ADVANCED ADHESIVES REPORT

NOVEMBER 2002

Your corrugating adhesives newsletter from Harper/Love Adhesives Corporation

The Challenge of Bonding Coated Substrates

Harper/Love and Corn Products International unite to solve the bonding challenge of functional liners with high porosity values

By Doc Kinney, Technical service manager, Corn Products International and John Kohl, technical director, Harper/Love Adhesives

As more functional coatings are developed and incorporated into the linerboard and medium, the paper's physical properties also change. These changes in paper characteristics are important for the corrugator to recognize in order to bond the medium to the liner effectively so that the finished box will stay intact and provide value for the end user.

The functional coatings that are added to linerboard and medium can affect significantly the porosity of the paper. Porosity is the measure of how open the fibers in the paper are — how well the paper can breathe. Porosity is also a time measurement of how quickly a set volume of air can pass through a sheet of paper. The more tightly compacted (oriented) the fibers are, the less the paper is capable of breathing—and the higher the porosity value. As the porosity values of paper increase, the penetration of starch adhesive into the paper correspondingly decreases.

In many instances, the use of specialty carrier starches in combination with bond enhancing liquids are an excellent approach to quality bonding of papers with functional coatings. Since the porosity of the paper is effectively reduced, which impedes penetration, we must accomplish a surface bond. This surface bond must be strong enough to hold the sheets of paper together through the torture of the flexos, folders and, ultimately, the end user. The best assurance of a quality bond is the use of specialty carrier starches and bond-enhancing liquids that work together to provide a strong glue.

Harper/Love and Corn Products International have used their partnership to create an adhesive which is able to bond the coated medium and liners by employing the synergistic effects of Fibrebond Specialty Carrier amplified by both XW-200 Bond Enhancer and Aquaseal W-150 Wet Strength Resin.

The improved specific adhesion resulting from this trilogy of additives has successfully increased pin adhesion in trials of functional coatings.

In a recent demo, we have seen wet pin adhesion values improve by 62% (from 4.8 to 7.8 lbs/lineal feet) compared to a more standard-type adhesive, while the 24 hour soak produced 100% fiber tear.

For more information on bonding coated substrates, call your local Harper/Love or Corn Products International representative.

In a recent demo, wet pin adhesion values improved by 62% (from 4.8 to 7.8 lbs/lineal feet) compared to a more standard-type adhesive, while the 24 hour soak produced 100% fiber tear.

New faces at Harper/Love

Tom Shaney has joined Harper/Love as Regional Sales Representative for North Carolina, South Carolina, and Virginia. Tom has over 18 years of experience in the cor-rugated industry in the Flexo Printing area having both sales and technical service experience with Anilox Rolls, Inks and Coatings and tape for Flexo plate mounting. He is active in both TAPPI and FTA. Tom lives in the Charlotte area with his wife Leigh and two daughters.

Cristy Hughes has joined Harper/Love as an Administrative Assistant. She is originally from Florence, SC and a graduate of Francis Marion University with a degree in Mass Communications-Public Relations track.

Measuring internal board temperatures

Thermopaper strips are easy, fast, and accurate

by Bill Nikkel

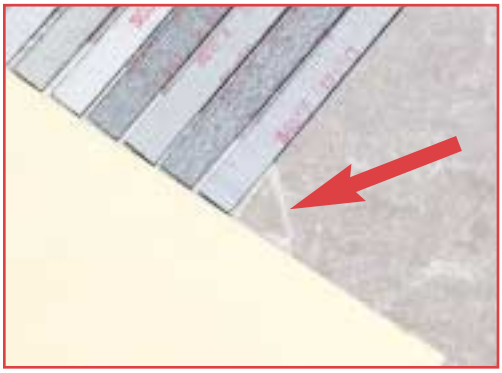
When troubleshooting a problem such as warp, or simply gathering benchmark data, it is helpful to know the maximum temperatures the glue line and liner reached on your corrugator.

This procedure for making these measurements with Thermopaper strips was originally developed during a study on warp, conducted by the Corrugated Industry Development Corporation (CID) in the early 1970s.

