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'The Science, and Secret, of Making Baseballs.'*

As MLB Nears Opening Day 2021, Much About Its Baseballs Is Hush-Hush

Rawlings Sporting Goods needs 10 days to make a major-league ball—just don't ask too many questions about the wool at its core

About 1.2 million major-league baseballs made by Rawlings Sporting Goods pass inspection to achieve “pro” grade each year. But a lot about the official ball is kept secret.

The exact color of red used for the laces? Proprietary. The kind of wool that encases the cork-and-rubber center? Confidential. The number of balls that fail to meet quality-control standards? Don't ask. (But if you must know, a committee appointed to study whether juiced balls led to the recent surge in home runs reported that only 55% pass inspection.) Percentage of MLB batted balls that resulted in home runs Source: Committee Studying Home Run Rates in MLB

Here's what Rawlings, the maker of the official balls since 1977, was willing to reveal about its product ahead of next Thursday's Opening Day, when as many as 5,400 balls will be rubbed up for use by Major League Baseball's 30 teams.

A baseball's center is a multilayered formulation of cork and rubber that measures 1.37 inches in diameter—a little smaller than a golf ball. The pill, as it's known, is coated in a tacky adhesive and wound in three layers of wool, including one four-ply and two three-ply yarns. A fourth, and final, winding is done with a thin poly-cotton for a smooth finish to help the ball's leather cover adhere to the fiber. The factory in Costa Rica where all major-league balls are made isn't open to the public, but Mike Thompson, Rawlings's chief marketing officer, described portions of the operation.

The ball windings, he said, are done with proprietary machines Rawlings has devised over the years. After the pill is wrapped with each length of fiber, its circumference and weight are measured to ensure it falls within specifications.



Major-league balls are assembled at a Rawlings factory in Costa Rica.

PHOTO: RAWLINGS

Mr. Thompson wouldn't divulge the incremental measurements, but according to MLB rules, a finished ball, including its leather cover, shall weigh not less than 5 ounces nor more than 5¼ ounces and measure not less than 9 inches nor more than 9¼ inches in circumference.

After the pills are fully wound, they're ready for leather.

These days, the balls are clad in American cowhide, rather than the horsehide of the past. The leather is supplied by Tennessee Tanning Co., a Rawlings subsidiary located in Tullahoma, Tenn.

Top-grain leather, the second-highest quality behind full-grain, is used to avoid blemishes and wrinkling, but not all of the hide is suitable.

"Belly leather stretches too much," Mr. Thompson said. "The strongest is from the back area."

The cover is made of two pieces of leather shaped like figure eights that fit together to make a sphere. Each panel is punched out with a hydraulic press fitted with a die that also perforates the perimeter with 108 holes to accommodate the ball's laces.

A single cowhide yields about 250 figure eights, Mr. Thompson said, meaning the hides of roughly 9,600 head of cattle are used each year to make MLB baseballs.

The figure eights are weighed and cut into thin layers to meet thickness and weight requirements. Before they're attached, they're moistened for a minimum of 20 minutes to make the leather more pliable, and the pills are tumbled in a container to lightly coat them with a tacky adhesive to hold the softened leather in place.

To hold the covers in place, the balls are then clamped into sewing vises in a large room where 300 to 400 workers, depending on the production schedule, hand-stitch the covers into place. The workers sew the leather panels together using pairs of 4-inch-long needles, each threaded with 110 inches of red lacing.

“The operators sew with both hands at the same time,” Mr. Thompson said. “You’re pulling thread through and extending your arms up in the air. It’s a concert of arms.”

It takes about 15 minutes to stitch each ball.

Afterward, the workers use a pick-like tool to align the stitches into the familiar formation of “vees,” and a final turn in a rolling machine ensures the seams are consistent.

The finished balls are then stamped with the MLB emblem, the commissioner’s signature and the Rawlings logo.

Start to finish, it takes about 10 days to make one ball.

On average, teams use seven dozen to 10 dozen balls a game, not including those used for batting or fielding practice.

But this year, the balls will be slightly different.

The committee commissioned by MLB to study the spike in home runs concluded that small differences in the hand-sewn seams combined with the current style of hitting, which emphasizes launch angles to help lift hard-hit balls out of the park, were responsible for the rash of dingers. To offset this trend, Rawlings confirmed it has loosened the tension of the first layer of wool wound around the pill to reduce its bounciness and shave a foot or two off the distance a long ball can travel.

The adjustment could reduce the number of homers.

But that's the way the new ball bounces.