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/cm^2 at 0.25 µm lines/spaces in 0.97 µm resist thickness
- 245 mJ/cm^2 at 0.40 µm lines/spaces in 1.40 µm resist thickness

Table 1. Recommended Process Conditions	
Contact Holes	
Thickness	0.70–1.20 µm
Softbake	90°C/90 sec. Proximity Hotplate
PEB	120°C/90 sec. Proximity Hotplate
Developer	Recommended for 0.26N; Compatible with 0.24N

Table 2. Recommended Process Conditions	
Lines/Spaces	
Thickness	1.00–2.30 µm
Softbake	100°C/90 sec. Proximity Hotplate
PEB	110°C/90 sec. Proximity Hotplate
Developer	Recommended for 0.26N; Compatible with 0.24N

®™ Trademark of The Dow Chemical Company (“Dow”) or an affiliated company of Dow

Figure 1.

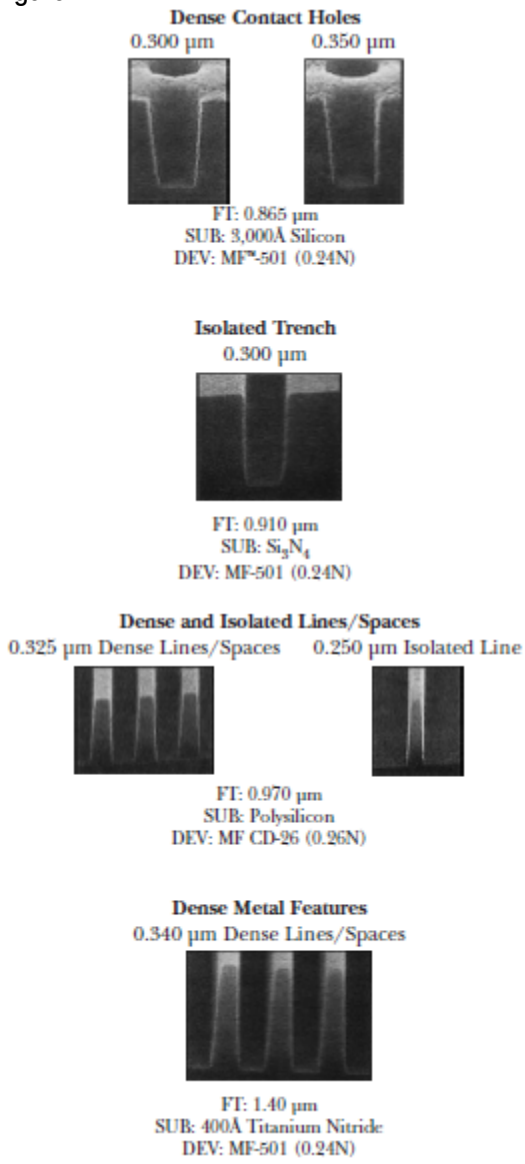


Figure 2. Interference Curves on Silicon at 0.70–1.15 **µm Thickness**

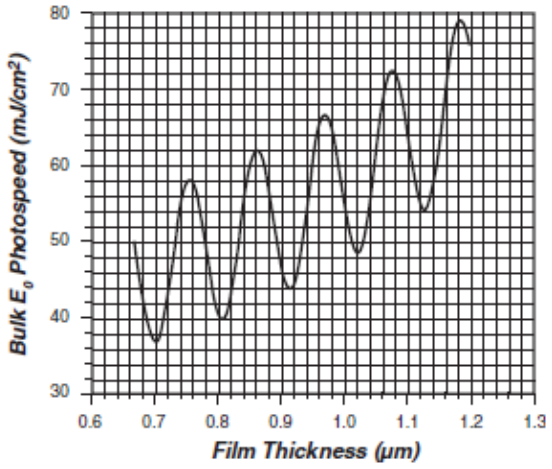


Figure 3. Absorbance Curves

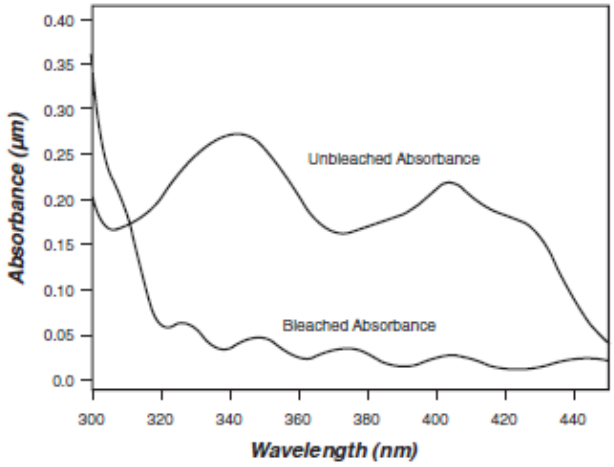


Table 3. Cauchy Coefficients	
n_1	1.6463
n_2	-2.2496e+6
n_3	6.3448e+13

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

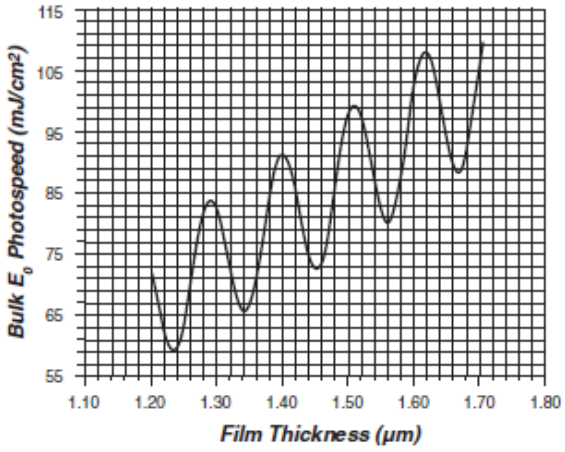


Figure 5. Spin Speed Curve

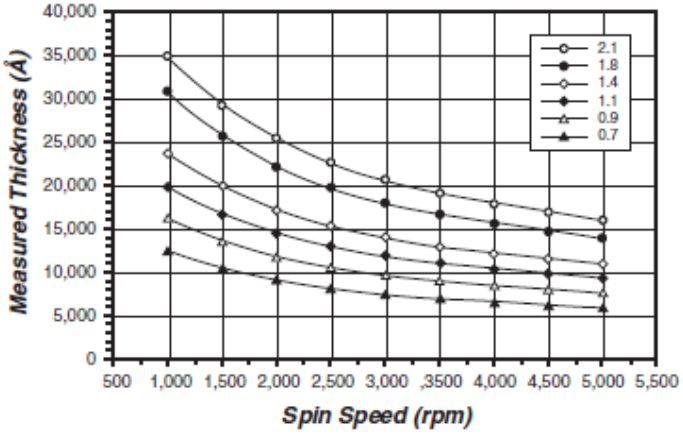
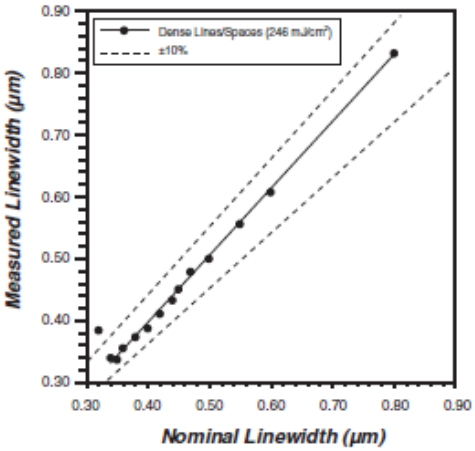
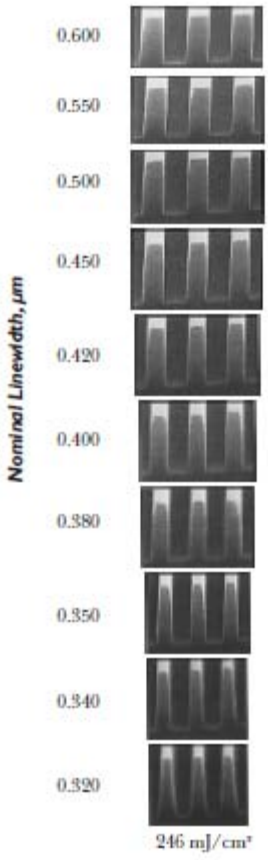


