## Photoresists: Application Areas and Compatibilities

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<th>Recommended Applications ¹</th>
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<tr>
<td>Improved adhesion for wet etching, no focus on steep resist sidewalls</td>
<td>AZ® 1500</td>
<td>AZ® 1505</td>
<td>= 0.5 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<tr>
<td></td>
<td>AZ® 1512 HS</td>
<td>AZ® 1512 HS</td>
<td>= 1.0 - 1.5 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<td></td>
<td>AZ® 1514 H</td>
<td>AZ® 1514 H</td>
<td>= 1.2 - 2.0 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<tr>
<td></td>
<td>AZ® 1518</td>
<td>AZ® 1518</td>
<td>= 1.5 - 2.5 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<tr>
<td></td>
<td>AZ® 4500</td>
<td>AZ® 4532</td>
<td>= 5 - 10 µm</td>
<td>AZ® 400K, AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF</td>
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<tr>
<td></td>
<td>AZ® 4562</td>
<td>AZ® 4562</td>
<td>= 5 - 10 µm</td>
<td>AZ® 400K, AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF</td>
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<tr>
<td>Steep resist sidewalls, high resolution and aspect ratio for e.g. dry etching or plating</td>
<td>AZ® ECI 3000</td>
<td>AZ® ECI 3007</td>
<td>= 0.7 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<tr>
<td></td>
<td>AZ® ECI 3012</td>
<td>AZ® ECI 3012</td>
<td>= 1.0 - 1.5 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<tr>
<td></td>
<td>AZ® ECI 3027</td>
<td>AZ® ECI 3027</td>
<td>= 2 - 4 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<tr>
<td></td>
<td>AZ® 10 XT</td>
<td>AZ® 10 XT</td>
<td>= 5 - 20 µm</td>
<td>AZ® 400K, AZ® 326 MIF, AZ® 726 MIF</td>
<td></td>
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<tr>
<td>Elevated thermal softening point and high resolution for e.g. dry etching</td>
<td>AZ® 701 MiR</td>
<td>AZ® 701 MiR (14 cPs)</td>
<td>= 0.8 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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<tr>
<td></td>
<td>AZ® 701 MiR (29 cPs)</td>
<td>AZ® 701 MiR (29 cPs)</td>
<td>= 0.8 µm</td>
<td>AZ® 351B, AZ® 326 MIF, AZ® 726 MIF, AZ® Developer</td>
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</tbody>
</table>

### Positive (chem. amplified) Reversal

| Elevated thermal softening point and undercut for lift-off applications | AZ® 5200 | AZ® 5209 | = 1 µm | AZ® 351B, AZ® 326 MIF, AZ® 726 MIF |  |
|  | AZ® 5214 | AZ® 5214 | = 1 - 2 µm | AZ® 351B, AZ® 326 MIF, AZ® 726 MIF |  |
|  | TI 3SE5X | TI 3SE5X | = 3 - 4 µm | AZ® 351B, AZ® 326 MIF, AZ® 726 MIF |  |
|  | TI xLift-X | TI xLift-X | = 4 - 8 µm | AZ® 351B, AZ® 326 MIF, AZ® 726 MIF |  |

### Negative (Cross-Linking)

| Negative resist sidewalls in combination with no thermal softening for lift-off application | AZ® nLOF 2000 | AZ® nLOF 2020 | = 1.5 - 3 µm | AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF |  |
|  | AZ® nLOF 2035 | AZ® nLOF 2035 | = 3 - 5 µm | AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF |  |
|  | AZ® nLOF 2070 | AZ® nLOF 2070 | = 6 - 15 µm | AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF |  |
|  | AZ® nLOF 5500 | AZ® nLOF 5510 | = 0.7 - 1.5 µm | AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF |  |

### Improved adhesion, steep resist sidewalls and high aspect ratios for e.g. dry etching or plating | AZ® nXT | AZ® 15 nXT (115 cPs) | = 2 - 3 µm | AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF |  |
|  | AZ® 15 nXT (450 cPs) | AZ® 15 nXT (450 cPs) | = 5 - 20 µm | AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF |  |
|  | AZ® 125 nXT | AZ® 125 nXT | = 20 - 100 µm | AZ® 326 MIF, AZ® 726 MIF, AZ® 826 MIF |  |
Technical Information for our Customers

Technical Information on our Photoresists, Developers, Removers and Wafers

With the information collected in this document, we would like to give you an initial overview of the basic areas of application and compatibility of our photo chemicals, ancillaries and substrate materials. We would be happy to advise you in more detail personally!

Developers: Application Areas and Compatibilities

Inorganic Developers

AZ® Developer is based on sodium phosphate and –metasilicate, is optimized for minimal aluminum attack and is typically used diluted 1 : 1 in DI water for high contrast or undiluted for high development rates. The dark erosion of this developer is slightly higher compared to other developers.

AZ® 351B is based on buffered NaOH and typically used diluted 1 : 4 with water, for thick resists up to 1 : 3 if a lower contrast can be tolerated.

AZ® 400K is based on buffered KOH and typically used diluted 1 : 4 with water, for thick resists up to 1 : 3 if a lower contrast can be tolerated.

AZ® 303 specifically for the AZ® 111 XFS photobase on KOH / NaOH is typically diluted 1 : 3 - 1 : 7 with water, depending on whether a high development rate, or a high contrast is required.

Metal Ion Free (TMAH-based) Developers

AZ® 326 MIF is 2.38 % TMAH- (Tetramethylammoniumhydroxide) in water.

