

Case Study: P/C Duck Insole Rib

Background

Sampson's Rib Group is the world leader in the production and supply of insole rib and rib-attaching machinery to the top manufacturers of welted shoes and boots. A division of Worthen Industries, Sampson's Rib Group and its predecessor organizations have provided high-quality adhesive insole ribs to the footwear industry since 1935.

Welt construction, found primarily in premium men's shoes and boots, produces tough, high-quality, long-lasting footwear. Insole Rib – produced entirely in Worthen's Nashua, New Hampshire facility – has specially designed polycotton textile bases that were developed to meet demanding tensile strengths. The two main styles of woven base textiles used are Twill and Duck construction. The Duck is the most commonly used insole rib worldwide.

The Challenge

Traditionally, Insole Duck products were constructed by applying multiple coats of a water-based and solvent-based adhesive, of which, 1-2 of the coats were formulated as high as 80% solvent-based solution. Due to the number of coats, roll sizes, and process capabilities, three days of production would only yield 5,000-6,000 yards of material and an additional 1-2% of scrap.

Compared to its competitors' products that were manufactured with solvent-based adhesives, Sampson Insole Rib was a water based product that had a lower environmental impact. With that said, Sampson's Rib Group knew they could do better. Given the company's reach, all product innovations would have significant impacts on not only Worthen Industries' environmental footprint, but also the footprint of its customers. In 2005, the company set out to create an improved Insole Rib that would:

- Be the most environmentally-friendly on the market¹
- Demonstrate improved performance over the previous product
- Reduce production costs
- Comply with current best practices and standards²

¹ Textile Meets OKEO-Tex 100 Std., filler consists of 12% recycled fibers, and 40% of the dry adhesive is a renewable resource from the byproduct of paper manufacture.

² For instance, California's Proposition 65, REACH, Heavy Metals, and various Brand Specific Restricted Substance Compliances

In addition to the above, the costs needed to align with market realities. “It was important that we were able to continue to competitively supply a U.S.-made product to the foreign markets” stated Bob Sampson, Business Unit Manager of the Sampson Rib Group.

Results - - - - -

Working with capital equipment investments and advances in chemistry, the team spent ten years developing and refining a new adhesive formula for the P/C Duck Insole Rib. This new formula is water-based, using just 3.5% solvent. The adhesive requires just one layer of coating and the company is now able to produce 20,000 yards of its Duck product in a single day, realizing significant energy savings. No scrap is produced because any unused material is able to be recycled back into the production process.

The entire process has recognized significant production cost savings as well. “We produce approximately 500,000 coated wide yards of the P/C Duck Insole Rib annually,” states Sampson. “We now produce this in approximately 25 production shifts versus what used to take us 272 shifts. We are able to grow with our customer demands while reducing our impact on natural resources.”

But perhaps most importantly, the product works and has been adopted by Sampson’s Rib customers worldwide: “At the moment all Portuguese Goodyear Welt Shoe factories are using the product successfully. We have quality, a good price, quick delivery and technical support. It is impossible to make our insoles with any other rib except yours.” – Floriano Bragga, International Shoe Machine (Portugal).

Best Practices - - - - -

- Industry innovator
- Anticipating customer needs/benefits

Contact - - - - -

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