Toyo Tires Technology

Quality and Performance

For over 60 years, Toyo has been a world leader in the development of advanced technology in the design and production of tires. Toyo has an excellent reputation for building high-quality tires at a competitive price. Toyo product range includes everything from racing tires, ultra-high performance street tires, a great selection of light truck and off-road tires, and broad line tires for passenger cars.

Toyo Tires has been voted #1 in product quality for 8 years running in the annual Tire Review magazine survey of independent tire dealers - passenger/light truck segment. For a reprint of the survey highlights, call 877-299-8696.
Technology and Innovation

The same technology that makes Toyo tires perform under the grueling punishment of the track is engineered into every one of our tires. You can be confidant that no matter how sudden the stop or sharp the turn, your Toyo tires will let you handle it like a pro.
Even before we build a tire for testing, our engineers examine the design using our revolutionary "T mode" computer analysis. Changes in the contact area between a moving tire and the road can be simulated and measured moment to moment in variable driving conditions. Those constant changes in contact area are important to you because they ultimately affect a tire's performance.

Confidence In Our Products

Visit one of the hundreds of dealers nationwide to find the Toyo tire that's right for you and take advantage of our "Experience the Difference in Quality Trial Offer." If you are not completely satisfied with the performance of our tires, return them to the dealer for a full refund or replacement - even the choice of refund or replacement is yours. Visit your Toyo dealer for complete details and a list of eligible tires.

TOYO SECRETS

Each day as you drive on straight roads, bumpy roads, around corners, at high speeds and low speeds, your tires are constantly responding to the forces of the road. And more importantly, they are channeling acceleration, braking, and steering power to the road.
Tire Dynamics

The part of the tire that stays in contact with the road is known as the contact patch. As your vehicle moves, the contact area between the tire and the road surface changes constantly which, in turn, affects the tire's performance from moment to moment. Until Toyo engineers developed a revolutionary new design approach, there was no way to simulate and measure these changes.
New Super-Computer Analysis

Using a proprietary tire-analysis program, Toyo engineers can simulate the contact patch changes in variable driving conditions for hundreds of tire designs.
Our engineers can examine internal stress and road contact patterns and test new design theories, all without actually building the tire. Once the prototype is built, it is torture-tested at

Toyo test facilities. :: Design Goal

The larger the patch, the better the traction, steering response, and overall performance. However, as a vehicle moves, the contact area decreases. In designing ultra high-performance tires, the goal then becomes to minimize this reduction in the contact surface and control the changes, so that when some reduction does occur, it occurs smoothly and predictably.
Maintaining The Maximum Tire/Road Contact Area

The conventional method used to minimize changes in the tire contact area has been to increase tread rigidity. The tread profile becomes lower and the contact patch becomes more stable. But, as the contact area is stabilized, the ride quality suffers. In fact, until recently, it was believed that optimum performance and a comfortable ride were incompatible. Toyo refused that assumption. A solution had to exist and Toyo found it.

Dynamic Stability Optimized Contact II Theory

In searching for new ways to maintain the contact area, Toyo engineers focused first on the belt tension in the tread. Belt tension has a major influence on both the contact surface and the tire characteristics that control ride quality.
Super-computer simulations showed that contact stability is greatly improved during cornering by increasing the tension in the center of the tread. Yet increasing tension in this area does not have a negative effect on ride quality. Indeed, performance and a smooth ride were compatible.
Toyo engineers then identified a precise balance of shoulder tension which improved performance and maintained a comfortable ride.

Using Dynamic Stability Optimized Contact II Theory, Toyo engineers were able to develop the first tires that successfully balanced a smooth ride with high-performance handling and stability in a low profile radial tire.

Toyo further improved ultra high-performance tires with Spiral Winding and a Rim Flange Protector. Our research and development efforts have pioneered advancements in large truck tires. Using High Elongation Steel Cord and Belt Defender Technology allows Toyo to extend its casing warranty longer than any other manufacturer.

Toyo operates one of the most aggressive and comprehensive testing programs in the industry to ensure the quality, safety, and performance of our products.

Toyo Proving Ground (Miyazaki, Japan) Here, high-speed performance, endurance, and noise test programs are carried out on passenger car, light truck, and bus tires. The facility also includes a test track to monitor and analyze steering stability characteristics of Toyo products.

Toyo Snow Tire Proving Ground (Saroma, Japan)

This facility permits evaluation of snow and all-season tires in actual snowy driving conditions. The facility also has the capability to accurately measure performance characteristics for traction, braking, and steering response in these demanding conditions.

