Developer for AR resists

AR 300-26 and AR 300-35 buffered developers

For the development of photoresists and novolac-based e-beam resist films

Characterisation

- buffered, colourless aqueous-alkaline solutions for photoresist development with low dark erosion
- AR 300-26 high contrast, steep edges, fast development, particularly suited for thick films
- AR 300-35 universal, wide process range for layers up to 6 µm

Properties

Parameter / AR	300-26	300-35
Normality (n)	1.10	0.33
Density at 20 °C (g/cm³)	1.06	1.02
Filtration (µm)	0.2	
Storage temperature (°C)	10-22	

Development recommendations

optimally suited suited

AR-resists / main component(s)	AR 300-26 sodium borate and NaOH	AR 300-35 sodium metasilicate /-phosphate
Application / conditions	immersion, puddle and spray development 21-23 °C ± 0.5 °C, approx. 40-60 s (max. 120 s)	immersion, puddle development 21-23 °C ± 0.5 °C, approx. 40-60 s (max. 120 s)
AR-P 3210	1 : 3	undil. to 10 µm
AR-P 3220	2 : 1 ; 2 : 1 to 3 : 2	- ; -
AR-P 3510, 3540 ; 3510 T, 3540 T	1 : 5 ; 1 : 2	1 : 1 ; undil.
AR-P 3740	1 : 3	4 : 1
AR-P 5320 ; 5350	2 : 1 to 3 : 2 ; 1 : 7	- ; 1 : 2
AR-BR 5460, 5480	1 : 4	1 : 1
AR-N 4340	1 : 1	- ; undil.
AR-N 7500.18 ; 7500.08	1 : 4 ; 1 : 7	4 : 1 ; 1 : 2
AR-N 7520.17 ; 7520.11, .07 new	3 : 1 ; 1 : 1	-
AR-N 7520.18 ; 7520.073	2 : 3 ; 1 : 3	2 : 1 ; pur
AR-N 7700.18 ; 7700.08	2 : 1 ; 1 : 3	undil. to 3 : 1
AR-N 7720.30 ; 7720.13	1 : 2 ; 1 : 3	-

Information on developer processing (applies to buffered developer and TMAH developers)

Higher developer concentrations result in a formally higher light-sensitivity of the resist-developer system, thus minimising the required exposure intensity, reducing the development times and allowing for a high throughput in production. It must however be taken into account that an increased dark erosion is associated with stronger developers which successively attacks unexposed structures. More diluted developers provide, depending on the kind of resist, higher contrast and reduce the thickness loss in unexposed or only partly exposed interface areas even with longer development times. This particularly selective working method ensures a high degree of detail reproduction, while the intensity required for exposure is inevitably increased at the same time. To obtain a high contrast, more diluted developer and longer development times are recommended. Substrates have to be rinsed in deionised water immediately after development until complete removal of all residual developer, and are subsequently dried.