AZ® 726 MIF is 2.38 % TMAH- (Tetramethylammoniumhydroxide) in water, with additional surfactants for rapid and uniform wetting of the substrate (e.g. for puddle development).

AZ® 826 MIF is 2.38 % TMAH- (Tetramethylammoniumhydroxide) in water, with additional surfactants for rapid and uniform wetting of the substrate (e.g. for puddle development) and other additives for the removal of poorly soluble resist components (residues with specific resist families), however at the expense of a slightly higher dark erosion.

Removers: Application Areas and Compatibilities

AZ® 100 Remover is an amine solvent mixture and standard remover for AZ® and TI photoresists. To improve its performance, AZ® 100 remover can be heated to 60 - 80°C. Because the AZ® 100 Remover reacts highly alkaline with water, it is suitable for this with respect to sensitive substrate materials such as Cu, Al or ITO only if contamination with water can be ruled out.

TechniStrip® P1316 is a remover with very strong stripping power for Novolak-based resists (including all AZ® positive resists), epoxy-based coatings, polyimides and dry films. At typical application temperatures around 75°C, TechniStrip® P1316 may dissolve cross-linked resists without residue also, e.g. through dry etching or ion implantation. TechniStrip® P1316 can also be used in spraying processes. For alkaline sensitive materials, TechniStrip® P1316 would be an alternative to the P1316. Nicht kompatibel mit Au oder GaAs.

TechniStrip® P1331 can be an alternative for TechniStrip® P1316 in case of alkaline sensitive materials. TechniStrip® P1331 is not compatible with Au or GaAs.

TechniStrip® N155 is a stripper with very strong dissolving power for Novolak-based negative resists such as the AZ® 15 nXT and AZ® 2000 series and very thick positive resists such as the AZ® 40 XT.

TechniStrip® N155 was developed not only to peel cross-linked resists, but also to dissolve them without residues. This prevents contamination of the basin and filter by resist particles and skins, as can occur with standard strippers.

TechniClean™ CA25 is a semi-aqueous proprietary blend formulated to address post etch residue (PER) removal for all interconnect and technology nodes. Extremely efficient at quickly and selectively removing organo-metal oxides from Al, Cu, Ti, TiN, W and Ni.

TechniStrip™ NF52 is a highly effective remover for negative resists (liquid resists as well as dry films). The intrinsic nature of the additives and solvent make the blend totally compatible with metals used throughout the BEOL interconnects to WLP bumping applications.

TechniStrip™ Micro D2 is a versatile stripper dedicated to address resin lift-off and dissolution on negative and positive tone resist. The organic mixture blend has the particularity to offer high metal and material compatibility allowing to be used on all stacks and particularly on fragile III/V substrates for instance.

TechniStrip™ MLO 07 is a highly efficient positive and negative tone photoresist remover used for IR, III/V, MEMS, Photonik, TSV mask, solder bumping and hard disk stripping applications. Developed to address high dissolution performance and high material compatibility on Cu, Al, SnAg, Alumina and common organic substrates.

Intelligent fluids® SH5 und SVD are non-toxic water-based strippers, compatible with all common substrate materials.

Our Wafers and their Specifications

Silicon-, Quartz-, Fused Silica and Glass Wafers

Silicon wafers are either produced via the Czochralski- (CZ-) or Float zone- (FZ-) method. The more expensive FZ wafers are primarily reasonable if very high-ohmic wafers (> 100 Ohm cm) are required.

Quartz wafers are made of monocrystatite SiO₂, main criterion is the crystal orientation (e.g. X-, Y-, Z-, AT- or ST-cut).

Fused silica wafers consist of amorphous SiO₂. The so-called JGS2 wafers have a high transmission in the range of ≈ 280 - 2000 nm wavelength, the more expensive JGS1 wafers at ≈ 220 - 1100 nm.
Our glass wafers, if not otherwise specified, are made of borosilicate glass.

**Specifications**

Common parameters for all wafers are diameter, thickness and surface (1- or 2-side polished). Fused silica wafers are made either of JGS1 or JGS2 material, for quartz wafers the crystal orientation needs to be defined. For silicon wafers, beside the crystal orientation (<100> or <111>) the doping (n- or p-type) as well as the resistivity (Ohm cm) are selection criteria.

**Prime-, Test-, and Dummy Wafers**

Silicon wafers usually come as „Prime-grade“ or „Test-grade“, latter mainly have a slightly broader particle specification. „Dummy-Wafers“ neither fulfill Prime- nor Test-grade for different possible reasons (e. g. very broad or missing specification of one or several parameters, reclaim wafers, no particle specification) but might be a cheap alternative for e. g. resist coating tests or equipment start-up.

**Our Silicon-, Quartz-, Fused Silica and Glass Wafers**

Our frequently updated wafer stock list can be found here: 


**Further Products from our Portfolio**

**Plating**

Plating solutions for e. g. gold, copper, nickel, tin or palladium:  


**Solvents (MOS, VLSI, ULSI)**

Acetone, isopropyl alcohol, MEK, DMSO, cyclopentanone, butylacetate, ...  


**Acids and Bases (MOS, VLSI, ULSI)**

Hydrochloric acid, sulphuric acid, nitric acid, KOH, TMAH, ...  


**Etching Mixtures**

for e. g. chromium, gold, silicon, copper, titanium, ...  


**Further Information**

**Technical Data Sheets**


**Material Safety Data Sheets (MSDS)**


(user: microc   password: yoursheets )