New Ways to Spot Dangerous Tires

There's more to car tire safety than just checking the tread and pressure levels. There are some new ways to spot a dangerous tire. Any safety check should also include a review of the tire's sidewall for cracks. Extreme weather will cause the cracks and separate the steal belt and tread. Edmunds.com consumer advice advocate Ronald Montoya says the age of the tire is a factor, no matter how much mileage is on the rubber.

"If you ask the car manufacturers, they will tell you six years," says Montoya. "If you ask the tire manufacturers, they will tell you 10 years with a regular inspection after every five years."

You can find out how old a tire is by checking the code on the inner wall. The first number is the week in a year the tire was made, the second number is the year. So, 11-10 would mean the eleventh week of 2010.

Some tires have the code on both sides. Newer tires have the code on the inside wall. Tires made before 2000 don't have a code at all.

That is really important if you are buying a used car or checking on the lifetime of your spare tire. Montoya even suggests you check the age of new tires because they may have been in a warehouse for a while.

Vibration while driving is a sure sign of an aging tire.

For a graphic of what to look for and more information on tire safety, visit Edmunds.com.

How Old — and Dangerous — Are Your Tires?

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The older a tire gets, the higher the risk of sudden and unexpected tread separation.

In February 2008, the owner of a 1998 Ford Explorer in Georgia needed a new tire for his SUV and ended up buying a used one. When he was driving two weeks later, the tread suddenly separated from the tire. The Explorer went out of control and hit a motorcycle, killing its rider. An analysis of the used tire revealed that it was nearly 10 years old.

The incident illustrates not only the potential danger of buying a used tire but also the perils of aging tires — including those that have never spent a day on the road.

For years, people have relied on a tire's tread depth to determine its condition. But the rubber compounds in a tire deteriorate with time, regardless of the condition of the tread. An old tire poses a safety hazard.

For some people, old tires might never be an issue. If you drive a typical number of miles — 12,000-15,000 miles annually — a tire's tread will wear out in three to four years, long before the rubber compound does. But if you only drive 6,000 miles a year, or have a car that you only drive on weekends, aging tires could be an issue. The age warning also applies to spare tires and "new" tires that have never been used but are old.

What Happens to a Tire as It Ages?
Sean Kane, president of Safety Research & Strategies, Inc., compares an aging tire to an old rubber band. "If you take a rubber band that's been sitting around a long time and stretch it, you will start to see cracks in the rubber," says Kane, whose organization is involved in research, analysis and advocacy on safety matters for the public and clients including attorneys, engineering firms, supplier companies, media and government.

That's essentially what happens to a tire that's put on a vehicle and driven. Cracks in the rubber begin to develop over time. They may appear on the surface and inside the tire as well. This cracking can eventually cause the steel belts in the tread to separate from the rest of the tire. An animation on the Safety Research & Strategies Web site shows how this happens. Improper maintenance and heat accelerate the process.

Every tire that's on the road long enough will succumb to age. Tires that are rated for higher mileage have "anti-ozinant" chemical compounds built into the rubber that will slow the aging process, but nothing stops the effects of time on rubber, says Doug Gervin, Michelin's director of product marketing for passenger cars and light trucks.

How Long Does a Tire Last?
Carmakers, tiremakers and rubber manufacturers differ in their opinions about the lifespan of a tire. The National Highway Traffic Safety Administration (NHTSA) has no specific guidelines on tire aging and defers to the recommendations of carmakers and tire manufacturers. Carmakers such as Nissan and Mercedes-Benz tell consumers to replace tires six years after their production date, regardless of tread life. Tire manufacturers such as Continental and Michelin say a tire can last up to 10 years, provided you get annual tire inspections after the fifth year. The Rubber Manufacturers Association says there is no way to put a date on when a tire "expires," because such factors as heat, storage and conditions of use can dramatically reduce the life of a tire.

