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R/bak® Cushion Mounting Materials

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THIN TO WIN
The Thin Plate Revolution in Flexography by John Arimond

Thin printing plates mounted to R/bak® cushion mounting materials are increasingly used in favor of thick plates for a wide variety of flexographic printing jobs. Experienced press operators often explain why in two words**: press latitude.** In this article, I will try to explain thin plate printing in some detail, and I will have to use more than two words, but it all comes down to increasing "press latitude," or making a flexographic job print successfully over a broad range of run conditions.

The quality of any flexo printing job is limited by mechanical imperfections and wear in press cylinders and bearings, viscosity variation in inks, thickness variation in plates, mounting tapes and substrates, and temperature variation in printing plants. In spite of these limitations, flexographic printing works, because photo-polymer and rubber printing plates are flexible and compressible. To enable complete inking, high spots on the plate "give" when pressed against the anilox roll. To enable uniform printing, high spots "give" when pressed against the substrate in the impression nip.

It is recommended that the pressure between the anilox roll and the plate be "as light as possible, so as not to crush or push down on the raised image areas of the plate," and that the printing impression nip be dialed in "just right to give a kiss impression – the lightest possible impression that transfers the ink to the substrate."[1] When flexographic plates are mounted on R/bak materials, lower inking and impression nip pressures are possible over a wider range of press settings, because R/bak materials are 2-10 times more compliant than flexo-graphic plates[2].

Low printing pressure is required for high quality halftone process printing. High pressure on a halftone dot can deform the dot and extrude the ink outward. The resulting "dot gain" compromises tone reproduction. By reducing the fatigue stress on the plate, low printing pressure also improves plate life.

Thin plate printing is experiencing particularly rapid growth in flexographic postprinting on corrugated, where machine and plate variation are compounded by fluted substrates with significant thickness variation and limited stiffness and crush strength[2].

Thin plate technology is enabling improved postprinting directly on corrugated substrates, reducing costs while maintaining image quality that rivals preprinted containers. In the impression nip (shown below), R/bak material compresses, preventing plate and substrate compression and allowing the plate to "kiss" the substrate as lightly as possible.

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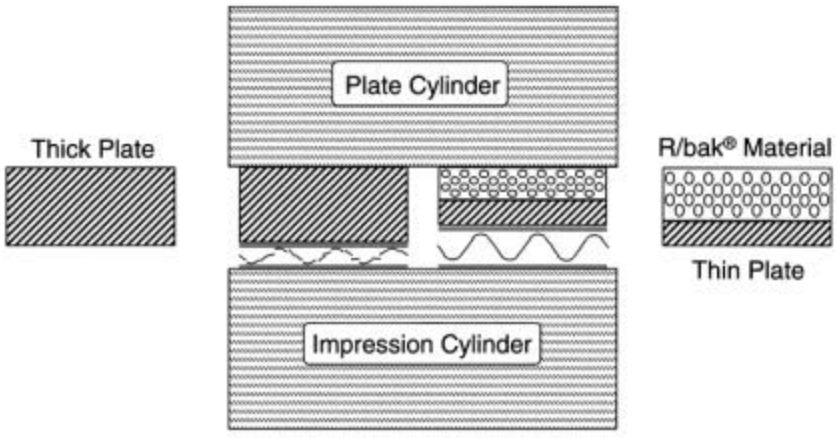
[1] *Flexography Primer*, D.C. Mulvihill, Graphic Arts Technical Foundation, 1985, p.45

[2] *Mechanical Characteristics of Corrugated Substrates*, J. Arimond & M.S. Koss, FLEXO, Sept., 1995

Conventional Flexography vs Thin Plate Flexography



When an R/bak cushion takes the brunt of the impression nip squeeze in thin plate corrugated postprinting, nip squeeze substantially greater than 0.010 inch (0.25mm) can be used without risking board crush. This can be particularly useful on older presses with cylinder runout and bearing wear exceeding 0.002 inch (0.05mm).

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