9" x 9" x 0.120" Chrome Photomask

FEATURES

Brown Reflective Chrome Photomask (LRC)

9" x 9" x 0.120" (L x W x D)

228mm x 228mm x 3.00mm

A photomask is an opaque plate or film with transparent areas that allow light to shine through in a defined pattern. They are commonly used in photolithography processes, but are also used in many other applications by a wide range of industries and technologies. They are made on Soda Lime glass, on Fused Silica (Quartz) and even on polyester film. The mask acts as a template, and is designed to optically transfer patterns to wafers or other substrates in order to fabricate devices of all types

Specifications

- **MATERIAL**: Soda Lime Glass
- **DIG / SCRATCH**: 20 / 40
- **SIZE**: 228 x 228 (+0 / - 0.2mm)
- **THICKNESS**: 3.00 mm (+/- 0.2mm)
- **FLATNESS**: 10 um (+/- 3um)
- **COATING**: Chrome Oxide 0.1um
- **REFLECTIVITY**: s/s Brown reflective 11% @ 450nm
- **DENSITY**: > OD3 @ 436 nm g-line
- **MIN CD**: Dependant on imaging Class chosen
- **RESOLUTION**: Class 1 - 4
- **POSITIONING**: +/- 1.0mm
- **ACCURACY**: = Dependant on imaging Class chosen
- **PACKAGING**: Individual Plastic Case
- **DEFECT SPEC**: Standard in house

PRODUCTS AVAILABLE

Photomasks

Reticles & Calibration Plates

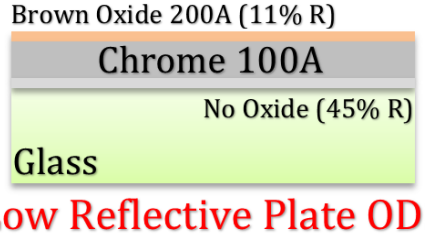
Photo Tooling

Large Format

Agfa Film Supplies

CAD-CAM Software

For more information on any of our products or services please visit us on the Web at: www.jdphotodata.co.uk



Low Reflective Plate OD3

PRODUCTS OPTIONS

White Backing

Reflective Backing

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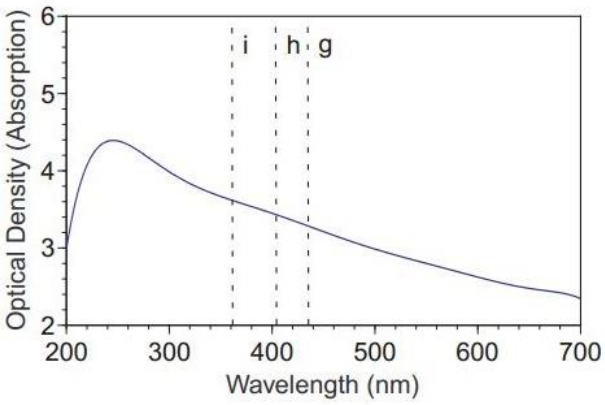
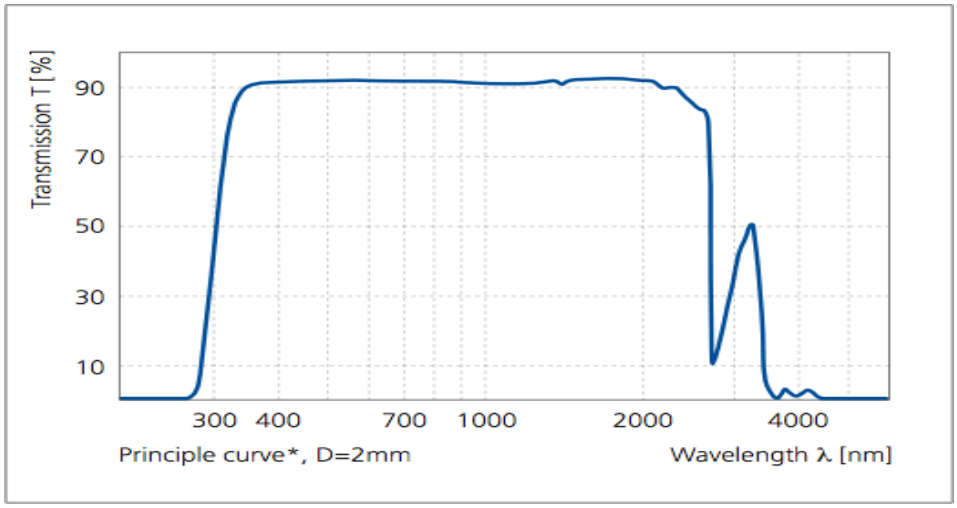
TRANSMISSION OF LIGHT THROUGH CHROME

