

UPDATE

News for offset printers · BU Sheetfed · EMEA Edition



Our printed materials – are they recyclable?

On November 14th 2019, the Society of Leaders of the Graphic Industry (CCFI) had organized a panel discussion in Paris on the recycling of printed matter.

Digital printing, Low-UV, H-UV, sophisticated finishing and paper processing ... the procedures are becoming more complex. On the other hand, consumers are becoming ever more sensitive to the needs of the circular economy. Several players from the graphic industry were invited to this topic.

Jérôme Fumex, EMEA Product Manager of the Business Unit Sheetfed at SIEGWERK, explained the measures taken in the areas of SICURA L-NRGY and H-UV to improve the recyclability of UV-printed materials, which were realized with considerable success.

On 21 and 22 November, a Packaging Congress held in Istanbul for the first time under the motto «Sustainability and Circular Economy» addressed this topic as well. Around 500 participants



from 13 countries were invited to 45 lectures to be informed and to discuss the topic of deinking and recycling of printed material.

Thomas Glaser, Head of Technology EMEA at the Business Unit Offset (in the middle of the picture) explained that SIEGWERK has been working on the recyclability of UV-printed materials for more than 2 years. The above-mentioned inks SICURA L-NRGY and UV/LED-UV have been specially adapted to detach from the paper fiber in the so-called flotation process during recycling.

New UV Ink Container



At the beginning of this year, Siegwirk has installed a new filling line. Starting from now, we are going to change our existing 2,5 kg metal packaging for UV offset products to a new plastic container.

The plastic packaging will have the following advantages compared to the metal packaging:

- great stability on the pallet
- higher level of transport safety
- 60% less weight compared to the metal can
- easy opening and closing of the containers

The product reference, the product quantity (2,5 kg) and the labelling will not change with this new packaging. Note that for conventional offset products, Siegwirk will continue to use 2.5 kg metal cans.

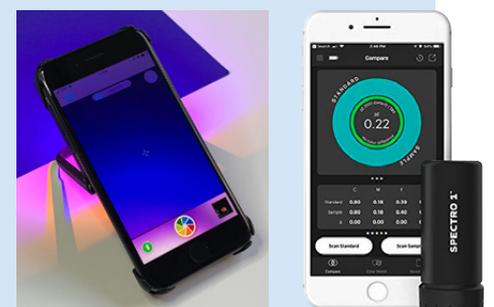
Interesting new spectrometers appear

Recently, a new generation of instruments has appeared. They are **compact, portable and network-connected** (via a dedicated App). No particular experience or training is required. Their use is quite simple. Several manufacturers propose this kind of equipment, able to measure, compare, save and exchange colors via smartphones. Some of them are basic colorimeters whereas others are real spectrophotometers (more accurate). The reliability (reproducibility, accuracy), the measurement conditions, the user-friendliness, or the exchange formats are all criteria that can vary according to the instrument. Three devices have been evaluated internally: ColorGrail, Color muse (by variable), and Spectro1 (by variable).

A more exhaustive analysis will be shared in the next Color News edition.



Color muse



ColorGrail

Spectro 1



Technical Information

How do you check UV curing on the machine?

It is important to continuously check the UV inks and varnishes on the machine to make sure they are curing well.

The following tests enable the printer on the machine to easily determine whether there is sufficient ink/varnish crosslinking. However, in the case of food packaging, these test methods do not relieve you from having to validate the curing process by means of a migration test.

a) Thumb smear test, immediately after printing: The tester turns his/her thumb about 180° on a printed page at constant pressure.

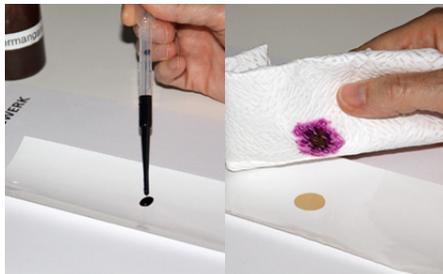
There should be practically no traces of ink on the thumb.

b) Friction resistance test, according to the FINAT FTM 26 manual: A fixed weight is used for this test. The result is far more reliable than the more subjective thumb smear test.

c) Potassium permanganate test: Suitable for opaque white, light colors and lacquers, but not for dark inks. A reference sample is first created on a fully cured print using 5% potassium permanganate solution (KMnO₄). (This only applies to the specific ink/varnish. A separate reference sample must be created for every other ink/varnish.) During production, samples are then created using the same potassium permanganate solution and compared with the reference sample. Because potassium permanganate is a strong oxidizer, un-crosslinked acrylate double bonds go dark, thus indicating insufficient curing.

Procedure: Drizzle the KMnO₄ solution under pressure – dab after 30 seconds – if necessary, assess the optical density of the stain with the densitometer.

Yellow = ok, red or brown = insufficient.



The paler the patch, the better the ink/varnish has cured.

d) Solvent resistance tests. These are designed to check the curing of UV inks and varnishes. Ethanol is used for testing the cure of UV inks while Methyl Ethyl Ketone (M.E.K.) is used to test the curing of UV varnishes.



e) Adhesion test: The test consists of assessing the adhesion of a UV ink or varnish on impervious substrates such as plastics or complexes or on some non-porous boards or papers. Adhesive tape as 3M 683 or 3M810 are used as standard. Poor adhesion will not necessarily indicate a lack of cure but depends on the ink/substrate affinity (choose an ink series that is adapted to the substrate).

f) Other technics involving FT-IR/NIR spectroscopy or UV-Vis spectrophotometer attempt to quantify a conversion rate of the polymerisation reaction. Although more precise than the previous tests, this requires an initial complex calibration process and subsequent investment on measurement device.

Gallus RCS 330 at Siegwark now with LED UV lamps

The label printing press at Siegwark Aarberg used for tests with UV offset printing, UV screen printing and UV flexo printing has been expanded and supplemented with three Phoseon emitters of the FirePower series for LED UV curing. The press now enables the ink engineers to perform tests by using the more and more frequently requested LED UV inks.

LED UV lamps emit light only in a narrow spectral range and they are characterized by high energy efficiency; in addition, the lower heat generation has the advantage that no ozone is emitted.

As a manufacturer of a wide range of LED UV inks – including low migration LED UV inks – Siegwark now is able to take into account the specific requirements of customers when developing their inks.

