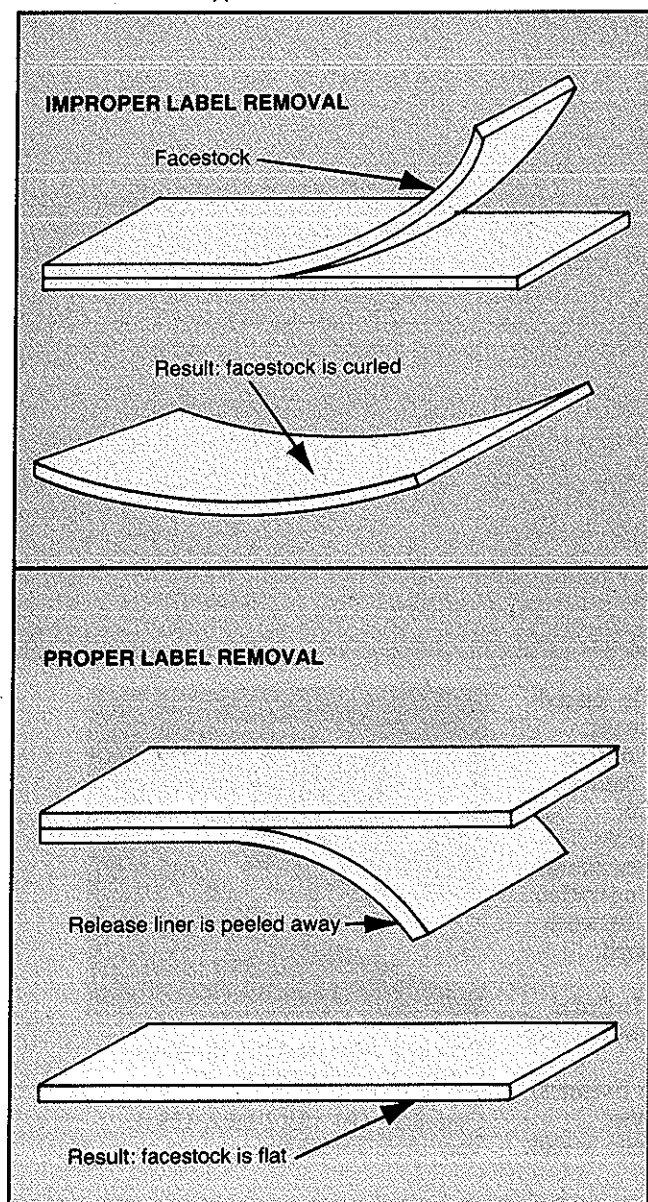


Meeting the needs of the fast-growing, fast-changing pressure-sensitive label industry

Jim Young
Feature Editor

Real benefits result from a closer relationship between the pressure-sensitive technical people and the paper industry

Label removal and application.



Spurred by the rapid growth of electronic data processing, universal product codes, and the global inventory they keep track of, pressure-sensitive label stocks are a booming market for the paper, polymers, and adhesive industries.

Scott L. Mingus, research associate in paper technology for the Fasson Roll Division, was unfamiliar with pressure-sensitive labeling when he was graduated with a paper science degree in 1978. That year Fasson's parent, Avery International Corp., had sales of less than \$500 million. Today Avery sales are over \$1.4 billion, 95% in pressure-sensitive materials, and at least one paper science and engineering school has a pressure-sensitive laminating press.

Mingus expresses concern that expansion could outstrip supply in some areas. "We see the possibility of some shortages in some of our facestocks and release liners in the next 2 or 3 years," he warns. "We would be interested in talking with people who are not currently supplying our industry about the paper we need."

Fasson supplies pressure-sensitive base materials in roll form to roll label printers for conversion into labels and packaging components. The company doesn't manufacture nor sell labels. Its activities involve the compounding of adhesives, adhesive coating and laminating of facestocks and liners, and finishing and packaging for shipment.

