AZ 111 XFS
AZ 8112
Standard
Photoresists

Clariant

GENERAL INFORMATION

Both photoresists are based on a similar chemistry. Besides the standard constituents novolak and naphthoquinone diazide, they contain a special additive which results in unique properties:

1. These resists exhibit extremely good adhesion on almost any surface like glass, oxides, highly doped oxides, metals etc.. This feature makes them a good choice for wet-etching.

2. They are less brittle than other positive photoresists.

3. They show almost no sticking to the mask which is important when exposed by contact or proximity printing. This properties lead to various applications. Besides semiconductor manufacturing they are also used for thin film and printed circuit technologies, electroplating, chemical milling etc..

4. Thermal stability during postbake is only 90°C (AZ 111 XFS) to 110°C (AZ 8112) without degradation of profile. For this reason they are not recommended for plasma-etching. On the other hand this allows for adjusting profile and final dimension by thermal treatment or thermal levelling of a non patterned wafer for back etch by applying a 120°C bake. Under this condition the resist does not crosslink (thermal crosslinking only starts at 125°C and above) and can easily be removed with solvents like acetone or NMP at room temperature.

5. Both photoresists do require a special developer which is not compatible with common positive photoresist developers, AZ 303 Developer, diluted 1:3 to 1:4 is recommended. Typical development time is 30 - 60 seconds, tank or spray development may be used.

6. Both photoresists are sensitive to UV-light in the range of 310 - 420 nm and intended for broadband exposure. It should be noted that they are almost insensitive to the g-line (436 nm) of the mercury spectrum. Sensitivity however is the main difference between both types:

AZ 111 XFS is the safer solvent version of the well known AZ 111 S and a plug-in-replacement therefore. It is mainly intended for contact- or proximity printing where low sensitivity is no concern. Exposure doses of about 150 mJ/cm² lead to exposure times of about 10 s. which can be well controlled.

AZ 8112 is 3 to 4 times faster, it is only intended for use on scanning projection printers, where AZ 111 XFS is by far to slow because it does not respond to g-line which accounts for a reasonable part of the overall UV-energy of those machines.

PHYSICAL and CHEMICAL PROPERTIES

	AZ 111 XFS	AZ 8112
Solids content [%]	19.3	24.0
Viscosity [cSt at 25°C]	25.2	27.5
Absorptivity [l/g*cm] at (...) nm	0.65 (375nm)	0.72 (377nm)
Solvent	methoxy-propyl acetate (PGMEA)	
Max. water content [%]	0.50	
Spectral sensitivity	310 - 420 nm	
Coating characteristic	striation free	
Filtration [µm absolute]	0.1	

FILM THICKNESS [µm] as FUNCTION of SPIN SPEED (characteristically)

spin speed [rpm]	2000	3000	**4000**	5000	6000
AZ 111 XFS	1.41	1.15	**1.00**	0.89	0.82
AZ 8112	1.73	1.41	**1.22**	1.09	1.00

PROCESSING GUIDELINES

Dilution and edge bead removal	AZ EBR Solvent
Prebake	100°C, 50", hotplate
Exposure	broadband UV
PEB	not required
Development	AZ 303 DEV, 1:4
Postbake	see "general information"
Removal	AZ 100 Remover, conc.

HANDLING ADVISES

Consult the **Material Safety Data Sheets** provided by us or your local agent!
This AZ Photoresists are made up with our patented safer solvent PGMEA. They are **flammable liquids** and should be kept away from oxidants, sparks and open flames.
Protect from light and heat and store in sealed original containers between 0°C and 25°C, exceeding this range to -5°C or +30°C for 1 week does not adversely affect the properties.
Shelf life is limited and depends on the resist series. The **expiration date** is printed on the label of every bottle below the batch number and coded as **[year/month/day]**.
AZ Photoresists are compatible with most commercially available wafer processing equipment. **Recommended materials** include PTFE, stainless steel and high-density poly-ethylene and -propylene.

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