

*A case of the flutters
Corrugating handbook
Dry-pin testing
High-flow flutes video
OBM™ Dustless
And more*

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IMPROVED PERFORMANCE WITH HARD AND CRUSH LINERS

HRC-2000

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FOR HARD-TO-BOND SUBSTRATES.**

HRC-2000 is designed specifically to address the challenge of achieving good bonds on high strength substrates at production line speeds. HRC-2000 penetrates and cures through the starch gel point to form a strong, lasting bond. This also transfers heat faster, causing the starch gel point to occur too early for proper wetting out. The result is a shallow brittle bond.

HRC-2000 solves these problems with a unique blend of proprietary performance enhancers that improve penetration and water holdout. The result is increased pin values and higher corrugator speeds. It's a liquid, easy-to-use liquid product that is easy to apply to the bond line.

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HRC-2000™

*Performance enhancer
for high ring crush liners*

HRC-2000 is the latest addition to Harper/Love's growing line of liquid performance products. The recent offering is a unique blend of proprietary performance enhancers that include both penetrating and corrugating performance agents to increase corrugator speeds on difficult-to-bond substrates.

HRC-2000 is specifically intended to address the challenges of achieving good bonds on high ring crush liners at acceptable corrugator speeds. Compared to standard liners, HRC materials resist moisture absorption. Starch tends to remain on the surface. They also transfer heat faster, causing the starch gel point to occur too early for proper wetting out. The result is a shallow brittle bond.

HRC-2000 solves these problems with a safe, odorless, easy-to-use liquid product that improves penetration and water holdout. The result is increased pin values and higher corrugator speeds with a single, simple application.



OCTOBER 2001



Flutters, fluff-out, edge blow-out

Whatever you call it, it's a common delamination problem. Here's how to diagnose and cure it.

by Chris Polster

The terms flutters, fluff-out, and edge blow-out all refer to a half-oval or vee-shaped delamination at the edges of the single face web. This is one of the most common delamination problems on a corrugator.

The three most common causes:

1. Not enough pressure-roll loading on the side that has the flutters. This could be caused by an incorrect setting or a roll that needs to be reshimmed.
2. Adhesive build-up on the corrugator rolls. This can be caused by glue dams which are set incorrectly or in need of repair. Because of the roll configuration on Agnati or Langston 380 single facers, it is also common to see adhesive build-up on the pressure roll when there are problems with the glue dams.
3. Medium riding on, or too close to, a corrugator roll groove. All machines, regardless of type, have a spot near a groove where the medium won't run well.

If none of these conditions exist, there may be a bearing problem with one of the rolls on the single facer. If so, flutters will occur through all speed ranges and paper grades, but may be intermittent.

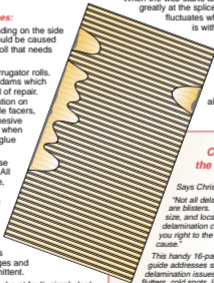
To discover which bearing may be at fault, simply look to see if there is fluff-out where the fluted medium exits the corrugating nip or where the single face web exits the pressure roll.

If it is not possible to see the exit of the corrugating nip, use the following technique to diagnose the source of the edge blow-out:

- When the web starts to flutter, fluctuate liner tension greatly at the splicer or roll-stand. If the fluff-out fluctuates when you do this, the problem is with the pressure roll.

- Do the same thing at the medium splicer or roll stand. If the flutter fluctuates, the problem is at the corrugating rolls.

Rolls that are badly worn can also cause this problem.



Common problems on the corrugator: the book

Says Chris:

"Not all delaminations are blisters. The shape, size, and location of a delamination can lead you right to the root cause."

This handy 16-page pocket guide addresses seven delamination issues, including flutters, cold spots, light-test blisters, no-starch blisters, and more. Ask your Harper/Love rep for your copy.



High-low flutes: the movie

New video examines an age-old problem

Forty years ago, the Institute of Paper Science and Technology produced a three-segment film on the problems of high-low flutes and fractured flutes. The studies featured high-speed motion photography, an engineering tool used to make visible in slow motion action that occurs too fast to observe in real time. The project was a remarkable accomplishment.

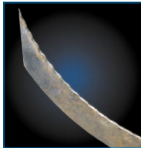
With the permission of IPST, HarperLove has updated these films and combined them into a video and DVD presentation entitled, *High-low flutes revisited—a fresh look at an old problem*. We kept the valuable high-speed footage, rewrote the script for clarity, upgraded the graphics, and recorded new narration tracks in both English and Spanish.

