MEGAPOSIT™ SPR™955-CM SERIES PHOTORESIST
For Microlithography Applications

Regional Product Availability
- North America
- Europe, Middle East and Africa
- Latin America
- Asia-Pacific

Description
MEGAPOSIT SPR955-CM Series Photoresist is a general purpose, high-throughput, i-Line photoresist for 0.35 μm front-end and back-end applications.

Advantages
0.35 μm Design Rules
- Dense lines/spaces and isolated lines on polysilicon
- Dense lines/spaces in high-aspect ratio films on TiN
- Contact holes on oxide
- Isolated spaces (trenches)

Fast Photospeed
- 165 mJ/cm² at 0.25 μm lines/spaces in 0.97 μm resist thickness
- 245 mJ/cm² at 0.40 μm lines/spaces in 1.40 μm resist thickness

Table 1. Recommended Process Conditions

<table>
<thead>
<tr>
<th>Contact Holes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>0.70–1.20 μm</td>
</tr>
<tr>
<td>Softbake</td>
<td>90°C/90 sec. Proximity Hotplate</td>
</tr>
<tr>
<td>PEB</td>
<td>120°C/90 sec. Proximity Hotplate</td>
</tr>
<tr>
<td>Developer</td>
<td>Recommended for 0.26N; Compatible with 0.24N</td>
</tr>
</tbody>
</table>

Table 2. Recommended Process Conditions

<table>
<thead>
<tr>
<th>Lines/Spaces</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>1.00–2.30 μm</td>
</tr>
<tr>
<td>Softbake</td>
<td>100°C/90 sec. Proximity Hotplate</td>
</tr>
<tr>
<td>PEB</td>
<td>110°C/90 sec. Proximity Hotplate</td>
</tr>
<tr>
<td>Developer</td>
<td>Recommended for 0.26N; Compatible with 0.24N</td>
</tr>
</tbody>
</table>
Figure 1.

Dense Contact Holes
0.300 μm
FT: 0.865 μm
SUB: 3.000A Silicon
DEV: MF™501 (0.24N)

Isolated Trench
0.300 μm
FT: 0.916 μm
SUB: Si₃N₄
DEV: MF-501 (0.24N)

Dense and Isolated Lines/Spaces
0.325 μm Dense Lines/Spaces
0.250 μm Isolated Line
FT: 0.970 μm
SUB: Polysilicon
DEV: MF CD-26 (0.28N)

Dense Metal Features
0.340 μm Dense Lines/Spaces
FT: 1.40 μm
SUB: 400Å Titanium Nitride
DEV: MF-501 (0.22N)

Figure 2. Interference Curves on Silicon at 0.70–1.15 μm Thickness
Figure 3. Absorbance Curves

![Absorbance Curves](image)

Table 3. Cauchy Coefficients

<table>
<thead>
<tr>
<th>$n_1$</th>
<th>1.6463</th>
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</thead>
<tbody>
<tr>
<td>$n_2$</td>
<td>-2.2496e+6</td>
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<tr>
<td>$n_3$</td>
<td>6.3448e+13</td>
</tr>
</tbody>
</table>

Figure 4. Interference Curves on Silicon at 1.20–1.65 μm Thickness

![Interference Curves](image)

Figure 5. Spin Speed Curve

![Spin Speed Curve](image)
Table 4. Dill Parameters

<table>
<thead>
<tr>
<th>Dill A Value</th>
<th>0.76 μm-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dill B Value</td>
<td>0.05 μm-1</td>
</tr>
</tbody>
</table>

Figure 6. Linearity for Dense Lines/Spaces at 1.4 μm

SUB: 400Å TiN over 100 nm silicon
FT: 1.40 μm ±50Å
SB: 100°C/60 sec. contact hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 110°C/60 sec. contact hotplate
DEV: MF-701, 60 sec. SP
Figure 7. Linearity for Dense Lines/Spaces at 1.8 μm

SUB: 100 nm on Si, 1,600Å Brewer BARC
FT: 1.80 μm ±50Å
SB: 100°C/90 sec. contact hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 110°C/60 sec. contact hotplate
DEV: MF-501, 60 sec. SP
Figure 8. Linearity for Isolated Trenches

SUB: 3,000Å Si$_3$N$_4$ on Si
FT: 9,100Å ±25Å
SB: 100°C/90 sec. contact hotplate
EXP: ASML PAS5500™/200 (0.55 NA, 0.65σ)
PEB: 110°C/90 sec. contact hotplate
DEV: MF CD-26, 60 sec. SP
Figure 9. Focus Latitude for 0.350 μm Dense and Isolated Lines/Spaces

SUB: 1,100 Å Brewer ARC™ XHRI-11 on Poly Si on Si
FT: 9,700Å ±25Å
SB: 100°C/90 sec. proximity hotplate
EXP: ASML PAS5500/200 (0.55 NA, 0.65σ)
PEB: 110°C/90 sec. contact hotplate
DEV: MF CD-26, 60 sec. SP
Figure 10. Focus Latitude for 0.350 μm Contact Holes

SUB: 1.00 mm Si with 1,100Å XHRi-11 Brewer ARC
FT: 8.65 μm ±25Å
SB: 90°C/60 sec. contact hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 110°C/60 sec. contact hotplate
DEV: MF CD-26, 30 sec. SP @ 21°C (TCU)
Figure 11. Thermal Flow Characteristics

SUB: 1.00 mm Si with 1,100 Å XHRI-11 Brewer ARC
FT: 1.41 μm ±25Å
SB: 100°C/90 sec. proximity hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 110°C/90 sec. proximity hotplate
DEV: LDD-26W, 60 sec. SP @ 21°C
HB: As indicated, 3 min. contact hotplate
Figure 12. Thin Film Head Application 1.0 µm Isolated Lines

SUB: 100 µm NiFe/850Å LOL™1000
FT: 0.80 µm ±25Å
SB: 90°C/120 sec. proximity hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 115°C/60 sec. contact hotplate
DEV: LDD-26W, 40 sec. SP @ 21°C (TCU)
Figure 13. High Energy Implant Application

SUB: 100 mm Si  
FT: 5.0 μm ±25Å  
SB: 90°C/120 sec. contact hotplate  
EXP: ASML PAS5500/200 (0.55 NA, 0.54σ)  
PEB: 110°C/60 sec. proximity hotplate  
DEV: MF-501, 30/30 sec. DSP @ 21°C
Handling Precautions

Before using this product, associated generic chemicals or the analytical reagents required for its control, consult the supplier’s Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on material hazards, recommended handling precautions and product storage.

CAUTION! Keep combustible and/or flammable products and their vapors away from heat, sparks, flames and other sources of ignition including static discharge. Processing or operating at temperatures near or above product flashpoint may pose a fire hazard. Use appropriate grounding and bonding techniques to manage static discharge hazards.

CAUTION! Failure to maintain proper volume level when using immersion heaters can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

Storage

Store products in tightly closed original containers at temperatures recommended on the product label.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

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Contact:
North America: 1-800-832-6200
Taiwan: 886-37-539100
China: (+86) 21-3851-1000
Hong Kong: (+852) 2879-7333
Korea: (+82) 2-9490-0700
Japan: (+81) 3-5492-2200
Europe: (+41)(0)44-728-2111
www.dowelectronicmaterials.com

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