

Unbleached denim finds new life in "blue jean" paper products

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*A rag bond paper manufacturer develops a product targeted
at environmentally conscious consumers.*

Blue jeans are the clothing Americans can't live without. People work in them, play in them, some even get away with going to the office in them. And now people can write on them, too.

Esleeck Manufacturing Company in Turners Falls, MA, a 93-year-old manufacturer of premium quality rag papers, began making an unbleached 100% cotton rag paper called Blue Jean Bond™ in January 1992. Made from recycled blue jean scraps, the pale blue paper was developed using denim cuttings from blue jean factories.

Esleeck is a small mill, with fewer than 100 employees and a production rate of 20–25 tons/day. Since its inception, the mill has used cotton cuttings as its primary source of raw materials. "Cotton fibers don't deteriorate the way wood fibers do, due to the strength and purity of cotton," the company's president, Charles H. Blanker, explains. "The longer fibers create paper able to withstand repeated folding and handling." For this reason, rag bond has long been used for legal documents, he notes, as well as for business and social correspondence. It can also be recycled up to eight more times than wood-based papers, he says.

A large portion of the paper made at Esleeck begins with 100% post-industrial waste, chiefly blue denim scraps from clothing manufacturers or textile mills. The chief difference between Blue Jean Bond and other papers produced by Esleeck from denim scraps is that no bleach is used to remove the color from the fabric.

In the rag sorting room, bales of cotton cuttings—scraps left over from the manufacture of cotton clothing and other dry goods—are carefully inspected. Any synthetic material, such as polyester-cotton fabric blends or synthetic stitching, and contaminants such as bits of wood or metal that may have found their way into the bales, are removed at this stage.

From there, the cuttings are literally chopped into small pieces and cooked and beaten to a pulp. The process for unbleached denim is much like the process used for white rags. Cooking is done in a rag boiler similar to but smaller than those used for wood pulp. High temperatures and caustic soda are used to break down the fiber bonds and remove any sizing from the fabric. The cooked pieces of cloth are then put into washers, where they are defibered and residual chemicals are removed.

Lon Chubb, Esleeck's vice president of manufacturing, holds denim clippings in the mill's stock preparation room.



Next the fiber goes through the refining process. Esleeck's refining equipment includes Bertram beaters, double disc refiners, and a jordan refiner. From there, it goes through the cleaners to the headbox system and on to the paper machine. Paper is then run up into rolls for shipment or sent to the sheeters, where it is cut into usable sheet sizes.

No wood at all is used in this grade; in fact, 65% of the company's production is all cotton, says Blanker. "Denim cuttings have always been used as a source of strong cotton fibers in some Esleeck papers," he says.

Denim scraps used to be called "overall cuttings." To be used in white paper, they had to be fully bleachable denim and always required considerable chemical action to make white papers. As market demand for high-grade recycled and environmentally

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friendly goods increased dramatically, Esleeck began in January 1992 to produce paper made from denim cuttings without concern for making them pure white—and Blue Jean Bond was born.

“We were, to the best of our knowledge, the first mill to produce a quality rag bond paper from blue jean scraps which had not been fully bleached,” Blanker says. “One of the key benefits, aside from its aesthetic appeal, is that the paper requires far less chemical treatment. The natural blue ‘blue jean’ color and texture come from the cuttings themselves and are largely untreated. We leave as much of the natural color as possible, treating it only enough, if at all, to get the desired results: a soft, strong paper that will allow print to be easily read against the pale blue background.”

Because neither bleach nor dye is used in making this paper, the blue color varies slightly from run to run, depending on the color of the denim scraps used in the process.

The rag pulp from which the paper is made is also made on-site by Esleeck. “We are able to fully control the entire process from start to finish, thus assuring customers of the very best and uniform quality,” says Blanker.

According to Joyce Blanker, marketing manager for Esleeck, the soft feel of the new paper has received a positive response from customers. She expects colleges, prep schools, and stores located near large student populations to stock the product. Clothing manufacturers have also expressed interest in having Esleeck produce custom lots of the recycled denim paper for their own use.

Staples Office Superstores, an office supply retailer, was among the first to sign on as a distributor of Blue Jean Bond. David Graham, a Staples’ product manager, reports that early sales of the paper look promising.

“I think Blue Jean Bond is going to make a big hit with the environmentally conscious corporate consumer as well as with individuals,” he says. “Both the source and the blue color will appeal to many, many small businesses. It’s just one more way to attract someone’s attention in what’s normally a sea of white across their desk.”

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