0 um@1000rpm x 60 sec	4.5 um@1000rpm x 60 sec
2nd soft bake(±1°C) 	140°C x 1.5 min hot plate, or	
	135°C x 60 min convection oven	
Fabrication of etch mask on the back side 	Customer-specific process to generate the hard mask	
Customer specific technology 	Etching: 40 % KOH, 85°C	
Removal of protection coating 	AR 300-76 or O_2 plasma ashing	

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Processing instructions

Pre-treatment prior to coating: The protective effect during etching can be extended to up to 8 hours if the surface is pre-treated with adhesion promoter AR 300-80. The coating is preferably performed at 4000 rpm. After tempering at 180 °C for 2 min (hot plate), a uniform, 15 nm thin layer of adhesion promoter is formed (-> Product information AR 300-80).

塗佈前處理(增黏處理): 以AR 300-80增黏處理可使保護塗層於蝕刻時保護性增至8小時. 增黏塗層建議以4000轉塗佈再以180°C在熱盤軟烤2分鐘,可獲得15nm均勻的增黏塗層.(細節請參考AR 300-80產品資訊)

Coating: A rotational speed of 1000 rpm is recommended for protective coatings, since at a film thickness of 2 - 5 µm wafer edges are best protected due to a certain “edge wrapping” of the resist. At higher spin speeds or if 6-inch wafers and above are used, the relatively high amount of resist which is deposited on the wafer may cause the so-called candy-floss effect. Low spin speeds, local exhaustion or removal of the “candy floss” with a glass rod during coating reduces these highly disturbing effects.

保護塗層塗佈: 建議的轉速為1000轉. 此轉數下,膜厚約2 - 5um, 晶元邊緣亦可形成包覆. 在較高轉速的塗佈, 或晶元大於6寸時, 保護膠需滴定較大數量, 此時容易形成”糖絲效應”. 降低轉速, 排氣,或以玻璃棒移除絲狀物以減少其影響.

Tempering: To obtain a particularly high protective effect for the fabrication of hard-baked films, tempering temperatures of 190 °C are recommended.

軟烤: 建議以 190℃ 高溫軟烤以獲得有效的保護塗層.

Etch process: The protective coating is even after hours not attacked by 40 % KOH. Possibly occurring problems only derive from insufficient adhesive strength and can be significantly reduced with a pre-treatment with AR 300-80.

蝕刻製程:保護塗層可耐40%氫氧化鉀幾小時的攻擊. 通常是由介面黏著度不夠而導致問題. 使用AR 300-80增黏劑可有效解決此問題.