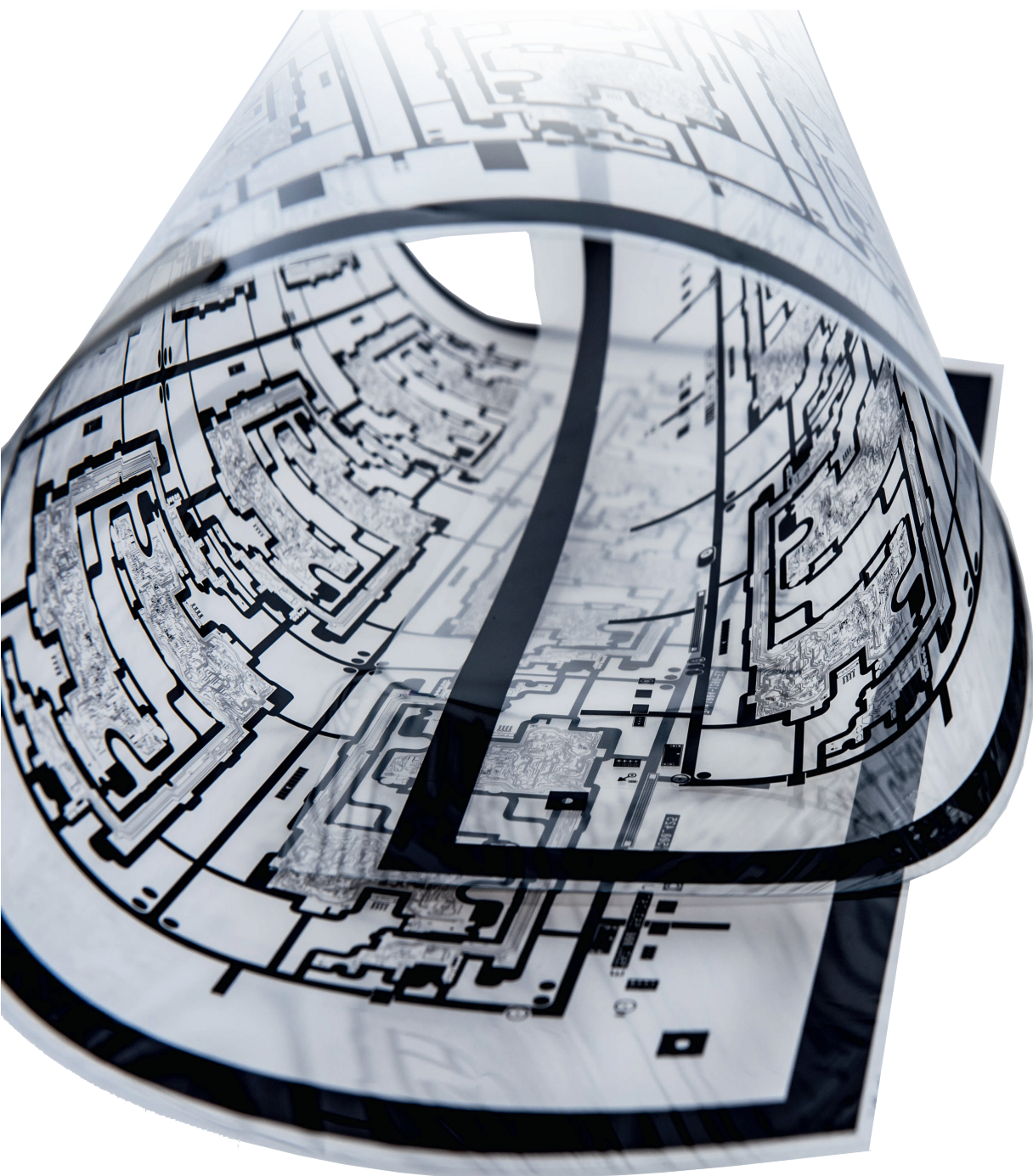


PHOTOTOOLING

FILMS AND CHEMICALS

FROM THE WORLD'S N°1





THE COMPLETE PORTFOLIO

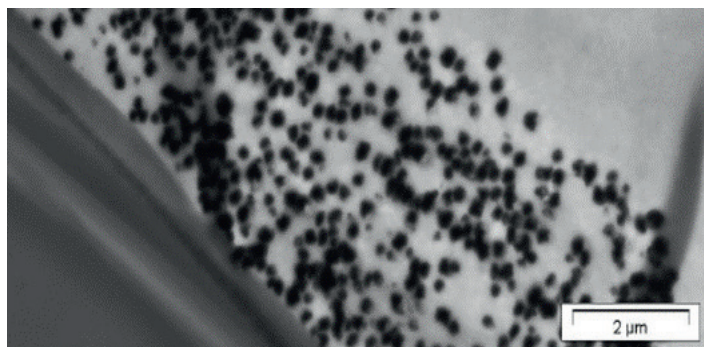
For the production of PCB, Agfa has the most comprehensive range of films and chemicals. Each individual customer can select the solution that meets his needs and best fits his production environment.

WORLD-CLASS FILM TECHNOLOGY

Agfa produces double sided (IdeaLINE RPF, CKF, OPF) and single sided phototool film (IdeaLINE HPF) based on Agfa's proprietary "hard dot" technology. This technology allows for extremely high contrast ratio and very sharp line edges.

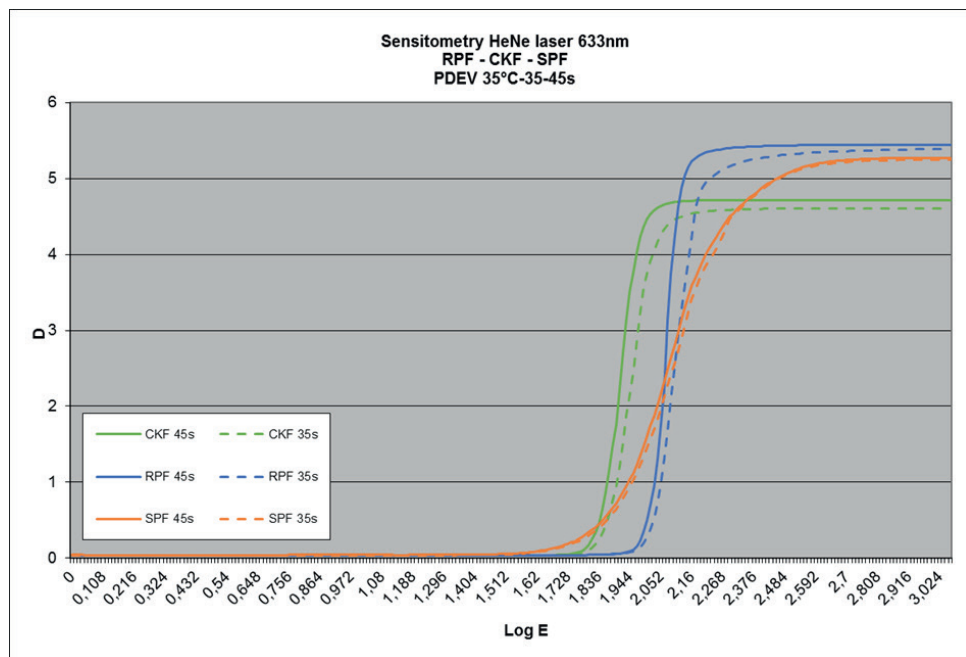
Double sided film is coated with gelatins on both sides. This gelatin acts as a matrix in which silver crystals are encapsulated. They allow the developing & fixing chemistries and rinsing water to penetrate which ensures excellent processing kinetics. Because both sides of the film absorb the same amount of water, the film remains perfectly flat at any relative humidity (RH). This means that mounting and holding the film steady on the exposure unit is perfectly simple.

A single sided gelatine coated phototool film has a superior dimensional stability coefficient for RH since the amount of gelatin is much lower. Good temperature and humidity control ensure that the film stays nice and flat.



Agfa's dot technology is based on nano-size silver particles (black spots in the photo) that are encapsulated in gelatin which allows for extremely high contrast ratio and very sharp line edges.

Agfa's IdeaLINE SPF film is based on "soft dot" technology. Its contrast ratio is somewhat lower and the line edges a little less sharp. It offers a very wide imaging and processing latitude and is perfectly fit for production in less critical environments.

