

Reprinted from *Real Answers*

How do you
know when you're
finished testing?

Special Edition Three

real | real QUESTIONS
real ANSWERS

 **BRIDGESTONE**

trucktires.com

1-800-543-7522

Bridgestone's Texas Proving Ground
occupies over 9 square miles of
the west Texas desert.

How do you know when you're finished testing



The short answer is that you aren't finished testing a tire until it's no longer being made or sold. And even then, there's still the possibility...

Somewhere between the rigidly controlled conditions of the laboratory and the real world of everyday use, there's the proving ground.

In this story on the making of truck tires, we look at the testing that goes on at Bridgestone's facility in Fort Stockton, Texas.

→ GRAVEL ROAD COURSE
→ CITY COURSE
↗ OPERATIONS
← RIDE ROADS
← HIGH SPEED OVAL



Why is so much tire testing necessary?

For one thing, nothing is more important than the safety of Bridgestone's customers. Every product must be tested over and over again to be as sure as we possibly can be that it will perform as it's supposed to.

Second, truck tires are very complex products. Some people even argue that a truck tire is a more complex piece of engineering than the engine in the truck. Getting the right blend of performance, including fuel economy, wear, traction, handling and retreadability is a very complicated process.

Where is this testing done?

About 12 miles west of Fort Stockton, Texas, right along Interstate 10 – with its own exit – is Bridgestone's Texas Proving Ground. It's a big place, roughly square, about 3 miles on each side, occupying over 6,000 acres. "TPG," as Bridgestone calls it, is about a two-hour drive south and a little west of the Midland/Odessa area.

Why put it so far away?

When you need that much land, you need to look at how to get it economically. And, in addition to that, a proving ground needs to be somewhere with very special characteristics.

Such as?

The TPG land, a part of the west Texas desert, is remarkably flat, making it ideal for building test tracks. And, the climate is moderate and stable. It rarely rains, which can ruin a fuel economy or traction test, and the facility is both quiet and a good ways away from prying eyes.

Though it can get both hot and cold, the average temperature at TPG is 67 degrees, there's very little wind, and the sun shines about 360 days a year.

What facilities does TPG have?

TPG is set up for complete outdoor testing of passenger, truck and agricultural tires. There's a 7.7-mile 3-lane oval track, banked to allow very high speed testing for passenger car tires.

This track is also thick enough for fully loaded single-, double- and triple-trailer semis to run at highway speeds around the clock.

There are wet skid pads for both cars and trucks, special road surfaces for testing noise and vibration and a variety of road courses, primarily for passenger cars, to simulate city driving and wet pavement.

© 2007, Bridgestone Firestone North American Tire, LLC • Real Answers, Special Edition Three



Wet Stopping Distance Testing



Wet Traction Testing

Are there special things just for trucks?

TPG has a special skid pad that allows the tires on fully loaded trucks to be tested for braking traction. In that same area is a thick glass plate, embedded in the pavement.

Beneath the glass plate is a specially constructed room with a high-speed camera that can shoot pictures of a tire tread rolling through a shallow trough of water, to investigate wet traction characteristics of truck tires.

A special trailer allows testing of what is called the “Peak & Slide” traction of truck tires, while another trailer allows Bridgestone engineers to deliberately misalign a tire, then drag it around the track to see how quickly it develops irregular wear.



What about fuel economy?

Fuel economy is tested using Society of Automotive Engineers’ methods. In most cases, two identical trucks are used, one with “control” tires and one with the tires to be tested.

Fuel is measured by weighing special auxiliary fuel tanks, using precise electronic scales. Time for each lap is rigorously checked. The vehicles even start at different times, to prevent “drafting,” but without being so far apart that the conditions aren’t consistent.



Curbing Damage Testing

What do engineers learn from all these tests?

A place like TPG allows Bridgestone to test things in controlled, but almost-real-world conditions. Fuel economy is a perfect example: In the real world, your loads may differ every day. Your routes may change. Traffic patterns and weather change. Drivers change. Vehicles change. It’s a wonder you can tell anything at all about fuel consumption – in the real world.

At TPG, however, most of those variables can either be eliminated or controlled, so you can make a statistical comparison between one tire and another.

TPG testing has also allowed Bridgestone to look at the effect of load, speed, tire inflation, tread depth, tire construction and other factors.


What about tire durability?

There are several courses for that. An absolutely brutal rib-tear course subjects treads to incredible abuse, while specially made curbstones are used to deliberately create shoulder and sidewall damage.

There’s even a wicked-looking device that can make a huge gash in a truck tire – while it’s going 60 mph.

What has Bridgestone learned from all this testing?

Among other things, Bridgestone engineers have learned how to make tires that stop quicker, hold the road better, last longer, save fuel and can be retreaded more often.

That’s a pretty good start. But the job will never be done. 



Rib-tear Torture Testing