Toyo Tire Technical Center (Itami, Japan)

Toyo's Technical Center is one of the most advanced tire-development centers in the world and contains a wealth of state-of-the-art design,

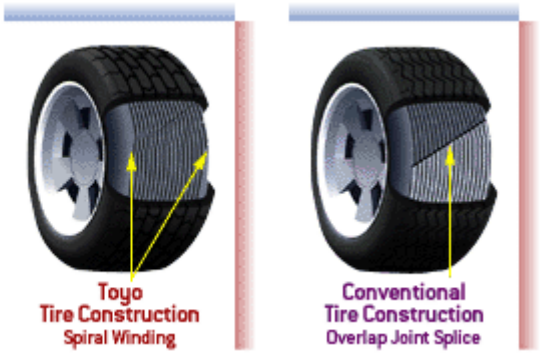
development, and testing equipment, including the Flat-Trac II tire testing machine and the super-computer based simulation system responsible for “T mode” designed products.

Worldwide Testing Programs

Toyo also maintains comprehensive evaluation programs in various markets throughout the globe where “real world” testing is performed. At Toyo, we also believe in innovation through competition. As a result, we are actively involved in a variety of worldwide motorsports. This includes everything from the World Challenge GT and Touring Car series that competes on famous racetracks across the United Sates to the Dakar Rally that covers some of the roughest terrain in Africa. All of this is done in order to test and develop new prototype materials, construction, and performance concepts.

SPIRAL WINDING

Toyo's Z-rated tires use a special Spiral Winding construction to reduce noise and improve ride quality.



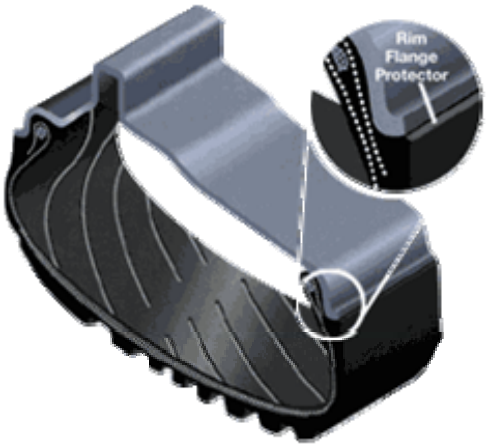
To provide smooth ride quality and low noise in our H, Z and W speed-rated tires, Toyo engineers have developed a unique Spiral Winding technology. A continuous band of 15mm nylon cord is wound around the circumference of the tire over two steel belts to eliminate the overlap joint splice, common in conventional tire construction. This joint splice can reduce ride quality and high-speed stability.

The New Toyo Spiral Winding Technique Provides Significant Benefits, Such As:

- Improved uniformity at high speeds.
- Increased high-speed endurance.
- More comfortable ride.
- Reduced noise level.

Many Toyo ultra high-performance tires feature a specially-designed protruding ridge along the circumference of the tire.

This ridge extends beyond the width of the wheel rim and acts as a bumper to protect the wheel from scratches and other damage. In other words, the tire ridge, not the expensive wheel, hits the curb.



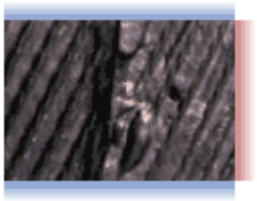
HIGH ELONGATION STEEL CORD

We Use High Elongation Steel Cord In Our Fourth Belt, So You Don't Have To Give Durability A Second Thought.

Some tire makers offer a fourth belt, or protector ply, of high elongation steel cord only for their on/off highway tires. Toyo uses its High Elongation Steel Cord in all of its premium radials, both over-the-highway and on/off highway, for maximum durability, whatever the conditions.

Our High Elongation Steel Cord features filaments with tight twists, wound like a spring, to better protect the tread area. Toyo's four-belt design, combining a High Elongation Steel Top Belt and Belt Defender, protects against cutting, chipping, and impact breaks for outstanding retreadability.

BELT DEFENDER TECHNOLOGY



Toyo's four-belt construction, featuring Belt Defender, protects the tire casing against cutting, chipping, and impact breaks for outstanding retreadability.

A typical casing without Belt Defender is rusted and damaged. Retreading may require excessive "buzz outs" or the casing may be rejected for retreading.

The worst enemy of tire life is rust from moisture penetrating steel cord filaments. Our solution is a special rubber compound that protects the third and fourth belts from rust migration into the belt package caused by nicks and cuts.

We call it Belt Defender. It increases the adhesion between the tread rubber and the steel belts for increased belt durability and dramatic improvement in retreadability.

Belt Defender means higher casing acceptance and lower cost-per-mile