Table 4. Dill Parameters	
Dill A Value	0.76 µm-1
Dill B Value	0.05 µm-1

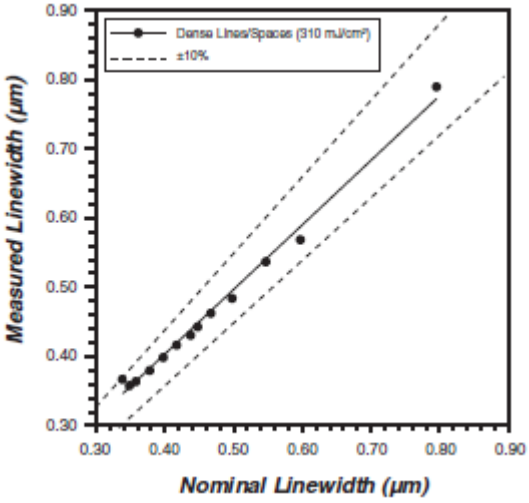
Figure 6. **Linearity for Dense Lines/Spaces at 1.4 µm**

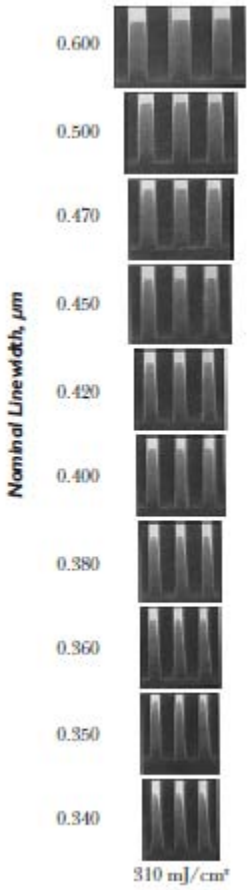




SUB: 400Å TiN over 100 nm silicon
FT: 1.40 µm ±50Å
SB: 100°C/60 sec. contact hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 110°C/60 sec. contact hotplate
DEV: MF-701, 60 sec. SP

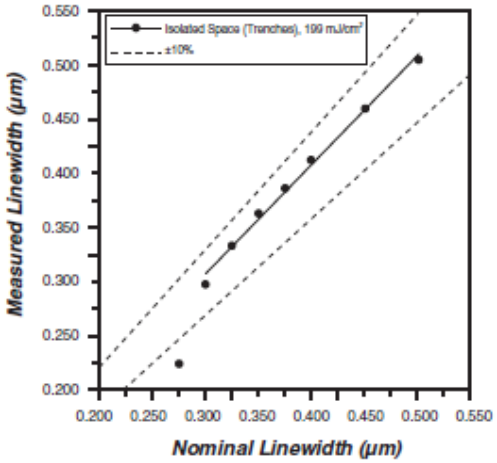
Figure 7. **Linearity for Dense Lines/Spaces at 1.8 µm**

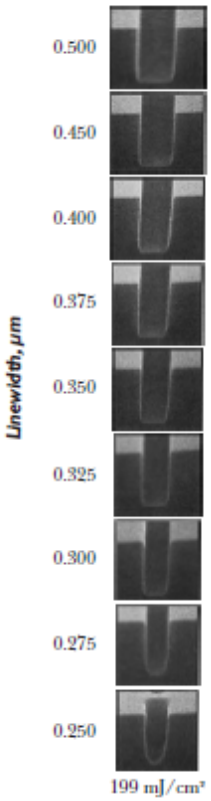




SUB: 100 nm on Si, 1,600Å Brewer BARC
FT: 1.80 µm ±50Å
SB: 100°C/90 sec. contact hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 110°C/60 sec. contact hotplate
DEV: MF-501, 60 sec. SP

