



FEATURES

Laser Photoplot Film

47.25" x 31.5" x 0.007"

1200mm x 800 mm x 0.018mm

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:

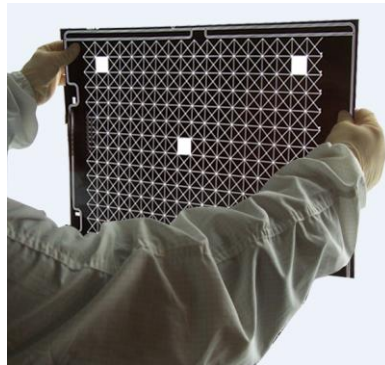
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1200 x 800 Laser Photoplot Film



A Laser Photoplot is an opaque 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 emulsion coated polyester film. The film acts as a template, and is designed to optically transfer patterns to other substrates in order to fabricate devices of all types

Specifications

- **MATERIAL:** PET Polyester Agfa Idealine HPF
- **SIZE:** 1200 x 800mm (+/- 0.5mm)
- **IMAGE SIZE:** 1190 x 790 mm
- **THICKNESS:** 0.18mm (+/- 0.01mm)
- **FLATNESS:** 10 um (+/- 3um)
- **COATING:** Emulsion silver halide gel
- **REFLECTIVITY:** 10-12% @ 400 - 800nm
- **DENSITY:** > OD4 @ 436 nm g-line
- **MIN CD:** Dependant on imaging Grade chosen
- **RESOLUTION:** 4k dpi, 10k dpi, 20k dpi
- **POSITIONING:** +/- 1.0mm
- **ACCURACY:** = 10 + (L * 0.005) um
- **PACKAGING:** Individual Plastic Sleeve
- **DEFECT SPEC:** Standard in house

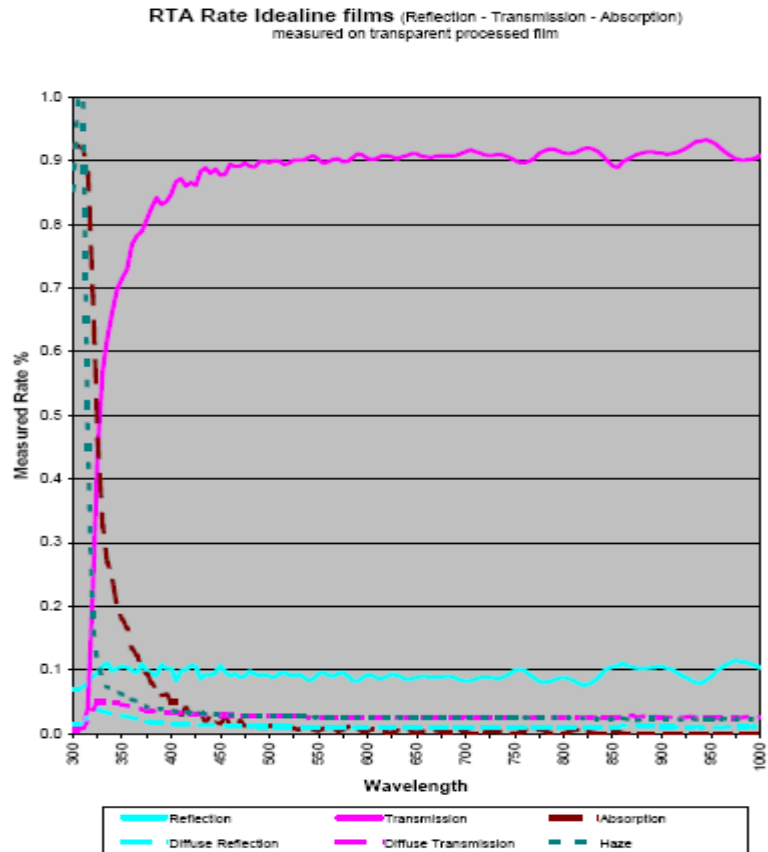
PRODUCTS OPTIONS

White Backing
Reflective Backing



TRANSMISSION AND REFLECTION

All of our laser photo plots are imaged onto Agfa Idealine HPF (High Resolution Plotter Film) 0.18mm thick polyester film which has a photographic emulsion coated onto one side. These are specially manufactured for high resolution and consistent high-quality results. They are both imaged, and inspected, in controlled environments which is crucial to their dimensional stability. For the most accurate films possible, please use this film in an environment of 21 deg C and 50% humidity.



