



FACT SHEET

ALL-SEASON TIRE TESTING

Automotive
Engineering



Background

Tires are critical to driver safety. When in good condition, properly maintained and of the correct type and size, they enable a vehicle to accelerate, steer and brake safely under a wide variety of road and weather conditions. Because they are responsible for much of the handling and stopping ability, tires play a critical role in the optimal performance of many vehicle safety systems.

When shopping for new tires, drivers must take into consideration several factors such as *cost*, *performance ratings* and most importantly, *when* to replace worn tires. AAA conducted primary research to understand first, the performance differences between new tires and those worn to a tread depth of 4/32" in wet weather conditions and second, the performance differences between high-priced and value-priced all-season tires.

Key Findings

On wet roads, new all-season tires compared to tires worn to a tread depth of 4/32" exhibit:

- An average increased stopping distance of **87 feet** for a passenger car and **86 feet** for a light truck — more than the length of a semi-trailer truck. When decelerating from 60 to 0 mph, worn tires continue to travel at **nearly 40 mph** at the point when new tires have already stopped.
- A decreased ability to handle the vehicle (maximum lateral acceleration) on a wet road surface of **33 percent** for a passenger car and **28 percent** for the light truck.

While there were strong performers in both groups, on average, the more expensive, all-season tires **did not** perform significantly better than the less expensive all-season tires in any of the tested driving scenarios.

To understand performance differences in all-season tires varying first in condition and second in price, AAA pursued two lines of inquiry:

1. Are there performance differences in certain driving scenarios between new tires and tires worn to a tread depth of 4/32"?
2. Are there performance differences in certain driving scenarios between high-priced and value-priced tires?



AAA Recommends

- Consumers begin shopping for new tires when the tread depth reaches 4/32”.
- Keeping tires properly inflated, rotating them on a regular basis and inspecting them at least once a month.
- Testing tread depth by placing a quarter upside down in the tread of a tire; if the top of Washington’s head *can be seen*, the tires need to be replaced.
- When shopping for replacement tires, it is important to remember that the price alone is not a good indicator of better performance.
- Drivers research prospective tire models through consumer reviews as well as understanding tire ratings.
- Increase following distance to allow for ample space if the vehicle ahead stops suddenly.



Methodology

Testing was conducted at the Michelin’s Laurens Proving Grounds in Mountville, South Carolina and was secured by AAA for independent testing and later validated at another facility designed for this purpose. Tires for testing were randomly selected from a list of commonly available standard size tires with a common speed rating. Three different tire brands were selected for each tier to prevent overrepresentation of a single brand. Based on U.S. sales data, the Toyota Camry and Ford F-150 were selected as test vehicles to represent the most frequently purchased passenger car and light truck.

Test procedures and scenarios for AAA’s performance evaluation of high-priced versus value-priced tires and new versus worn were designed to mimic wet driving conditions, following industry standard methods. To conduct new and worn tire testing, a conservative speed of 60 mph was chosen to represent a typical highway speed, and a uniform water depth was used in accordance with industry testing standards.

Each test vehicle was outfitted with equipment designed to ensure consistent application of the brake pedal as well as capture vehicle dynamics, raw sound pressure data and vibrations encountered by the vehicle operator. Skid pad speed was not predetermined, however a test speed of 60mph was chosen for wet stopping distance. During the skid pad test, vehicles were driven to the point where the vehicle loss traction with the road.