In addition, we have added a fourth segment, written by Consultant Bill Nikkel to add the perspective of forty years of development since the original films were made.

Says Bill, "We've always known high-low flutes develop somewhere after they leave the corrugating labyrinth, and before the single-face board leaves the pressure roll nip." He points the finger at the fingers—specifically the drag of the medium against the fingers and improper positioning of the fingers.

Bill concludes, "The only certain remedy for high-low flutes is to eliminate fingers entirely. The better alternative is to use a vacuum or positive pressure system to hold the medium in mesh with the corrugating roll."

Whatever kind of machine you're running, *High-low flutes revisited...* adds to our understanding and provides a valuable training aid for operators. Ask your HarperLove sales or technical representative for a private showing.



Among other things, Bill Nikkel's update explores the problem of scalloped fingers. This wear pattern is a result of the finger vibrating against the paper-covered teeth. The contact that causes the wear also causes the pinching of the medium as it passes through this area. This pinching contributes to the development of high-low flutes.

Advancements in dry-pin

New instruments and techniques allow greater

New tools:

The art of pin adhesion testing has been improved from its original format, by both technology and testing technique. The original flexible-beam flat crush testers had an upper moving platen that was powered down onto another platen mounted on a flexible beam. A dial indicator provided pressure information. This time-honored tool was used for a variety of testing in the paper industry, including actual flat crush, but also ring crush for both liner and medium.

The flexible beam instrument has slowly been replaced by the more accurate and modern rigid-beam flat crush tester, in which the moving upper platen is similar, but the lower platen is now rigid. It is mounted to a load cell which electronically measures force in pounds. This is much more precise, with less interpretation error than the dial indicator.

New techniques:

The technique first used to measure pin adhesion for C-flute board used a sample size of 2" x 2.5", cut with the machine direction 2.5". A two-pieced jig was developed with seven pins on top and eight pins on the bottom. The pins were inserted into the flute cavities, and the assembly was placed into the tester. Force was applied to separate the weakest side of the board. Because the sample size held 12 inches, or 1 lineal



Adhesive Technology Alliance

Produced jointly by HarperLove Adhesives and Corn Products International, this new brochure details the marketing alliance of the two companies. Named the *Adhesive Technology Alliance*, the relationship offers customers a single source for adhesive products and technical service. Ask your HarperLove representative for your copy.

testing

Higher precision, more focused testing



foot of glue line, the results of this test were reported directly in pounds.

The Fiberboard Shipping Container Testing Committee reviewed this technique several years ago and proposed a new method. It calls for a sample 2" x 6" cut with the machine direction 6°. The method allows testing of a particular side of the board (selective pin adhesion).

The new jig features a holding side, with seven pins, and a breaking side, with six pins. The holding side is placed so the fluted medium rides over the pin, making it impossible for that side of the board to burst upward through both medium and liner. The breaking side of the jig has six pins that ride directly on the liner side of the sample, facing down, which allows that side of the board to burst downward, separating the liner from the fluted medium.

Because the 6-inch sample has 24 inches of glue line, the results are read as pounds per 2 lineal feet, or divided by two to get pounds per foot. *Pete Snyder*

Texas gets another
Go-to Guy



Todd Harris recently joined the Harper/Love technical service team. He brings to the program 16 years of hands-on corrugating experience, and management skills developed as a plant superintendent. Todd will work out of the Dallas area.

OBM™ Dustless!

No more mushroom cloud

One Bag Mix has gone dustless. We've added a lightweight synthetic agent that improves the product three ways: It keeps the lid on dust, acts as a defoaming agent, and promotes better blending during manufacture.

Harper/Love's OBM concept was created to answer the needs of corrugators pursuing the industry's fast-growing miniflute markets.

Miniflute construction is replacing folding cartons for some high-end packaging applications. A lithographic printed liner is bonded with cold-set adhesives to miniflute single face. The result is a strong carton with outstanding graphics. The customer realizes product protection and selling graphics in the same package. The product is often lighter and less expensive than folding carton alternatives.

OBM fits this application like a glove. It offers just-add-water convenience, small-batch flexibility, reduced investment in equipment and starch inventory, and greater personnel safety. It also reduces space requirements and training costs.

OBM is well suited to small, 50- to 300-gallon batches, and simplifies precise application of low-viscosity, high-solids adhesives. Harper/Love customizes OBM adhesives to match specific customer uses.



Litho liners cold-bonded to miniflute single face produce an attractive and economical alternative to folding carton packaging. (Package samples courtesy Accurate Box Company, Inc., Paterson, New Jersey.)