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The Cotton Purification Process for Our Products

Most people aren't interested in thinking about a product's origin. The products are taken for granted, without any knowledge of how they actually came to be. With dental products, it's much the same. However, since many of these products were born in a cotton field, taking a moment to consider all of the steps of the Cotton Purification Process is not only an important education, but an appreciation, too.

From Raw to Purified: The Cotton Purification Process

Raw cotton bales undergo a dramatic change before becoming one of our dental products (<https://www.richmonddental.net/dental/>). While raw cotton contains fiber, it also carries small plant parts and field trash (non-lint or foreign matter) that must be dealt with. Many people—consumer and dental professionals alike—are also unaware that cotton fiber has a coating of natural waxes, which ultimately makes it hydrophobic (i.e., water repellent). This means raw cotton is unsuitable for use in many consumer products that require absorbency, a trait that is critical in many applications.

Luckily, since we're owned by Barnhardt Manufacturing Company (<http://www.barnhardt.net/>), we have a variety of processing advantages to ensure the cotton we use is 100% purified. We control the process from start to finish. While we've used the same time-honored process for years, today we couple that experience with state-of-the-art equipment. Here are the steps taken—albeit somewhat abbreviated for brevity—to complete that process from point A to Z.

Step One: Mechanical Purification and Cake Formation

The first step in our process is to open the dense tufts of fiber from the bales. The fiber is fed into a hopper that mechanically picks the fiber tufts apart, and then the opened fiber is fed to mechanical cleaners that open the fiber even more. Ultimately this allows non-lint material to be more easily extracted from the fiber. Though the goal is to remove all of the non-lint material, in reality it's never 100% removed. That's why the remainder of the process is conducted in large vessels called kiers. Cotton is wet out and packed into large cakes with a hole in the middle, then lowered down into the kier. These kiers utilize heat and pressure to speed up the wet purification process.

Step Two: Scouring

Next, a solution containing sodium hydroxide is pumped into the kier. As the kier is heated and pressurized, the alkali solution is continuously pumped through the cakes. During this time the waxes on the fiber are saponified (converted into water soluble soaps), the remaining plant matter is softened, and the pectins and other non-cellulosic materials are suspended so they can be washed away. After a predetermined length of time, the saponified waxes and suspended materials are rinsed away with fresh water. After scouring, the cotton fiber is absorbent and any small amounts of plant matter that remained have been softened.

Step Three: Purifying

Once the scouring rinse is drained, a purifying solution is pumped into the kier. Barnhardt uses only hydrogen peroxide as the oxidizing (purifying) agent, which makes our process Totally Chlorine-Free (TCF) (<http://www.barnhardtcotton.net/sustainability/tcf-certification/>). The hydrogen peroxide whitens the fibers by oxidizing the



<https://www.richmonddental.net/wp-content/uploads/2015/07/braidedrollsquare.png>

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