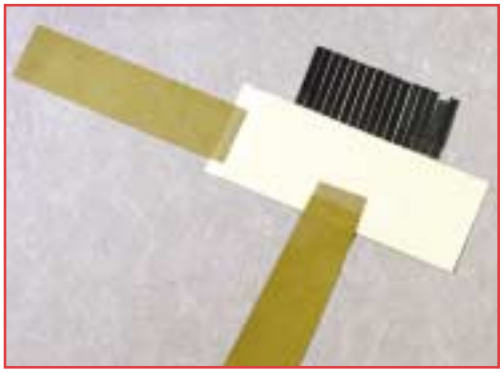
Thermopaper is a 1/4" x 2" grayish-white strip which changes color to black at a specific temperature. There are 43 different Thermopapers, rated at temperatures from 90°F to 500°F. Each strip has its temperature imprinted on it; this imprint remains visible even after the color change, providing a permanent record of a given test.*

1 Make an assembly of Thermopaper strips, ranging from 180°F to 340°F, in 10° increments.

Start with a piece of stiff paper about 8" x 3" (a piece of file folder material will do fine). Attach a 6" piece of transparent adhesive tape along one side, allowing about half the width of the tape to extend past the paper. Attach the black side of the strips to the tape.



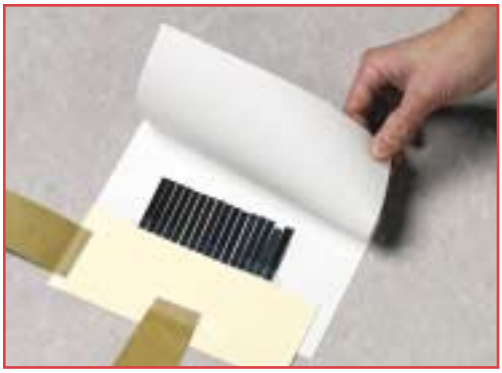
2 Fold over any excess tape at the corners.



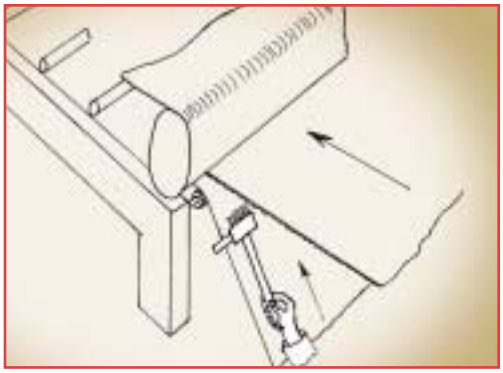
3 Tape a short 8" flag extension onto the end of the assembly, and a long 24" leader strip to the center of the assembly. The 24" leader strip is necessary to keep hands away from the entrance nip.

6 Retrieve the marked sample from the stacker. The location of the assembly will be obvious because it causes a large blister. Cut the blister open to reveal the assembly, which will look similar to the photograph. The change in color will tell you the maximum temperatures of both the glue line and the liner.

**(Purchase Thermopaper from Paper Thermometer Co, Greenfield, NH. Telephone 603-547-2034)*



4 To protect the strips until you are ready to use them, fold a letter-sized sheet of paper and tape it over the strips. The completed assembly can be stored with the flag and leader strip folded, and the protective sheet in place.



5 To take your measurements, feed the Thermopaper assembly into the nip of the double facer, on top of the double face liner, by holding onto the long leader strip. Make sure the black side of the Thermopaper faces up and the flag extends beyond the edge of the double face liner. Have an assistant stationed between the end of the double facer and the slitter/scorer to watch for the flag. Have him mark the board around the flag (a heavy marker or crayon works well). Safety note: use extreme caution when inserting the material into the nip at the double facer.

Jim Carbone recognized for technical contributions

All of us at Harper/Love applaud our colleague Jim Carbone, honored this year by TAPPI with the Bettendorf Prize, the Corrugated Container Division's technical award.

Jim has a long history with TAPPI. He has chaired the Corbotec Committee twice, and has been involved in a variety of studies involving wet strength, temperature transfer, warp control, glue-roll cell size, bonding, and other technical issues.

He also gives seminars for IACORR, and has been a guest speaker for ACCCSA several times. "I always have something to say," says Jim.

Jim's career reaches back 47 years to an early start in a paper mill, where he learned the ins and outs of paper-making technology. He was soon assigned to a corrugator to observe and recommend improvements. "In those days, we were running at about 250 feet per minute," says Jim. "We clearly had a long way to go."

