AZ® 10XT (520 cp) photoresist performance

Comparison to AZ® 9260
Overview

AZ® 10XT (520 cP) photoresist was tested side by side vs. AZ® 9260 at a film thickness of 12.0 µm.

The two products were compared for coat uniformity, thermal stability, and lithographic performance on silicon as follows.
AZ® 10XT (520 cP) vs. AZ® 9260 Photoresist

Process Conditions:

Optitrac Coat/ Bake
Coat: Static dispense
Substrate: 150mm HMDS primed silicon
Target Film Thickness: 12.0 µm
Spin Speed: 1370 rpm for 30 sec
Softbake: 110°C hotplate/ 180 sec contact
Exposure: Ultratech 1500 gh line stepper, increment 125 mJ/cm²

Develop: AZ® 400K 1:4, 260 sec continuous spray @ 27°C

Analysis:

Hitachi S4700 SEM
AZ® 10XT (520 cP) vs. AZ® 9260 Photoresist

Target 12.0 µm FT on 150 mm Silicon by Hand Dispense

5 mm Edge Exclusion Map

AZ® 9260
Spin 30 sec @ 1370 rpm
Mean FT = 12.27 µm
Std. Dev. = 805 Ang. (0.66%)
Range = 0.44 µm
Hi/Lo Var. = 1.78%

AZ® 10XT
Spin 30 sec @ 1370 rpm
Mean FT = 12.02 µm
Std. Dev. = 606 Ang. (0.51%)
Range = 0.34 µm
Hi/Lo Var. = 1.42%

No difference in coat uniformity between the two products
# AZ® 10XT (520 cP) vs. AZ® 9260 Photoresist

Performance Summary on Silicon at 12.0 µm Film Thickness

<table>
<thead>
<tr>
<th>Product</th>
<th>Features (1:1)</th>
<th>Film Thickness (µm)</th>
<th>DTP 10.0 µm (mJ/cm²)</th>
<th>Exposure Latitude 10.0 µm (%)</th>
<th>DOF 10.0 µm (µm)</th>
<th>Linearity (µm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZ® 9260</td>
<td>Dense Lines</td>
<td>12.0</td>
<td>1257</td>
<td>134</td>
<td>18.0</td>
<td>1.8</td>
</tr>
<tr>
<td>AZ® 10XT</td>
<td>Dense Lines</td>
<td>12.0</td>
<td>1283</td>
<td>108</td>
<td>18.0</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Comparable lithographic performance between the two products
AZ® 10XT (520 cP) vs. AZ® 9260 Photoresist

Exposure Latitude on Silicon; FT=12.0 µm; 10.0 µm L/S

Film Thickness: 12.0 µm
Optitrac coater
SB: 110°C/ 180 sec contact
Ultratech 1500 g-h Line Stepper
AZ®400K 1:4, 260 sec continuous spray @ 27°C
AZ® 10XT (520 cP) vs. AZ® 9260 Photoresist

Depth of Focus on Silicon; FT=12.0 µm; 10.0 µm L/S

Film Thickness: 12.0 µm
Optitrac coater
SB: 110°C/ 180 sec contact
Ultratech 1500 g-h Line Stepper
AZ®400K 1:4, 260 sec continuous spray @ 27 °C
AZ® 10XT (520 cP) vs. AZ® 9260 Photoresist

Linearity on Silicon; FT=12.0 µm; F=-3.0 µm; L/S

Film Thickness: 12.0 µm
Optitrac coater
SB: 110°C/180 sec contact
Ultratech 1500 g-h Line Stepper
AZ®400K 1:4, 260 sec continuous spray @ 27°C
AZ® 10XT (520 cP) vs. AZ® 9260 Photoresist

Thermal Stability on Si for Large Pads and 10.0 µm Lines

Film Thickness: 12.0 µm
Optitrac coater
SB: 110°C/180 sec contact
Ultratech 1500 g-h Line Stepper
AZ®400K 1:4, 260 sec continuous spray @ 27 °C
Summary

AZ® 10XT showed no difference in coat uniformity or thermal stability compared to AZ® 9260.

Lithographic performance for these two products was virtually identical.