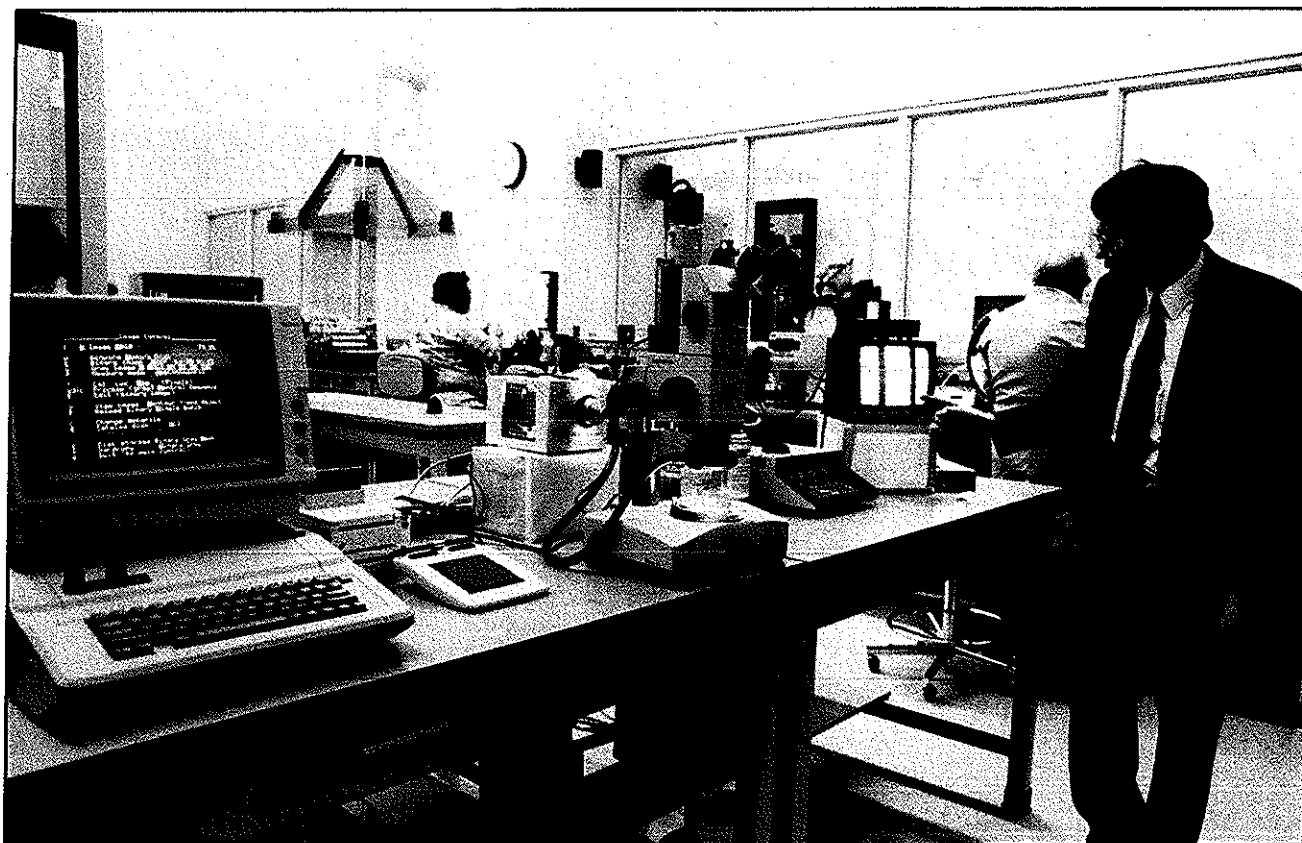
Paper grades run the gamut. Paper for data systems is primarily uncoated, engineered for strength with high absorbency to capture ink from a computer terminal. Coated papers are the larger market segment, ranging from cast-coated sheets to enamel and matte-finish grades. These include thermal-sensitive and other specially treated coated products.

Specialty structures are another major market that includes fluorescent coated papers, latex impregnated papers, polyethylene and paper laminations, and metallized laminations.

Uncoated and coated papers are used in impact printing: flexography, gravure, dot matrix, ultraviolet-cured letterpress, and offset. Both papers are also used in nonimpact printing: laser, ink jet, ion deposition, magnetography, direct thermal, and thermal transfer.

All of these markets are expanding, but Fasson's most explosive growth area is label stock for nonimpact printing. Direct thermal is the largest segment, followed by toner (laser,

Scott Mingus, research associate in paper technology, demonstrates a computerized image analyzer/microscope/TV system analyzing a bar code to determine the effect of paper surface on print quality.



Jim Young photos

Direct thermal (left) and thermal transfer nonimpact-printed bar codes are magnified 25X.



Fasson photos (25X bar codes)

ion-deposition, magnetography, etc.), and thermal transfer printing. Thermal printing electronically uses heat to color or image the facestock. Thermal transfer printers have a thermal printhead that is rapidly heated and cooled against an ink transfer ribbon, not a heat-sensitive label stock.

