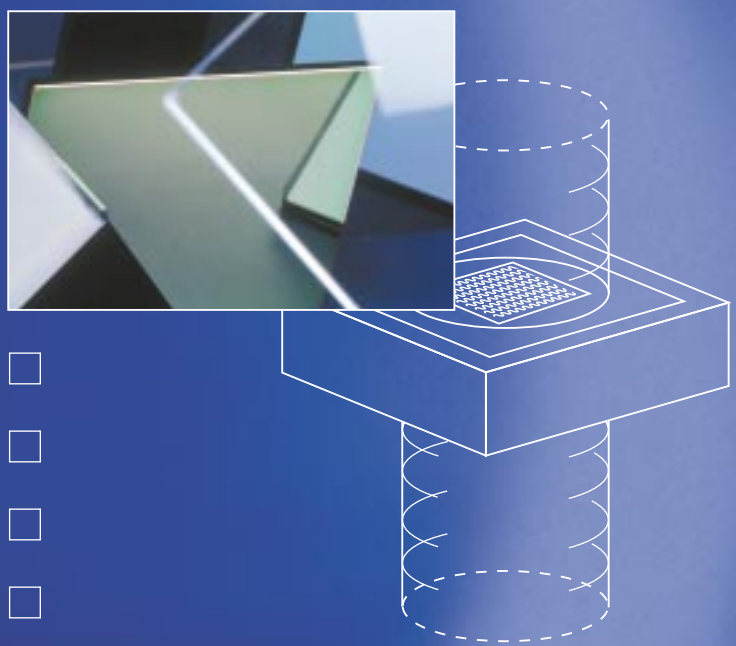
Mask Blanks

IC, Advance Packaging



SCHOTT lithotec

Schott Lithotec DUV Mask Blanks

Schott Lithotec has a fundamental know-how in material and process development as well as in thin film technology. Thus, Schott Lithotec offers substrates and mask blanks covering the complete range of current and next generation lithography. With the in-house production of fused silica material and ZERODUR®, a zero thermal expansion material, Schott has its own source for DUV and EUV materials.

Substrate Polishing Line

Advanced polishing equipment guarantees the highest surface quality and flatness. Our flatness inspection tools show best results for Schott Lithotec substrates in the range of 0.5 µm and below. AFM roughness measurements are used to monitor the super super polishing grade of Schott Lithotec substrates.

With the new advanced quality line for DUV and EUV mask blanks, which is located in Germany, Schott Lithotec has set a tailored environment for manufactoring leading edge products: The entire production takes place in hyper clean room atmosphere. SMIF pods guarantee zero defects from the very beginning up to the packaging.

The coating tools are designed for optimized chrome systems as well as high resolution photo and e-beam resists. Multilayer coatings for EUV mask blanks are available on zero thermal expansion materials like ZERODUR®.

According to the roadmap, the improvements of our products are focused on the realization of feature sizes down to 0.15 µm and below. Enhancement of the CD performance and the reduction of defect size and density are the primary demands.

The quality control processes of Schott Lithotec use sophisticated instruments to guarantee that only the highest quality levels are delivered to our customers worldwide. 100 % final blank inspection is done by using the laser scanning inspection system with resolution below 0.15 µm. Defects are located, identified and classified precisely.

Programs for Future Products

The following mask blank projects are presently performed by Schott Lithotec:

