Ink laboratory

Research, Development,
Quality Assurance

swissqprint

Ink laboratory

swissQprint digital printers take shape at the company's headquarters and production site in Kriessern, Switzerland. Here is also home to an ink laboratory, set up in 2019. Its job is to make ink and hardware work together optimally and ensure constant ink quality. The result: a total solution for high-quality digital printing.

The swissQprint ink laboratory constantly monitors the quality of inks being shipped. We also exchange notes with suppliers to maintain the continuous improvement of our inks and drive forward their development. The lab specialists work with state-of-the-art equipment and systems that enable them to make a thoroughly professional job of:

– Research and development
– Systematic quality control
– Application-specific tests

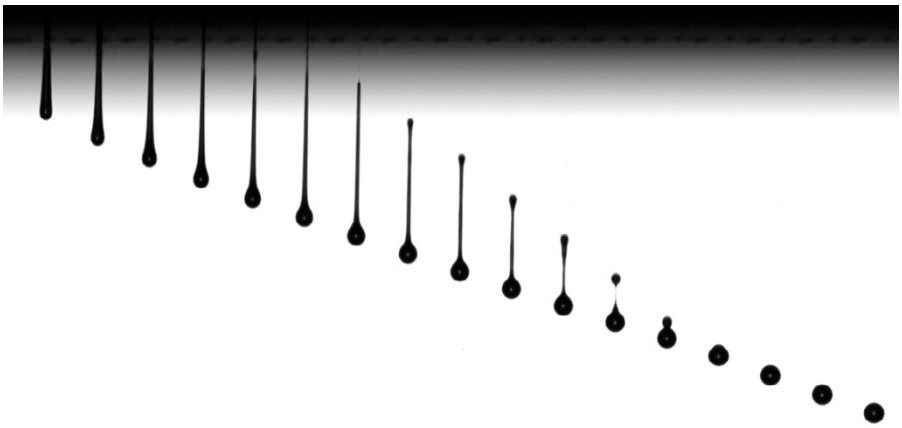
Research and development

Determining optimum print settings for new ink sets
Every ink set has its unique physical properties. This necessitates finding the ideal machine settings for each case. A purpose-developed test rig provides very accurate simulation of a swissQprint printer.

One of its features is a "drop watcher" that we use to investigate droplet formation at the print head, which has a major influence on print quality. Only when droplet

– Velocity
– Trajectory
– Jetability
– Size

are within tolerance will they land precisely as expected on the substrate and deliver the desired print results.

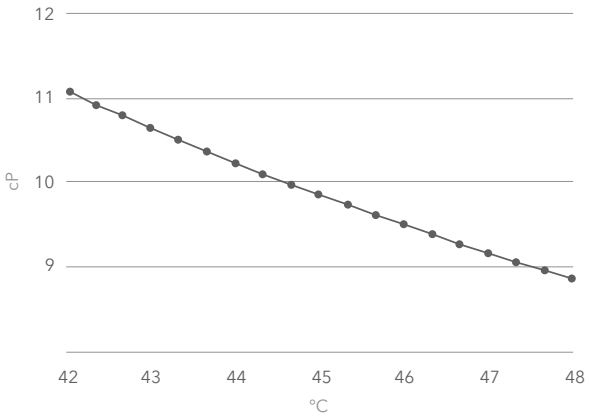


Systematic quality control

Checking each and every production batch
swissQprint users rightly expect a constant and reproducible print result. Individual ink batch quality is part of attaining that objective. To ensure ink performance, we test each production batch for a number of defined properties.

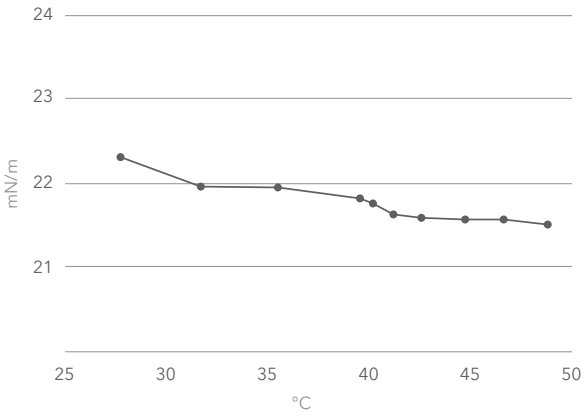
Viscosity

Ink viscosity changes depending on temperature. Constant viscosity gives constant print results in terms of droplet size – and hence constant colour fidelity.



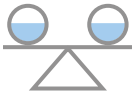
Surface tension

Correct ink surface tension is largely responsible for consistent wetting of the substrate with ink and for shaping the droplets.



Particle size

Inks must have a stable composition and only contain particles of non-critical size in relation to the print head nozzles to eliminate any sort of trouble.



Stability

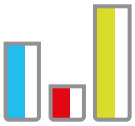
Ink must keep within defined tolerance limits until its expiry date. We run checks on back samples. This enables us to detect unexpected deviations, recall ink batches if necessary and proactively avert problems at the customer.

Colour values

We have built our own test rig for reproducing colour accuracy and ink curing. Ink batches must have a ΔE_{00} value less than 1 to be in tolerance and cleared for delivery, because only then is colour accuracy guaranteed.

UV curing

Every ink batch must cure under UV light efficiently and according to defined parameters.



Application-specific tests

Matching requirements with suitability and behaviour
Certain applications make exceptional demands of a printed product. Which is to say, of the ink and its bonding to the substrate. Where relevant, the swissQprint ink laboratory technicians can test and evaluate properties such as:

– Lightfastness
– Weathering resistance
– Flexibility
– Foldability
– Abrasion resistance
– Thermoformability
– Temperature versus colour fastness
– Resistance to solvents
– Adhesion
– Plasticiser migration
– Odour emission
– Resistance to postprocessing

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