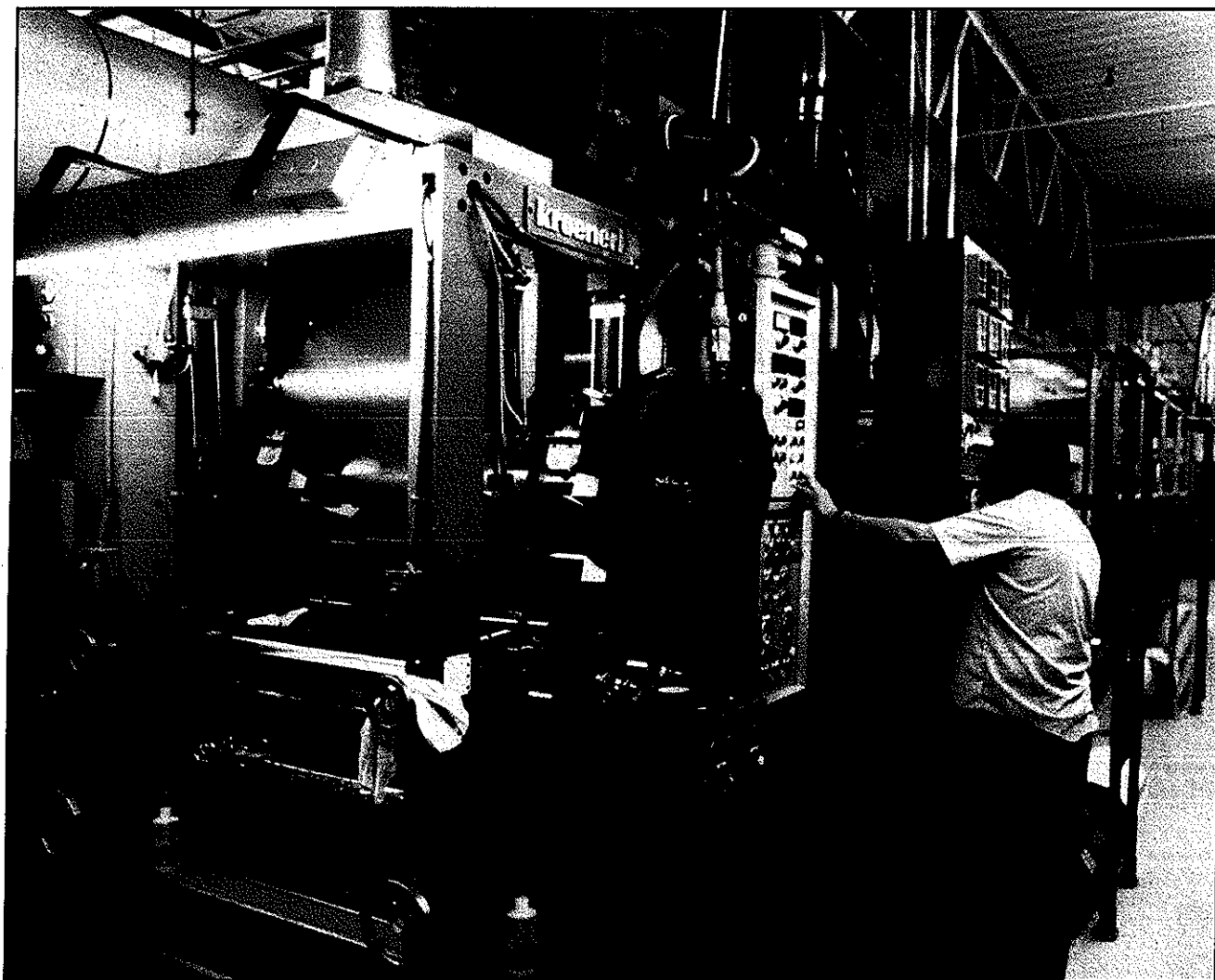
Universal products codes, the ubiquitous bar codes, are a major reason for the industry's growth as their use increases at a rate ranging from 25% to 50% per year. The nonimpact techniques of direct thermal and thermal transfer printing are said to be the most reliable and cost-efficient means of bar-coding variable items such as meat packages in super-

markets. Nonimpact printing of bar codes will continue to expand as the codes get smaller, resulting in a higher density that requires excellent edge definition for scanning. Their overall mushrooming use will ensure that impact printing will expand as well.

Increased paper supplier support

Donald R. Berger, Fasson's thermal products manager for nonimpact printing, states that 3 or 4 years ago it was difficult to convince American paper companies to invest a lot

Ken Orazen, pilot coater operator, applies release coating to a film liner on a 30-in. machine.



of time developing the right kind of products for the non-impact printing segment of the pressure-sensitive label market.

"We've seen quite a turnaround," he says. "In thermal transfer, for example, two key properties are a combination of a high degree of smoothness and a surface that at the same time will absorb ink somewhat into the paper so it doesn't smear, smudge, or abrade easily. These are two diametrically opposed criteria. It used to be, 'You guys want what?' Now that they see that it's a growth area, many people are working on products like that."

Mingus adds that there have been real benefits from a closer relationship between the pressure-sensitive technical people and the paper industry. "Products today will process at almost double the press speed we ran 10 years ago. Labels are now running at 500-600 ft/min and higher. The print quality has dramatically improved. We're getting a lot of innovations from our ink companies as well as our paper suppliers and the manufacturers of the presses themselves. A lot of our suppliers are beginning vendor certification programs, so they do their QC (quality control) and send us their data."