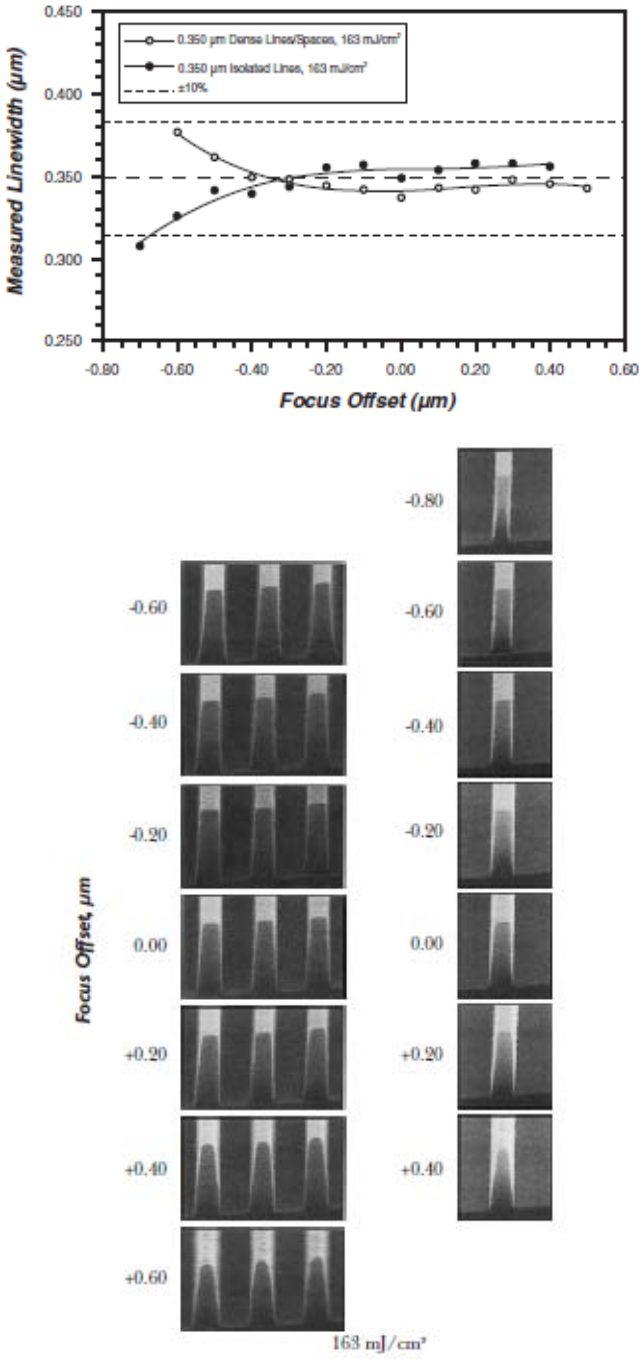
Figure 8. Linearity for Isolated Trenches





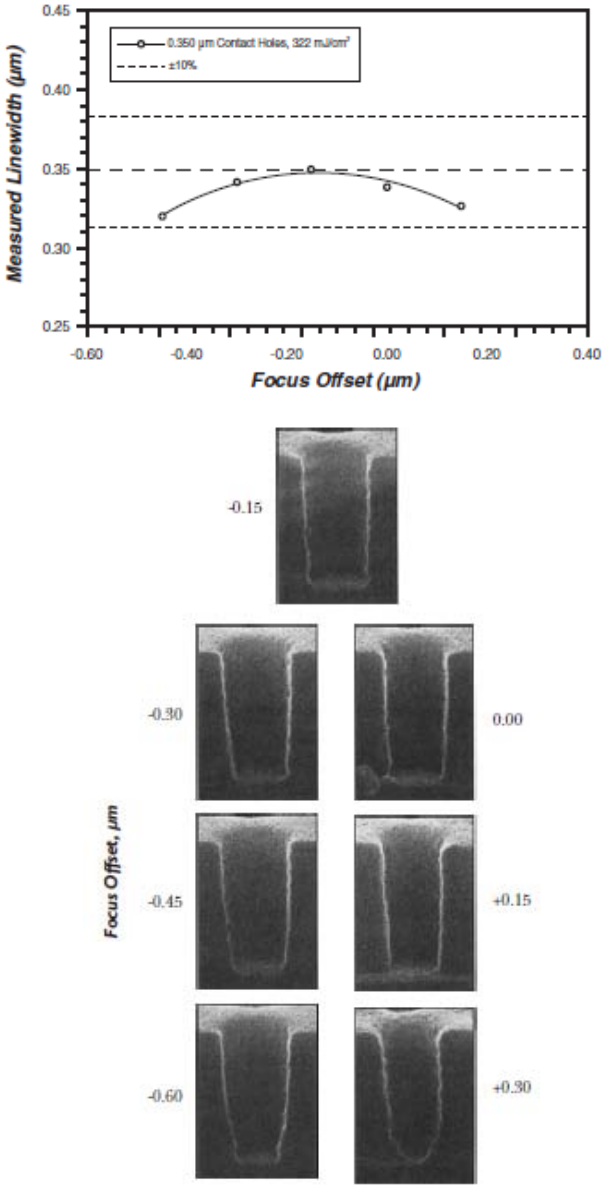
SUB: 3,000Å Si_3N_4 on Si
FT: 9,100Å ±25Å
SB: 100°C/90 sec. contact hotplate
EXP: ASML PAS5500™/200 (0.55 NA, 0.65σ)
PEB: 110°C/90 sec. contact hotplate
DEV: MF CD-26, 60 sec. SP