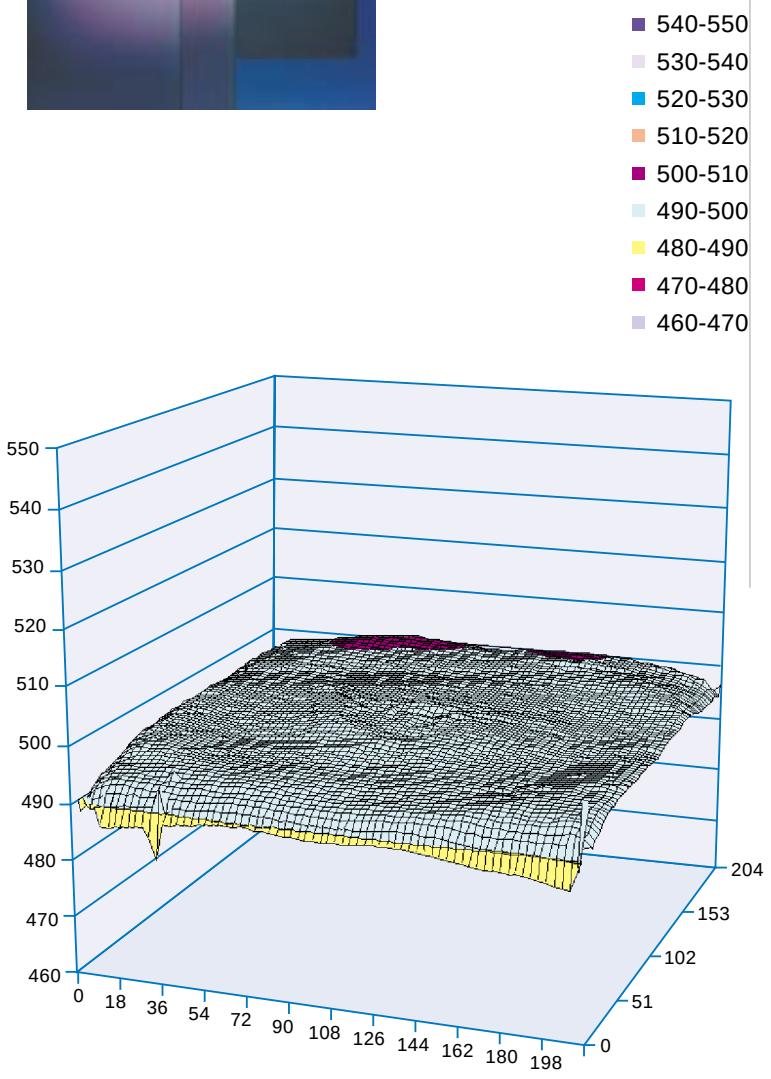
- Phase shifter mask blanks
- 157 nm lithography mask blanks
- EUV mask blanks

Mask Blanks for Advanced Packaging

Advanced Packaging is an emerging market. The technology need masks for full field exposures of 150 mm as well as 200 mm wafers. To guarantee full performance using proximity or contact mode for exposure, mask blank substrates are needed with a high degree of flatness.

All mask blanks have an ARC with an etch time of 50 seconds and are available with divers resist coating, such as AZ1505.

Preferred materials are green soda lime for 7012 mask blanks and 9012 mask blanks. However, fused silica is available as standard product also.



Resist coating of a 9 inch mask blank with a broadband photo resist. Substrate Flatness ≤ 15 µm, resist homogeneity ≤ ± 1%. For reference only.

Resist Type: AZ1505

One Color Level =10 nm

Green Soda Lime Products

All: Anti-Reflective Chrome system, Green Soda Lime Material,

Size	Flatness [µm]		Defect level	Resist type	Resist thickness [Å]
6012	5	C	Visual – 04	AZ1505	5000
7012	5	C	Visual – 04	AZ1505	5000
9012	15	C	Visual	AZ1505	5000
9025	15	C	Visual	AZ1505	5000

Visual = Visual Inspection only, other resists available on request.

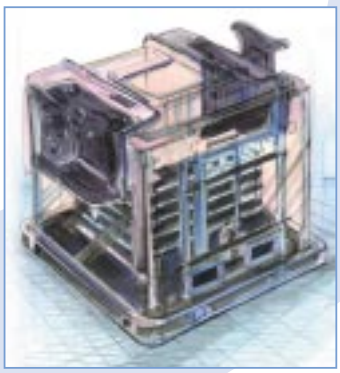
High End Mask Blanks Production

Cutting of raw ingot

Lapping and polishing

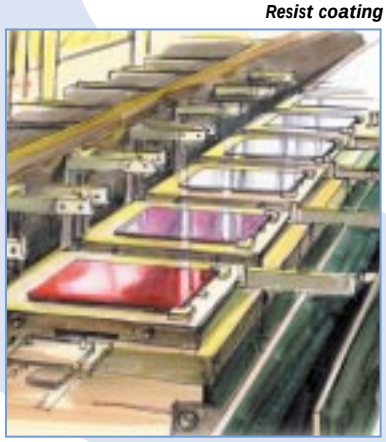
Flatness inspection and cleaning

SMIF Pod



Chrome coating

Resist coating



Final Inspection/Packaging