

DiPaMAT

INTO DIGITAL PCB

WITH INKS FROM THE EXPERT



AGFA 

WHY AGFA

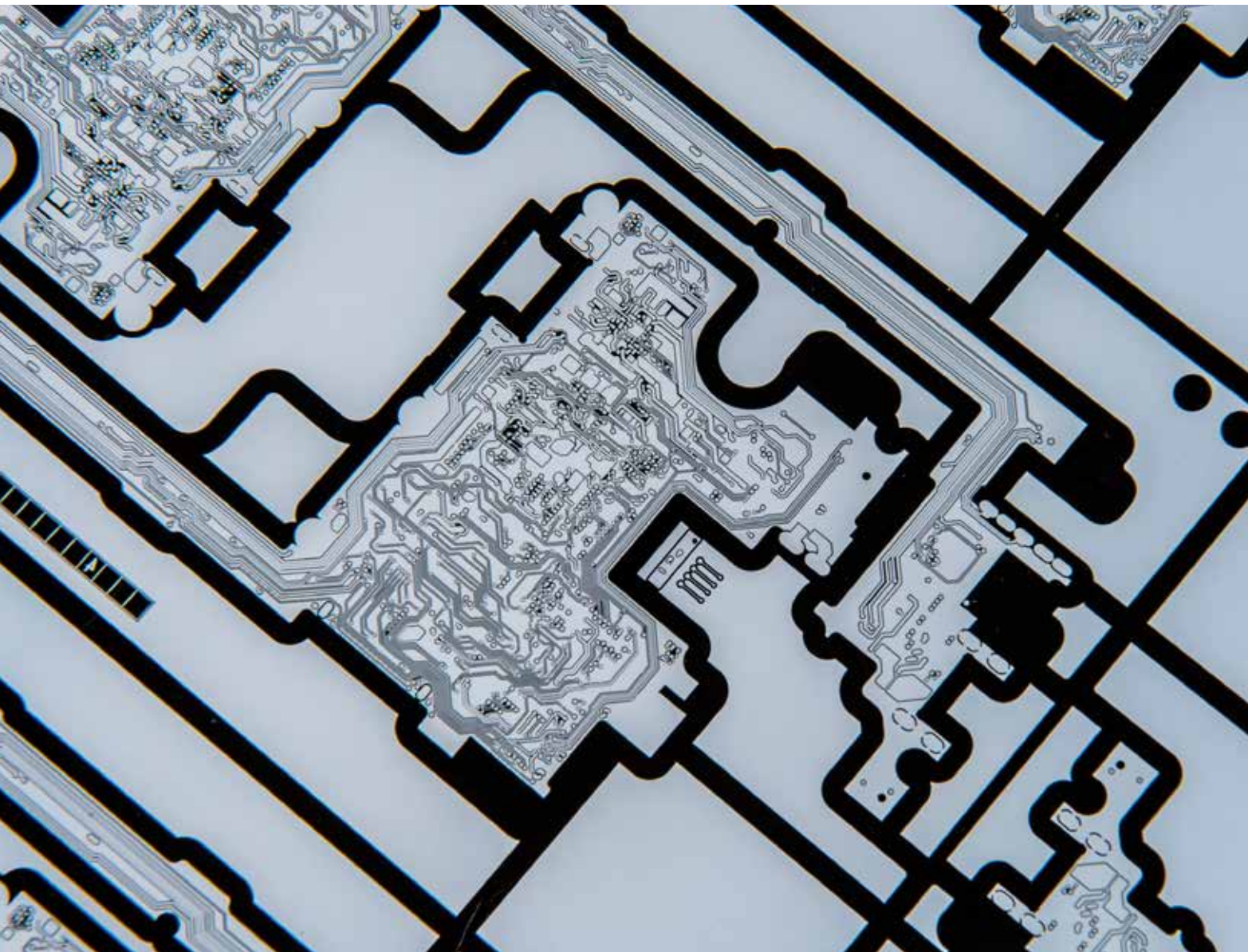


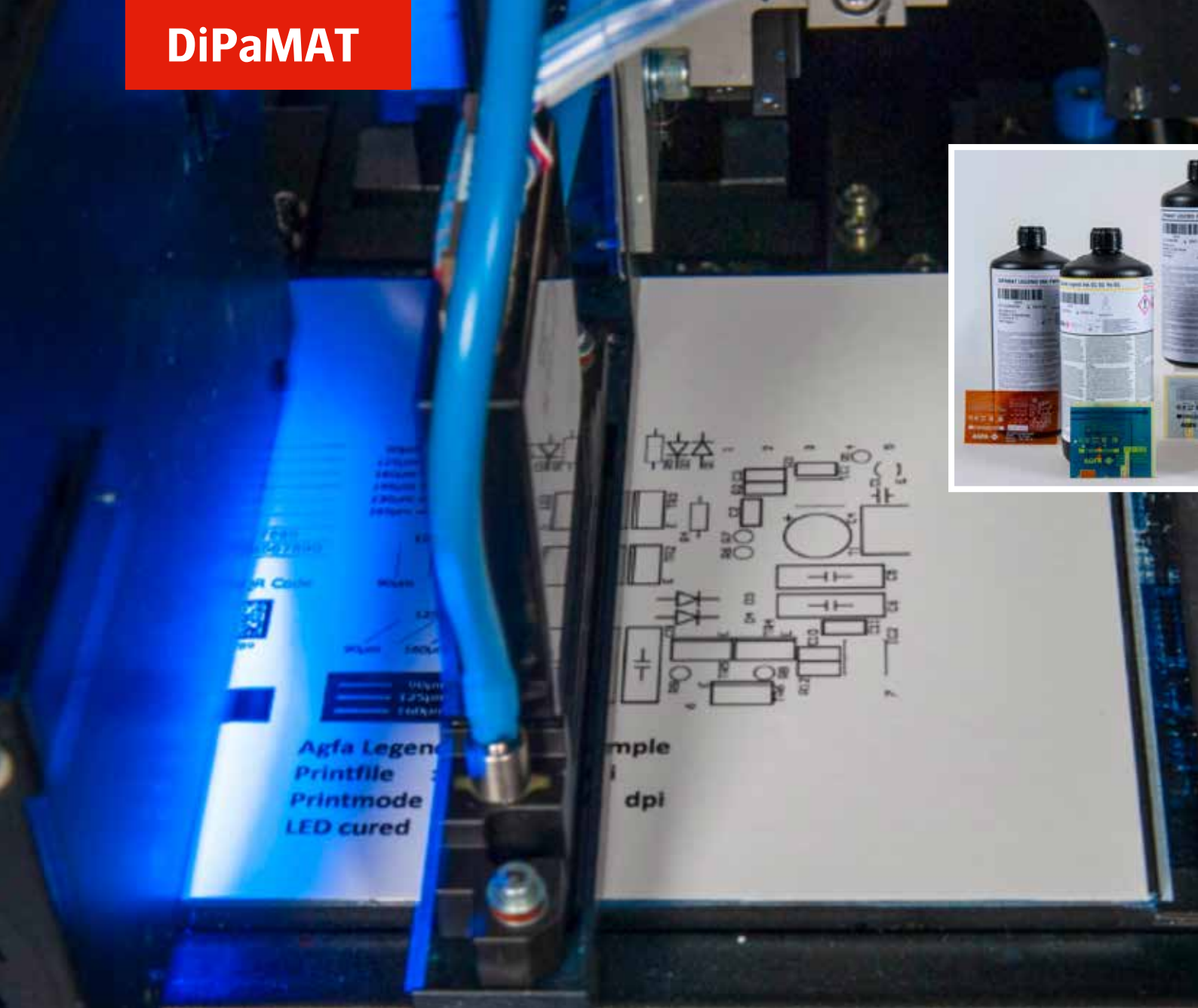
Building on its vast know-how in the production of polyester films (PET) with coated photosensitive layers, Agfa has been a supplier of films for the production of Printed Circuit Boards since the early start of the industry. Today, thanks to its sustained product quality as well as reliable product and service supply, the company is the world's N°1 in phototooling.

The benefits of digital printing in terms of flexibility, cost efficiency and environment friendliness have sufficiently been proven in the graphic and packaging industry to be gradually adopted also by other highly specialised industries.