Figure 9. **Focus Latitude for 0.350 µm** Dense and Isolated Lines/Spaces



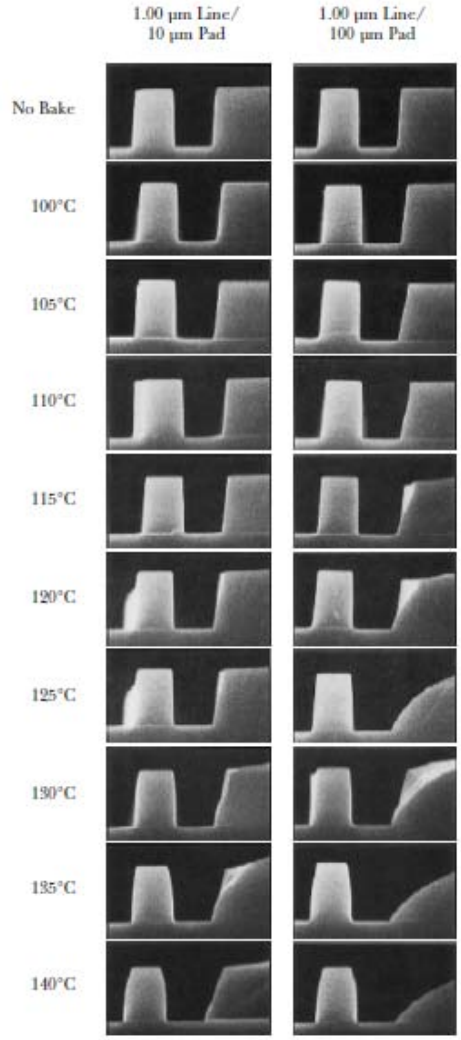
SUB: 1,100 Å Brewer ARC™ XHRi-11 on Poly Si on Si
FT: 9,700Å ±25Å
SB: 100°C/90 sec. proximity hotplate
EXP: ASML PAS5500/200 (0.55 NA, 0.65σ)
PEB: 110°C/90 sec. contact hotplate
DEV: MF CD-26, 60 sec. SP

Figure 10. **Focus Latitude for 0.350 µm Contact Holes**



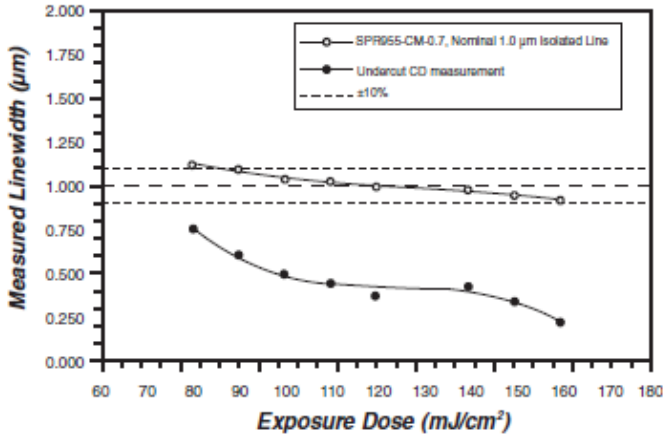
SUB: 1.00 mm Si with 1,100Å XHRi-11 Brewer ARC
FT: 8.65 µm ±25Å
SB: 90°C/60 sec. contact hotplate
EXP: GCA XLS 7500 i-Line (0.55 NA, 0.54σ)
PEB: 110°C/60 sec. contact hotplate
DEV: MF CD-26, 30 sec. SP @ 21°C (TCU)