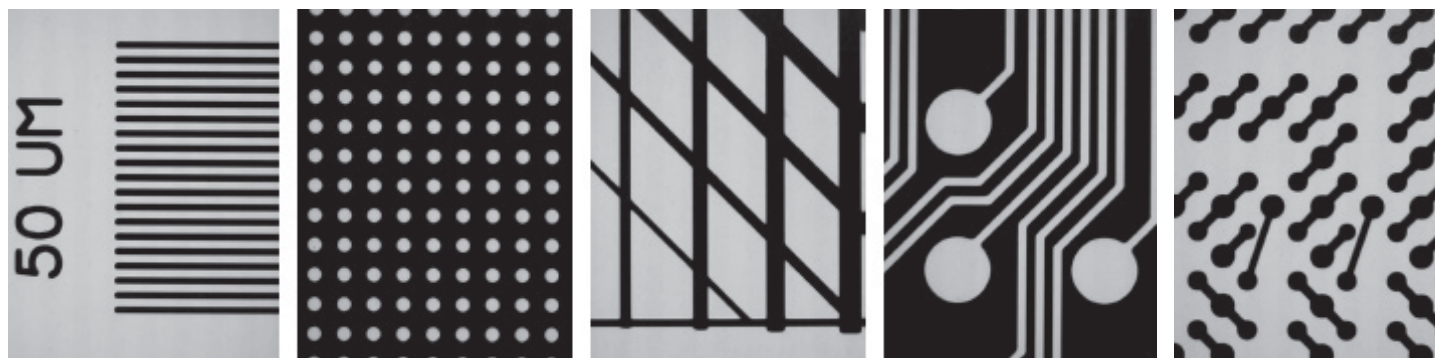


Hard dot films show a very steep sensitometry curve compared to soft dot and its working window is more narrow for both exposure and processing. Changing the developing time has no effect on soft dot film resulting in a wider processing latitude.

UV LIGHT FILM FIT FOR LDI

Agfa's IdeaLINE CPF2 is a special high resolution film that works with UV light. Unique in the market, it can be exposed on Laser Direct Imagers, which is a very good alternative or back-up for a traditional film plotter.

Examples of IdeaLINE CPF2 silver halide film imaged on a Laser Direct Imager.



PRODUCT PORTFOLIO OVERVIEW

FILM TYPE	APPLICATION	EXPOSURE	DARK ROOM SAFE LIGHT
HPF	High resolution work	Red laser or LED 630-670 nm	Dark green (cyan)
RPF	2-sided PCB, multilayers, HDI, lines > 20 µm	Red laser or LED 630-670 nm	Dark green (cyan)
CKF	2-sided PCB, multilayers, lines > 35 µm	Red laser or LED 630-670 nm	Dark green (cyan)
SPF	2-sided PCB, multilayers, lines > 35 µm	Red laser or LED 630-670 nm	Dark green (cyan)
OPF	2-sided PCB, multilayers, HDI, lines > 20 µm	Blue/green laser or LED 405-530 nm	Dark red
CPF2	Exposure on LDI imagers and negative copy from master film	UV ~350 nm	Bright yellow
CHEMICALS	FUNCTION	DILUTION	PROCESSING CONDITIONS
PDEV	Developer	1:2 = 5 litres developer concentrate to make 15 litres working solution	Temp.: 32° - 35°C Time: 30 - 35 sec Repl.: 250 ml/m ²
PFIX	Fixer	1:4 = 5 litres fixer concentrate to make 25 litres working solution	Temp.: 32° - 35°C Time: 30 - 35 sec Repl.: 500 ml/m ²
P-D Cleaner	Developer tank cleaner	2.5 litres part A + 2.5 litres part B for max. 20 litres developer tank	Temp.: 35°C Time: 30 - 60 min