With each introduction in new markets, however, the requirements set to the inks can be extremely demanding regarding their functional properties and physical behaviour.

Armed with a strong IP portfolio related to inkjet technologies, Agfa is a globally recognised expert in the development and volume manufacturing of inkjet inks for a variety of specific industries. Together with its deep-rooted familiarity with PCB production processes, Agfa is the trusted partner for the PCB manufacturer who is considering the transition from analogue to digital, be it for prototyping or high volume production.





WHY INKJET PRINTING IN PCB

Ironically, the PCB industry has produced the tools that helped many industries to deeply implement digital production technologies, but had to wait for the availability of jettable inks with PCB dedicated functionalities before it could access the digital inkjet world itself.

No doubt, the key incentives for migrating to digital PCB manufacturing are flexibility and environmental sustainability. Inkjet technology allows to output a digital design directly as a finished product in the workshop thereby eliminating unproductive and expensive intermediate steps. Inkjet also integrates series production and customisation into a single process.

Moreover, inkjet includes 'drop-on-demand' technology which means that ink is applied only where needed instead of over full areas. Compared to the conventional production methods inkjet challenges the PCB manufacturer with a fully new paradigm. Implementing it sometimes disrupts existing processes to replace them with unseen opportunities and efficiencies.



ABOUT DIPAMAT INKJET INKS

All inks are UV curable either with mercury bulb or LED. The inks are non toxic and contain no solvents, hence they are environmentally friendly. DiPaMAT inks have a low viscosity, which allows for great printing efficiency within a wide range of printhead technologies.

DiPaMAT inks meet all industry standards as well as health and safety regulations and are manufactured under ISO 9001.

Following Agfa's vendor-neutral strategy, DiPaMAT inks are validated by major suppliers of industrial piezo print heads and printer integrators.

THE UNSEEN POSSIBILITIES OF SOLDER MASK PRINTING

DiPaMAT solder resist ink reaps the benefits of digital inkjet printing at all levels.

Compared to traditional processes or the more recent LDI, inkjet applies solder mask in the exact amount needed only on the desired areas. This reduces largely the number of process steps and the environmental footprint.

Inkjet printers custom built for solder mask combine advanced print heads with sophisticated printing algorithms. This offers the unique capability to vary thickness over the PCB in a truly additive way. Area specific resistance to breakdown voltage and optimized edge coverage are examples of what can be achieved. The unparalleled precision of the ink deposition avoids unwanted ink obstruction in vias and prevents solder bridges.

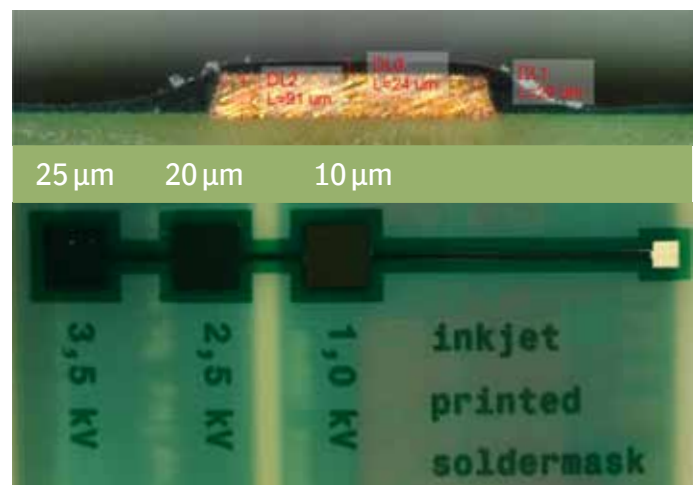


The prestigious IPC APEX Innovation Award was granted in 2019 to the inkjet solution for PCB manufacturing using Agfa's DiPaMAT ink.



DiPaMat Solder Mask meets the IPC SM 840 standard and goes beyond. It has a high thermal resistance and passes the stringent requirements of the automotive industry.