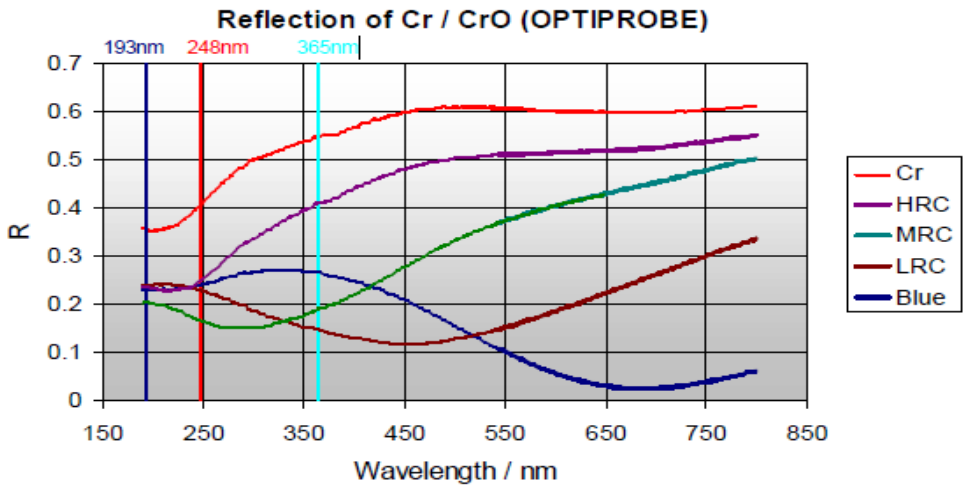


Optical Density 5 = 0.001% transmission
Optical Density 4 = 0.01 % transmission
Optical Density 3 = 0.1% transmission

TRANSMISSION OF LIGHT THROUGH SODA LIME



REFLECTIVITY



RESOLUTIONS

Class 1 : This represents a resolution that is equivalent to approximately 64k dpi .Although this resolution may resolve smaller features, we recommend keeping feature sizes above 10um as corner rounding is considerable. Edge sharpness and definition is acceptable for non critical design types, although designs with arcs/circles and lines running off 90 degree grid may show pixilation. NO features such as lines / circles / spots / squares below 10 um unless on a 'best effort' basis previously agreed with our technicians.

Class 2 : This represents a resolution that is equivalent to 128k. This resolution will resolve down to 4 micron lines and has good line edge qualities with only a small pixilation along edges. Corner rounding is below 3um but still visible. NO features such as lines / circles / spots / squares below 4um unless on a 'best effort' basis previously agreed with our technicians.

Class 3 : This represents our most common resolution for demanding, high precision photomasks. It is equivalent to 256k dpi, and offers an excellent price / quality balance. This resolution will resolve down to 2 micron lines and has very good line edge qualities with no pixilation along edges, and corner rounding is kept to a minimum.

Class 4 : Our highest resolution, which is equivalent to 512k dpi , and is the best quality that we can offer. This resolution will resolve down to 1 micron lines and has excellent line edge qualities with no pixilation along edges, and corner rounding is barely visible.

INSPECTION

Standard : We firstly inspect the piece by eye for flaws, design inaccuracies and contaminations. We also inspect a test coupon (placed in the bottom corner of the mask) for line width accuracy and edge definition. Next we measure the overall dimension of the mask, and record both of these measurements on our internal inspection records. Finally, we find the CD of the mask, measure that, record it, and also take a digital photo that is saved with the inspection log. We use Nikon MM40 at 900x magnification and an OGP ZIP 300 at 400 x magnifications for this.

Enhanced : In addition to the standard inspection process described above, we will then document them via a Certificate of Conformance which we supply with the mask. Tolerances are per our standard tolerances.

Full Certificate : By selecting this option during the ordering process, we will inspect upto 10 customer defined measurements, with customer supplied tolerances. You will need to send us a document, or a separate layer of the design, showing us where you want us to take the measurements from. There can be upto 10 positions defined by the customer. These dimensions are then programmed on the co-ordinate measuring system and the mask is compared to this unique program. A certificate of conformity is given if the mask passes the inspection process.

WRITE AREA

The way that the masks are manufactured means that we have a "keep out" area that we cannot write critical features to - this equates to a 10mm border around the edge of the plate. This is because the resist is slightly thicker in the corners and edges, where it builds up during the spinning process. We use ‘fringeless’ blanks wherever possible, so can image outside of this area if necessary, but recommend only text and references marks in this outer area.

DEFECT SPECIFICATIONS

The Customer Defect Specification Form is to be used by customers to inform us of their defect specifications. It may be supplied to cover every order within a given time frame, or on a per order basis. If the form is not submitted, our own internal specifications take over. These specifications will be used by our front end engineers to asses if masks can be written before going into the write phase, and customers will be informed where specifications are deemed to be unachievable.

FEATURE TOLERANCES

Feature Tolerance refers to one specific feature (also known as CD or Critical Dimension). So, if part of your mask design has a 12um channel and this is a critical feature, you can use the table below to work out possible deviations to the channel width, depending upon which resolution you choose. As a rule, the higher the resolution, then the more accurate the individual feature size will be.

Resolution	Material	Tolerance
CLASS 1	64k dpi on chrome photomask	0.8um + 5% host Max 1.4um
CLASS 2	128k dpi on chrome photomask	0.6um + 5% host Max 0.8um
CLASS 3	256k dpi on chrome photomask	Max 0.4um
CLASS 4	512k dpi on chrome photomask	Max 0.2um

DIMENSIONAL TOLERANCES

Overall dimensional tolerances refer to the tolerances over a distance greater then 5mm – in layman's terms, people ask us 'how accurate will the mask be' and these guidelines should go somewhere towards providing the tolerances in overall dimensions ,depending upon the resolution chosen. Again, it goes without saying that the higher the resolution, then the more accurate the final mask.

Resolution	Microns
	where L is measuring length in MM and the resulting figure is in microns.
CLASS 1	= 6.4 + (L * 0.016) um
CLASS 2	= 1.6 + (L * 0.008) um
CLASS 3	= 0.6 + (L * 0.004) um
CLASS 4	= 0.2 + (L * 0.001) um

All figures above in Microns....

Example, at Class 3 resolution a 100mm line would have a tolerance of (0.8 + 0.4) = +/- 1.2um