High Quality Test Wafer and Analysis Support To Help R&D Work On CMP Process, Consumables and Materials

April, 11 2019

ADVANCED MATERIALS TECHNOLOGY INC.
www.amti.co.jp
Yasuji Moriki morikiy@amti.co.jp
Toshihiro Aoki aokit@amti.co.jp
ADVANCED MATERIALS TECHNOLOGY INC.

- AMT (Advanced Materials Technology) has been contributing to the field of CMP technology for over 20 years as a Test Wafer Supplier.
- Supporting over 150 customer companies all over the world
- Dealing with about 100 supplier companies
- Head Quarter, Sales Office and Distribution Warehouse in Fukuoka Japan.
- Customer Support Office in Taiwan (R.O.C.)
Customer Benefit

- Highly controlled quality test wafers
- Stable supply of test wafers mainly in 12inch and 8inch.
  AMT has good relationships with mass production fabs in Japan.
- Find high end test wafers
  AMT has access to the state of art R&D lines.
- Analysis support

*We show you technical data of quality test wafers and analysis support from next slide.*
AMT STI Pattern Wafers

HDP Oxide complete filling into STI trenches

Center (0.5/0.5um)

Center (1000/1000um)

AMT Proprietary
AMT a-Si/SiN Pattern Wafers

We’ve developed amorphous-Si stopper/ LP-SiN fill pattern.
AMT CD50nm STI Pattern Wafers

We’ve developed advanced node of STI pattern.
AMT W-CVD Pattern Wafers

Mass production technology of TiN/W-CVD fill

Center (180nm)

Center (250nm)
Pattern Edge Cut less than 1mm

Full Shot including Edge Chips
EE less than 1mm

TEOS Patterning

W-CVD fill Pattern
12inch W-CVD Film Roughness Analysis

W-CVD grain growing depends on thickness.

W-CVD 400nm Thick

<table>
<thead>
<tr>
<th>ISO 25178</th>
<th>高さパラメータ</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sq</td>
<td>23.50 nm</td>
<td>表面の曲率平均高さ</td>
</tr>
<tr>
<td>Sa</td>
<td>13.00 nm</td>
<td>表面の曲率平均高さ</td>
</tr>
<tr>
<td>Sz</td>
<td>166.68 nm</td>
<td>表面の最大高さ</td>
</tr>
</tbody>
</table>

EUR 15178N

<table>
<thead>
<tr>
<th>接幅パラメータ</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sz</td>
<td>155.20 nm</td>
</tr>
</tbody>
</table>

Sa= Ra : Arithmetic Mean Roughness

Sq= RMS : Root Mean Square (Rq)

W-CVD 500nm Thick

<table>
<thead>
<tr>
<th>ISO 25178</th>
<th>高さパラメータ</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sq</td>
<td>77.15 nm</td>
<td>表面の曲率平均高さ</td>
</tr>
<tr>
<td>Sa</td>
<td>21.39 nm</td>
<td>表面の曲率平均高さ</td>
</tr>
<tr>
<td>Sz</td>
<td>186.11 nm</td>
<td>表面の最大高さ</td>
</tr>
</tbody>
</table>

EUR 15178N

<table>
<thead>
<tr>
<th>接幅パラメータ</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sz</td>
<td>181.92 nm</td>
</tr>
</tbody>
</table>

Sa= Ra : Arithmetic Mean Roughness

Sq= RMS : Root Mean Square (Rq)

AMT Proprietary
12inch TiN-CVD film composition analysis

We can provide composition-confirmed CVD-TiN film.

- Ion sputtering rate = 1.05 Å/sec (Based on SiO₂)

AMT Proprietary
Any Questions?

AMT helps customers R&D works all around wafer process by providing test wafers and analysis support.