

Challenge Solved: Rollers that Apply Stains and Coatings — Evenly

Super soft urethane rollers provide consistent application of coatings and stains to hardwood flooring panels while reducing production line down-time.

The Challenge

North America's leading manufacturer of pre-finished hardwood flooring, Quebec-based Boa-Franc was having trouble achieving consistent application of its coatings and stains.

Founded in 1979, Boa-Franc is committed to producing the finest hardwood flooring on the market. The company has invested in state-of-the-art equipment, skilled engineers and craftspeople, and environmental responsibility. For example, the company is CARB 93120 compliant – a measure adopted by the California Air Resources Board to reduce formaldehyde emissions from composite wood products such as hardwood flooring.

Due to its high-speed, automation-driven manufacturing process, the company needed very soft rollers to ensure even application of its UV-cured stains and coatings. The company was using neoprene rollers, but application consistency didn't meet Boa-Franc's quality standards.

The neoprene rollers also had a very short life span, which necessitated regular change-outs and down-time.

Because Boa-Franc works with suppliers that support its manufacturing goals and quality standards, it was the company's coating supplier who suggested using urethane versus neoprene rollers. The supplier recommended Urethane Innovators.

The Solution

Boa-Franc's finishing line is 150 feet long and incorporates various machines. Four foot hardwood panels are fed into the line where they undergo light sanding and brushing.

Rollers apply the multiple coats of stain and other coatings, which are then UV cured. The entire process takes approximately 1.5 minutes.

"When we initially called Urethane Innovators, they asked us detailed questions and then suggested we first start with a sample roller," said Claude Gagné, Boa-Franc's purchasing manager. "They took one of our existing neoprene rollers and recovered it with urethane. Then, based on our feedback, they incorporated changes. Once we had everything as we wanted it, they began manufacturing our rollers."

The tricky aspect: creating the urethane rollers durometer — or softness

To apply the stain and the coatings, the urethane rollers needed to be super soft and flexible but also have some firmness so that the coating was evenly applied – meaning, zero surface imperfections. In Boa-Franc’s case, having the smallest bevels in the industry was particularly challenging for Urethane Innovators.

Creating Boa-Franc’s rollers was definitely a challenge for UI. The durometer needed to be very low, at about 10A, which is easy to achieve for something small, like a no-crush wheel. For a five or six foot roller, it’s a whole other matter.

When processing super soft urethanes, the chemical makeup has to be very precise. To maintain this precision, each step of the production process requires exacting attention, from the base material and the additives to the mold, core, and oven temperature.

Curing super soft urethane also a challenge

Incorrect curing with this particular material can affect durometer by as many as 5 – 7 points in either direction. This shift in hardness could drastically affect the ability of the roller to function consistently.

With Boa-Franc’s rollers, UI had very little leeway in terms of durometer. To ensure correct durometer, UI checks it at each step. While it adds time to the overall production process, in the long run, it helps us ensure the customer gets the roller they’re looking for.

In addition, UI faced another challenge: ensuring the soft material could be ground without



affecting surface integrity.

Once it’s cured, a urethane roller is machine ground to smooth the surface and remove any extraneous urethane leftover from the molding process. For the Boa-Franc rollers, however, the grinding process was problematic due to the material’s softness.

Too much pressure and it’s easy to remove too much material or ruin the finish of the roller. UI checks the roller diameter after each grinding pass to ensure it’s within the specified tolerance.

Once the rollers have been ground, they’re then wrapped for shipping – which was another challenge, as the protective paper in which the rollers were wrapped stuck to the urethane. UI now uses a proprietary light powder coating, which doesn’t affect the urethane, before wrapping.

Results

According to Gagné, Boa-Franc has tested using rollers manufactured from other materials, but with poor results. “No one has been able to

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—CLAUDE GAGNÉ, BOA-FRANC’S PURCHASING MANAGER

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He went on to add that UI responds quickly to Boa-Franc’s requests for engineering adjustments. “We’re a high-end, engineering-based manufacturing company,” said Gagné. “UI helps us meet our passion for exacting quality standards by listening to us and then delivering exactly what we ask for. I wish we could have this kind relationship with all our suppliers.”

From the outset, Boa-Franc made UI’s job easier by providing us with valuable feedback while we developed their product. The entire team, including Claude, was a delight to work with. Boa-Franc exemplifies the type of long-term relationship based on mutual trust and success that Urethane Innovators strives to achieve with each customer. We’re thrilled to know we help them meet their commitment of producing the finest hardwood flooring imaginable.

Urethane Innovators specializes in high-volume production runs of custom molded urethane and silicone products. Family-owned and operated since 1977.

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