Heat: NHTSA research has found that tires age more quickly in warmer climates. NHTSA also found that environmental conditions like exposure to sunlight and coastal

climates can hasten the aging process. People who live in warm weather and coastal states should keep this in mind when deciding whether they should retire a tire.

Storage: This applies to spare tires and tires that are sitting in a garage or shop. Consider how a spare tire lives its life. If you own a truck, the spare may be mounted underneath the vehicle, exposed to the dirt and the elements.

If your spare is in the trunk, it's as if it is "baking in a miniature oven," says Dan Zielinski, senior vice president of Public Affairs for the Rubber Manufacturers Association. Most often, the spare never sees the light of day. But if the tire has been inflated and mounted on a wheel, it is technically "in service" — even if it's never been used, Gervin says.

A tire that has not been mounted and is just sitting in a tire shop or your garage will age more slowly than one that has been put into service on a car. But it ages nonetheless.

Conditions of use: This refers to how the tire is treated. Is it properly inflated? Has it hit the curb too many times? Has it ever been repaired for a puncture? Tires on a car that's only driven on the weekends will have a different aging pattern than those on a car that's driven daily on the highway. All these factors contribute to how quickly or slowly a tire wears out. Proper maintenance is the best thing a person can do to ensure a long tire life. Gervin recommends that you maintain proper air pressure in tires, have them rotated regularly and have them routinely inspected.

How to Determine the Age of a Tire

The sidewall of a tire is littered with numbers and letters. They all mean something, but deciphering them can be a challenge. This Edmunds article about reading a tire's sidewall goes into greater detail, but for the purposes of determining the age of a tire, you'll just need to know its U.S. Department of Transportation (DOT) number.

Tires made after 2000 have a four-digit DOT code. The first two numbers represent the week in which the tire was made. The second two represent the year. A tire with a DOT code of 1109 was made in the 11th week of 2009. Tires with a three-digit code were made prior to 2000 and are trickier to decode. The first two digits still tell you the week, but the third digit tells you the year in the decade that it was created. The hard part is knowing what decade that was. Some tires made in the 1990s — but not all — have a triangle after the DOT code, denoting that decade. But for tires without that, a code of "328" could be from the 32nd week of 1988 — or 1978.

Clearly, these DOT numbers weren't designed with the consumer in mind. They were originally put on tires to make it easier for NHTSA to recall tires and keep track of their manufacturing date.

To make matters worse, you might not always find the DOT number on the outer side of the tire. Because of the way a tire is made, it is actually safer for the technician operating the mold to imprint information on the inner side of the tire, so some manufacturers will opt to put the number there. It is still possible to check the DOT code, but you might have to jack the car up to see it. Keep the visibility of the DOT number in mind the next time you are at a tire shop and the installer asks if you want the tires to be mounted with the raised lettering facing in.

That potential inconvenience is going away, however. NHTSA says that the sidewall information about the tire's date of manufacture, size and other pertinent data is now required to be on both sides of the tire for easier reading.

After checking out a tire's birth date, give the rubber a visual inspection. Some of the best advice on such an inspection comes from the British Tyre Manufacturers' Association. It recommends that consumers check tires regularly for any sign of aging, such as tread distortion or large or small hairline cracks in the sidewall. Vibrations or a change in the dynamic properties of the tire could also be an indicator of aging problems, the association says. It recommends replacing the tire immediately if such symptoms appear.

Don't Buy Used

Tires are expensive, especially when you factor in the price of mounting and balancing. That's why used tires become more attractive to consumers who are strapped for cash. But the purchase of used tires is very much a buyer-beware situation, Zielinski says. "Even a one-year-old tire can be dangerous if it was poorly maintained," he says.

When a consumer buys a used tire, he has no idea how well it was maintained or the conditions in which it has been used. The previous owner might have driven it with low pressure. It could have hit curbs repeatedly. It could have been patched for a nail. Further, it's a dated product.