MECHANICAL PROPERTIES

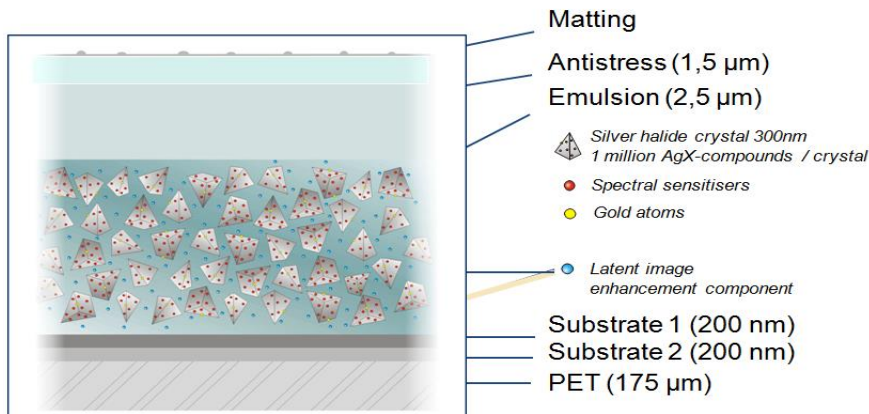
Thermal Coefficient of Expansion (length, width)	0.001% / °F (0.0018% / °C)
Humidity Coefficient of Expansion (length, width)	0.0008% / % RH
Specific Gravity	1.39
Young's Modulus	6.8 x 10 ⁵ psi
Poisson's Ratio < 1 year at room temperature	0.25
Tensile Strength Yield ASTM D882-67	13,500 psi
Tensile Strength Break ASTM D882-67	25,600 psi
Elongation at Yield ASTM D882-67	5.5%
Elongation at Break ASTM D882-67	115%
Tear Strength Initiation Graves Tear ASTM D1004-06	24 lbs.
Tear Strength Propagation Tongue Tear ASTM D1938-67	0.5 lbs.
Toughness ASTM D882-67	21,500 lb. / cubic inch
Refractive Index at wavelength 589 nm	N = 1.50 Vertical axis through thickness N = 1.64 Width direction in plane of sheet N = 1.66 Length direction in plane of sheet



PHOTO
DATA

POLYESTER CONSTRUCTION

Film Photo-Mask



RESOLUTIONS

We can write the films at 3 different resolutions, measured in DPI (Dots per Inch). The higher the resolution, the better the quality. Please see the section SPECIFICATIONS to see the impact that class resolution has on dimensional accuracy and feature tolerances.

4k DPI : This is LOW Resolution. Although this resolution may resolve smaller features, we recommend keeping feature sizes above 100 μm 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 75 μm unless on a 'best effort' basis previously agreed with our technicians.

10k DPI : This represents a MEDIUM Resolution. This resolution will usually resolve down to 50 micron lines with decent line edge qualities with only a slight pixilation along edges. Corner rounding is still noticeable under magnification. NO features such as lines / circles / spots / squares below 40 μm unless on a 'best effort' basis previously agreed with our technicians.

20k DPI : This represents HIGH Resolution. It offers an excellent price / quality balance. This resolution will resolve down to 20 micron lines and has very good line edge qualities with little pixilation along edges, although some circles / squares and spots may have some distortion to them. Corner rounding is usually acceptable at this level.

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 designs can be written before going into the write phase, and customers will be informed where specifications are deemed to be unachievable.



PHOTO
DATA

FEATURE TOLERANCES

Feature Tolerance refers to one specific feature (also known as CD or Critical Dimension). So, if part of your design has a 50um 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.

<i>Resolution</i>	<i>Type: FILM</i>	<i>Tolerance</i>
4k DPI	<i>Laserplot polyester film</i>	+/- 25um
10k DPI	<i>Laserplot polyester film</i>	+/- 15um
20k DPI	<i>Laserplot polyester film</i>	+/- 8um

DIMENSIONAL TOLERANCES

Overall dimensional tolerances refer to the tolerances over a distance greater than 5mm – in layman's terms, people ask us 'how accurate will the film be' and these guidelines should go somewhere towards providing the tolerances in overall dimensions.

<i>FILM MASKS</i>	<i>Microns</i>
All resolutions	= 8.0 + (L * 0.005) um