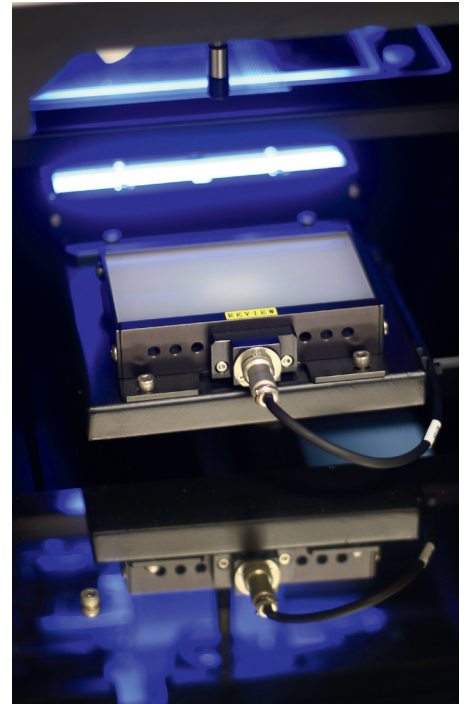
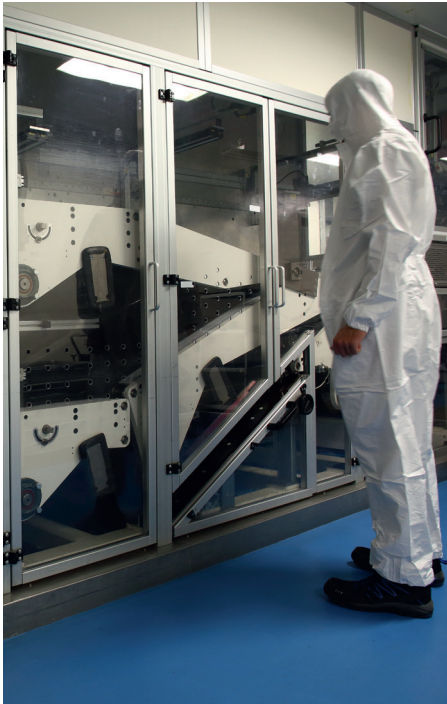
XXL SHEETS - SECURELY PACKED

The finishing and packaging of IdeaLINE film are performed in several locations around the world that follow identically strict processes and controls using equally qualified materials.

The phototooling film is cut and packed in clean room environment. The cutting equipment is encapsulated and kept under laminar HEPA filtered airflow. In addition, the

films go through a final contact surface cleaning system prior to stacking and AOI inspection.

The finishing and packaging of IdeaLINE film take place in clean room environment. In a dedicated room, all film is rigorously quality controlled with sample sheets being inspected using our Automatic Optical Inspection system.



Thanks to our flexible finishing lines, Agfa offers phototooling sheets in an exceptionally wide range of sizes going up as large as 162cm x 245cm.

Most IdeaLINE film products are vacuum packed in a foil which contains a moisture barrier. This vacuum pack is wrapped in a PE foil as an additional barrier against dust

that could come from the cardboard packaging. This PE foil wrap is removed prior to bringing the film into the exposure & processing area.

No matter the sheet size, IdeaLINE's particularly solid and easy to handle packaging fully preserves the product's quality and integrity from manufacturing and transport through to exposure & processing.



QUALITY CERTIFIED PRODUCTION

Agfa has centralized its polyester production and extrusion lines as well as its high quality, high speed coating lines in Mortsel, Belgium.

Multiple film inspection systems continuously monitor each step in the production process in order to ensure consistent world-class product quality.

Within a total annual film capacity of 300 million square meters, a single production batch of phototooling films can go up to 0,5 million square meters.



Between the film manufacturing and finishing the master rolls of coated polyester are stored in a central warehouse.

VALIDATED BY THE GLOBAL INDUSTRY

Building on its vast know-how in the production of polyester films (PET) with coated photosensitive layers, Agfa has been a supplier of films for the production of Printed Circuit Boards since the beginning of production manufacturing. Today, IdeaLINE is the world's N°1 choice for phototooling film thanks to its sustained product quality which has been validated by all the major photoplotter vendors.



AGFA. AT YOUR SERVICE AROUND THE GLOBE

Through self-owned organisations and with the support of longstanding business partners, Agfa is happy to share its expertise and vast application experience with customers worldwide.

For more information on our products, contact your local representative via agfa.com/industrial-imaging.



○ Agfa organisation

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