Improved cross-direction tensile strength has permitted faster die cutting and stripping by converters as they seek increased productivity to stay competitive. Gains have also

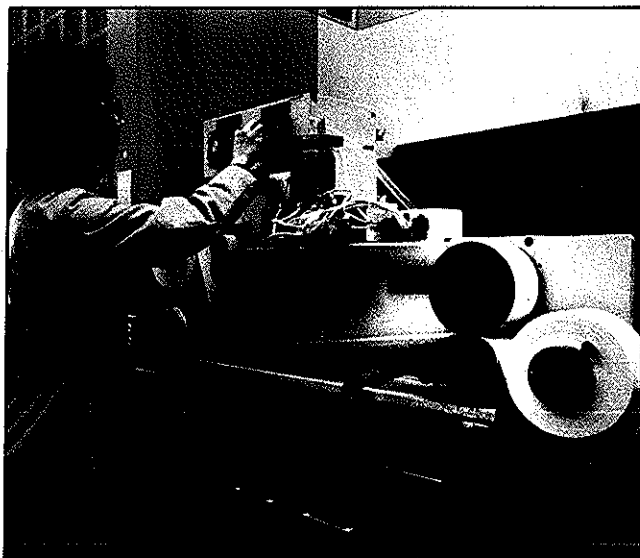
been made in curl control, dimensional stability, smoothness, gloss, opacity, uniform caliper, and prevention of adhesive migration through the paper, but Mingus and Berger still see room for improvement in all of these areas if the pressure-sensitive industry is to reach its full potential.

"The transition has been a bit slow, but the pace has picked up in the last couple of years," Berger observes. "As a result of specialty grades often being made on machines that are too slow and without the right controls for commodity grades, we aren't always able to get some SPC (statistical process control) data that I think would be available from the new generation machines in the commodity area. There hasn't been enough volume to encourage those people to jump in with both feet, but that's changing."

Fasson has intensified its recruiting of paper science graduates, particularly for the quality control testing of papers. "They know what they are looking for, and they know how to run appropriate tests," Mingus says. "More importantly, they know how to interpret the results of paper testing and how to discuss issues with the paper mill engineers themselves on how to better bring these products to a higher quality level."

According to Mingus, one of the most technically advanced elements of a pressure-sensitive product is the release liner, or backing paper. "That's the product that represents the

Diana Di Carlo, senior research technician, runs a prototype adhesive trial on a 3-in. hot melt pressure-sensitive lab coater.



biggest opportunity for improvement—and the biggest chance for disaster,” he says. “Papers have to have just the right level of hold-out for our silicone systems to achieve proper release. If the paper is not dense enough, our silicone formulations will soak into the paper. Paper that is too dense may not give the proper level of cure and proper level of release. Too thin or too thick affects die cutting. If the release liner is too rough, you can get a rougher adhesive coat that can lessen the adhesive values. A lot of properties of the

adhesive itself are a mirror reflection of the surface of that paper.”

Liner stock is primarily purchased from mills supplying glassine products, but polyester with its excellent strength and die-cutting properties is making inroads.

Regarding films and adhesives, the demand is for greater consistency. “Bond strength between polyethylene and carbonless bond, for instance, is an area that has been quite a bit of concern to us over the last few years,” Mingus says. “Test methods do not always pick up the fact that there are problems. Before you get to SPC, you have to understand the kinds of tests that are going to get you there. More than anything, we need a lot of help in better detailing what the problems are and how we measure them.”

Value-added manufacturing

Fasson often applies a top coat to facestocks to improve printability, to protect against environmental contaminants and moisture, or both. Backside coating may be applied to film and papers to increase opacity and to prevent the adhesive from wicking into the facestock. Coating and moisturization techniques can be used to make the sheet lie flatter.

“Our long-term goal is to purchase commodity papers at a competitive price and make them more attractive as a pressure-sensitive product,” Mingus concludes. “Whether that be via paper coatings, new adhesive development, new ways of die cutting, new ways of applying release coatings, new release coatings themselves, or more technically engineered backing papers, in every one of these areas our goal is to achieve higher processing speed and improved printing for our customers.”

Pure Quality.

At Colloids
pure quality is our
standard. And we have been
producing quality products
for the paper industry
for over half a century.
Our expanded product
line includes dispersants,
defoamers, surfactants,
binders, retention aids,
strength aids and sizes.
Our commitment
remains pure quality.



COLLOIDS, INC.

International
(404) 422-1250

Newark, NJ
(201) 926-6100

Marietta, GA
(404) 422-1250

Richmond, CA
(415) 235-2225

St. Catharines, Canada
(416) 688-6470

Colloid dispersants were used in the coating of this paper