Is white right?

Why focus on white ink? High material costs and consumption are involved. There is little industry standardisation and the graphic industry demands high quality. This article will discuss the economics of white ink, printing versus coating, anilox cell configurations, a banded roll test along with printed results and conclusions.

Economics of white ink

The scenario for one plant:
- Weekly use kg 2724,
- cost/kilo USD 3.97,
- cost/week USD 10,811.82,
- cost/year USD 562,201.30

What sort of impact would this have on a worldwide basis?
- Weekly use kg 2,724,000,
- cost/kilo USD 3.97,
- cost/week USD 10,811,000,
- cost/year USD 562,201,000

The anilox cell volume controls the money spent on white ink! The table below shows the impact, worldwide, of different cell volumes.

In white ink alone the anilox volume can make USD 250 million difference.

Printing vs. coating

- Coating. Coating volumes used are typically 8 BCM and higher with a fixed coating transfer rate. The coating weight walls, small cell openings and low cell volumes.

Banded roll test

What is a banded roll? An anilox which is engraved in sections with different line screens and volumes. This is an accepted

Typical cells for coating.

Typical cells for printing.

is generally unaffected by cell design. Cells designed for coating have heavy post-polishing, smooth cell walls, wide cell walls, large cell openings and high cell volumes.

- Printing. Printing volumes are typically 11 BCM and lower with printing transfer rates which are variable. The printing result is also affected by cell design.

Cells designed for printing have no post-polishing, thin cell

Harper Corporation of America, Charlotte, NC, USA.
running a banded roll series of tests are to
- correlate cell volume to opacity;
- correlate cell volume to coating weight;
- evaluate pinholing;
- recommend future action;
- select the best cell configuration for a particular application.

The test parameters

Three cell volumes were used 8.0, 12.0, 16.0 BCM with three cell configurations 60° hex, 30° channel cell, 45° tri-helical, using water and solvent ink printed on Polypropylene, Polyethylene and PVC substrates. An enclosed blade chamber system was used printing on the front surface of the film.

Discoveries on press

There were differences in blade wear life, post-polishing coarse screens can reduce blade wear, post-polishing fine screens can reduce print quality.

Printed results

With the 45° helical engraving large pinholes were noticed, with the 60° hexagonal engraving pinholes were still evident but smaller and with the 30° channel engraving there were many pinholes but they were extremely small.

The next diagrams show the effect of cell volumes and cell configurations on 10 pt. positive and negative type.

The following diagram compares the print characteristics of the three cell configurations under test. The trihelical engraving, smooth visual lay down, more reverse fill in and weaker positive type gave the best overall result.

Summary

The following conclusions can be determined from the results of the series of tests:
- deposit rates appear to be fixed;
- cell design affects ink lay;
- cell design affects print quality;
- banded testing is a good process improvement tool for white ink.

This test procedure has shown that, just like photopolymer plates and derrometers, banded testing has become a part of the flexo process and is capable of improving the final printed result. Why wait, go and carry out your own tests using a banded roller. Now!