Jim sees his own contributions building on the corrugating revolution of the 1960's, 1970's, and 1980's. "I was fortunate to have been involved during a time when a lot of good people made a lot of good things happen," Jim comments. He cites the activities of the Corrugated Industry Development Corporation (CID) in the early 1970's that developed solutions related to warp control, temperature control, speed control, moisture control, and bonding.

He also points to advances such as automated roll stands, flying splices, higher speeds, fingerless machines, better

paper, and more, which helped create the modern, continuous-run corrugating plant.

Jim credits a long list of industry leaders, including Stig Lagergren, Al Biorseth, Bill Nikkel, Dean Coder, Rich Surber, Jim Stevenson, Ed Riley, Rick Croker, and others. "I have had the opportunity to work with the best," says Jim. "I am especially grateful to Stig Lagergren for getting me involved," he continued. "I am still learning from my involvement with TAPPI, and from every visit I make to a box plant."

As for the future, Jim says, "I wish I had another twenty years. People are going to forget what a brown box looks like. We're going to be bonding plastics. We'll be running treated medium. Recycling problems will be solved. We'll eliminate double-wall board within ten years. Who knows, we may eliminate adhesives - don't tell the boss I said that."

Jim has been with Harper/Love for 11 years. He works exclusively in Latin America, spending almost all his time on technical issues involving machine audits, starch formulation, and related productivity challenges.

Jim's expertise in corrugating and adhesive technology and his commitment to TAPPI and the industry deserve recognition. They provide an example for all of us who make our careers in corrugating.

ACCCSA Leaders see continued progress

Outgoing President Rodolfo Hollander and incoming President Jaime Peñaredonda share a common vision of accomplishment and progress for their association.

The Asociacion de Corrugadores Del Caribe, Centro Y Sur America (ACCCSA) represents about 70 corrugators, two-thirds of whom come from the Andean countries of Peru, Ecuador, Colombia, and Venezuela. Industry suppliers such as Harper/Love Adhesives are also members, and support the association by sponsoring events and programs.

Sr. Hollander credits his predecessor, Sr. Eric Capra, with significant progress, including the hiring of Javier Rivera, who serves as ACCCSA's executive director.

During Sr. Hollander's 4 years as president, the association acquired its own office in Costa Rica, expanded its training program, and hired a marketing firm to help determine the members' wishes for the future of the association. "We're working hard for the benefit of our industry, and our membership," he said.

Sr. Hollander expressed appreciation for the cooperation of Harper/Love Adhesives in its training program. Luis Fernando Lozano, Harper/Love's exclusive agent in Bogota, Colombia, has taught five courses for ACCCSA, in Costa Rica, Ecuador, Chile, Guatemala, and Venezuela. It is a practical, 4-day course, which covers all aspects of the corrugating operation. Luis takes great pains to make his course informative, complete, objective and noncommercial.

Sr. Peñaredonda echoed Sr. Hollander's appreciation for the leaders who preceded him, and expressed his intention to build on their accomplishments. "We want to bring together the best thinking in our association to build a responsive organization that offers the greatest benefits possible for our members," he said. The association hosts seminars, training programs and an annual meeting and trade show. The 2002 annual meeting was held in Quito, Ecuador, in early September.

Sr. Rodolfo Hollander is President of Smurfit Cartonera Dominicana, in the Dominican Republic, and Vice president of corrugating in the Caribbean for Smurfit Cartón de Venezuela, S.A., in Caracas.

Sr. Peñaredonda is Gerente General for Cartorama c.a. in Guayaquil, Ecuador.

Harper/Love Adhesives Corporation
11101 Westlake Drive
P.O. Box 410408
Charlotte, North Carolina 28241-0408

Leaders in the science of making good adhesives better™

800-438-3066
www.harperlove.com
e-mail: salestech@harperlove.com

IN THIS ISSUE

ADVANCED ADHESIVES REPORT
Your corrugating adhesives newsletter from Harper/Love Adhesives Corporation

Aquaseal Plus™ Outstanding performance. Superior wet strength.

This unique product combines water resistance and high performance in one easy-to-use liquid product.

- Reduces cost compared to using carrier starch for performance, plus resin for wet strength
- Stable viscosity
- Exceeds TAPPI 24-hour soak test
- Better bond quality
- Increased corrugator speeds on heavyweight grades
- Single, simple application
- Easy-to-use liquid for any manual or automatic mixing system
- Safe to use. FDA approved

For detailed technical information or a demonstration in your plant, contact your Harper/Love representative or call us toll free at 800-438-3066.