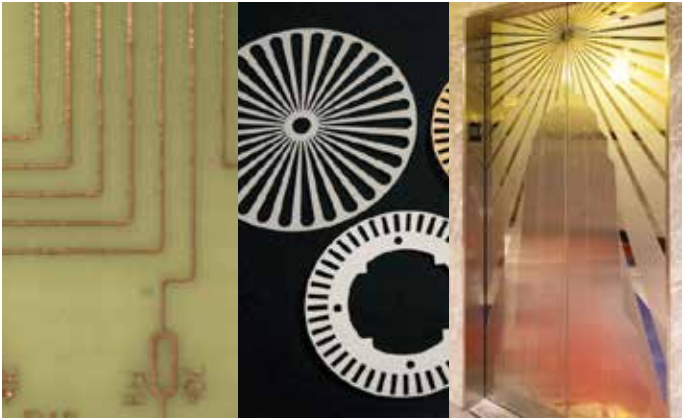
Thanks to their chemical composition DiPaMAT Solder Mask inks allow for multi-pass printing that delivers strongly cohesive layers. Variable thicknesses can be applied depending on the requirement.



By precise ink deposition, inkjet solder mask can get rid of issues related to the conventional printing process, like obstructed vias and solder bridges.



EASY TO IMPLEMENT ETCH RESIST INKJET PRINTING



Using the existing etching and stripping process, DiPaMAT Etch Resist ink is jetted on copper for the production of PCB inner layers and finds applications on various metals for chemical milling and metal decoration.

DiPaMAT blue coloured Etch Resist inkjet ink gives an excellent image contrast on a wide range of metals. It has a very good resistance to acid etching.

DiPaMAT Etch Resist has become an industry proven alternative for dry film to make inner layers for PCB production as well as for metal structuring in chemical milling and metal decoration applications.

Except for the availability of a good quality inkjet print engine, DiPaMAT Etch Resist ink does not require any other adjustment in the existing etching and stripping process.

The possibility of printing variable data offers new opportunities, like making single-copy customized prints without the traditional high set-up cost.

LEGEND AND SERIAL NUMBER PRINTING IN ONE SINGLE PROCESS

The introduction of inkjet inks for legend printing as a replacement for screen printing meant the beginning of the digitization of PCB production. Today Agfa offers the complete legend ink portfolio: white, yellow and black for rigid boards and white for flex boards. All these inks provide a highly opaque, non-yellowing image and have excellent adhesion, hardness and solder resistance properties. Additionally, these inks are suitable to operate in most industrial print heads and systems.

Within the traditional concept, applying a unique serial number or QR code on each individual PCB board requires an additional process next to the screen printing of

the board's legend. Since inkjet implies the printing of variable data, DiPaMAT Legend inks allow to print the legend simultaneously with sequential serial numbers - an unseen efficiency improvement. DiPaMAT Legend inks ensure excellent durability and lasting traceability of each individual board and are easily integrated in existing processes.



With DiPaMAT Legend inks both the PCB's legend and a serialisation number or code are printed in one single process step; a considerably more efficient process compared to screen printing with subsequent laser marking. Available in different colours, DiPaMAT offers optimal legibility also of small characters on different backgrounds.

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 in inkjet with customers worldwide. For more information on our products, contact your local DiPaMAT representative via agfa.com/dipamat.



THE DIPAMAT PORTFOLIO BY FUNCTIONALITY

DiPaMAT Legend Ink	Application	Colour	
Wh04	Rigid PCB	Highly opaque white	
Wh04LS	Rigid PCB - Mass production	Highly opaque white	
Bl01	Rigid PCB	Highly density neutral black	
Ye04	Rigid PCB	Yellow	
FWh01	Flexible PCB	Highly opaque white	
DiPaMAT Solder Mask	Application	Colour	
SMG01	Rigid PCB	Green	
SMFG01*	Flexible PCB	Green	
SMFBl01*	Flexible PCB	Black	
DiPaMAT Etch & Plating Resist	Application	Function	Stripping
ER01	PCB & Metal structuring	Acid etching (compatible with existing equipment)	Flakes (compatible with existing equipment)
SRD01*	Metal structuring	Acid etching Brushing	Soluble
PR01*	Metal plating	Surface plating	Flakes

(*) in development



Ink development and manufacturing processes are executed according to the Quality Management System of Agfa, which is ISO 9001 certified. Agfa is also ISO 14001 Environment certified.

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