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EB Pilot Line Test Report
EB Finish Cure of UV Inks

Background
PCT was asked to evaluate the potential to increase the line speed of a UV equipped web offset press. The eight color press has been limited to a print speed of 600 fpm even though it is designed for speeds up to 1200 fpm. The limiting factor has been the UV curing capacity.

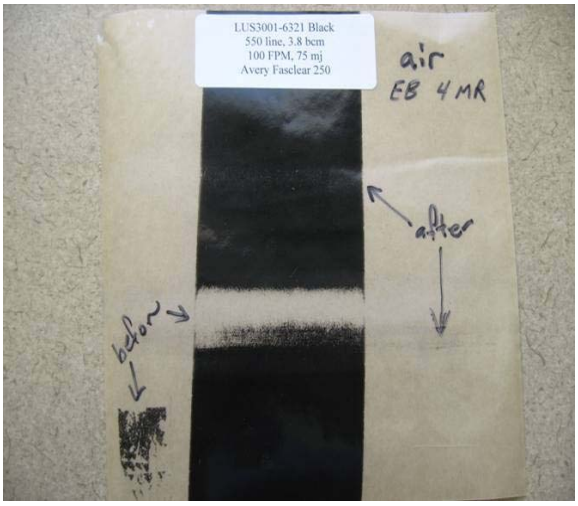
Purpose
PCT conducted tests to confirm that EB can provide complete cure of the same UV inks at higher line speeds without the use of nitrogen for inerting the EB curing zone.

Test Procedure
The owner of the press ran sample material at a speed of 900 fpm with the existing UV curing. This material was surface cured but testing showed that tape adhesion of the inks was poor and the inks were severely affected by 10 to 15 MEK rubs.

We attached cut sheets of the printed material to a carrier web. The printed sheets were EB cured IN AIR at the following conditions:

3.0 Mrads 100 fpm
3.5 Mards 100 fpm
4.0 Mrads 100 fpm
4.5 Mrads 100 fpm
3.0 Mrads 500 fpm
4.0 Mrads 500 fpm

Results
Our preliminary results show that after EB exposure that all samples gave excellent tape adhesion and a dramatic increase in MEK rub resistance. This demonstrates that EB exposure in air effectively completes the cure of the UV inks and coatings.



Since our EB equipment can deliver 3600 Mrad fpm (3 Mards @ 1200 ft/min or 4 Mrads @ 900 ft/min) it appears that the addition of an EB unit to this press will provide effective high speed curing without nitrogen inerting.