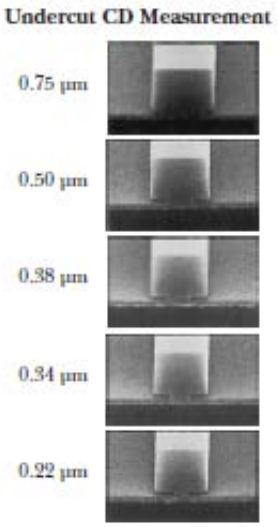
Figure 11. Thermal Flow Characteristics



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

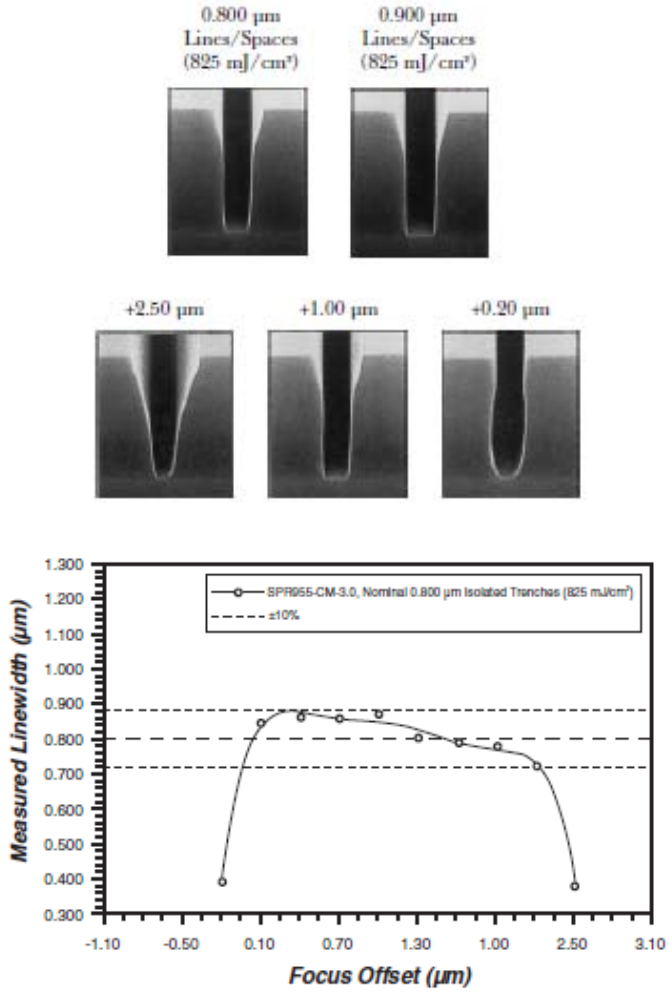
Figure 12. Thin Film Head Application **1.0 µm Isolated Lines**





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.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Electronic Materials Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

For Industrial Use Only. This information is based on our experience and is, to the best of our knowledge, true and accurate. However, since conditions for use and handling of products are beyond our control, we make no guarantee or warranty, expressed or implied, regarding the information, the use, handling, storage or possession of the products, or the applications of any process described herein or the results sought to be obtained. Nothing herein shall be construed as a recommendation to use any product in violation of any patent rights.

Contact:
North America: 1-800-832-6200
Taiwan: 886-37-539100
China: (+86) 21-3851-1000
Hong Kong: (+852) 2879-7333
Korea: (+82) 2-3490-0700
Japan: (+81) 3-5460-2200
Europe: (+41)(0)44-728-2111
www.dowelectronicmaterials.com

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to “Dow” or the “Company” mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.