"You wouldn't want a used tire for the same reason that you wouldn't buy a 10-year-old computer," Zielinski says. "You are denying yourself the advancements in tire technology over the past few years."

Make Sure You Get a "Fresh" Tire

Just because a tire is unused doesn't mean it's new. In a number of instances, consumers have purchased "new" tires at retail stores only to find out later that they were manufactured years earlier. In addition to having a shorter life on the road, a tire that's supposedly new but is actually old may be past its warranty period.

If you buy tires and soon after discover that they're actually a few years old, you have the right to request newer ones, Zielinski says. Any reputable store should be willing to make amends. "It is fair for a consumer to expect that 'new' is not several years old," he says.

Letting Go

Getting rid of an unused spare or a tire with good-looking tread may be the hardest thing for a thrifty consumer to do. "Nobody's going to take a tire that looks like it's never been used and throw it out," Kane says. But if it's old, that's exactly what the owner should do.

Although Kane has lobbied NHTSA to enact regulations on tire aging, nothing is currently on the books. A NHTSA spokesman says the organization is "continuing to conduct research into the effects of tire aging, and what actions consumers can do to safely monitor their tires when they are on their vehicles."

It's too bad that tires don't have a "sell by" date, like cartons of milk. Since there's no consensus from government or industry sources, we'll just say that if your tire has plenty

of tread left but is nearing the five-year mark, it's time to get it inspected for signs of aging.

Of all your vehicle's components, tires have the greatest effect on the way it handles and brakes. So if the tire store recommends new tires at your five-year check-up, spend the money and don't put it off. Your life could depend on it.

Checking Your Tires for Wear

You should check your tires for wear at least once a month and before and after long trips. To determine whether you need to (a) buy new tires, (b) have your wheels balanced, (c) have your wheels aligned, or (d) change your driving habits, simply read your tire treads for clues. Table 1 and Figure 1 show you what to look for.

Table 1: How to Read Your Treads

Clue	Culprit	Remedy
Both edges worn	Under-inflation	Add more air; check for leaks
Center treads worn	Over-inflation	Let air out to manufacturer's specifications
One-sided wear	Poor alignment	Have wheels aligned
Treads worn unevenly, with bald spots, cups, or scallops	Wheel imbalance and/or poor alignment	Have wheels balanced and aligned
Erratically spaced bald spots	Wheel imbalance or worn shocks	Have wheels balanced or replace shocks
Edges of front tires only worn	Taking curves too fast	Slow down!
Saw-toothed wear pattern	Poor alignment	Have wheels aligned
Whining, thumping, and other weird noises	Poor alignment, worn tires or shocks	Have wheels aligned or buy new tires or shocks

Squealing on curves	Poor alignment or under-inflation	Check wear on treads and act accordingly

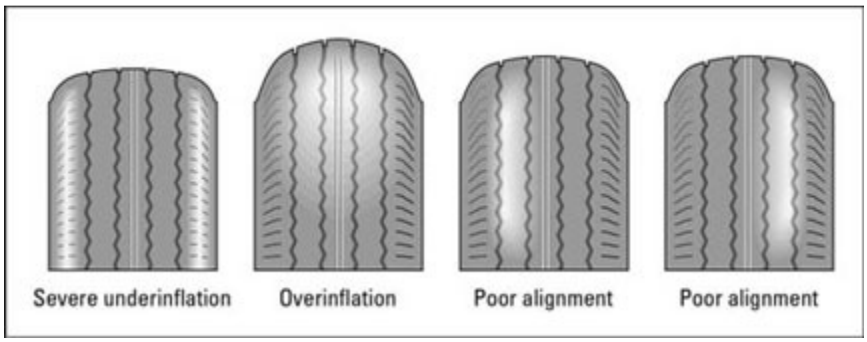


Figure 1: What the signs of poor tread wear mean.

Checking Tread Depth

U.S. coins can be substituted for a tire tread depth gauge as tires wear to the critical final few 32nds of an inch of their remaining tread depth.

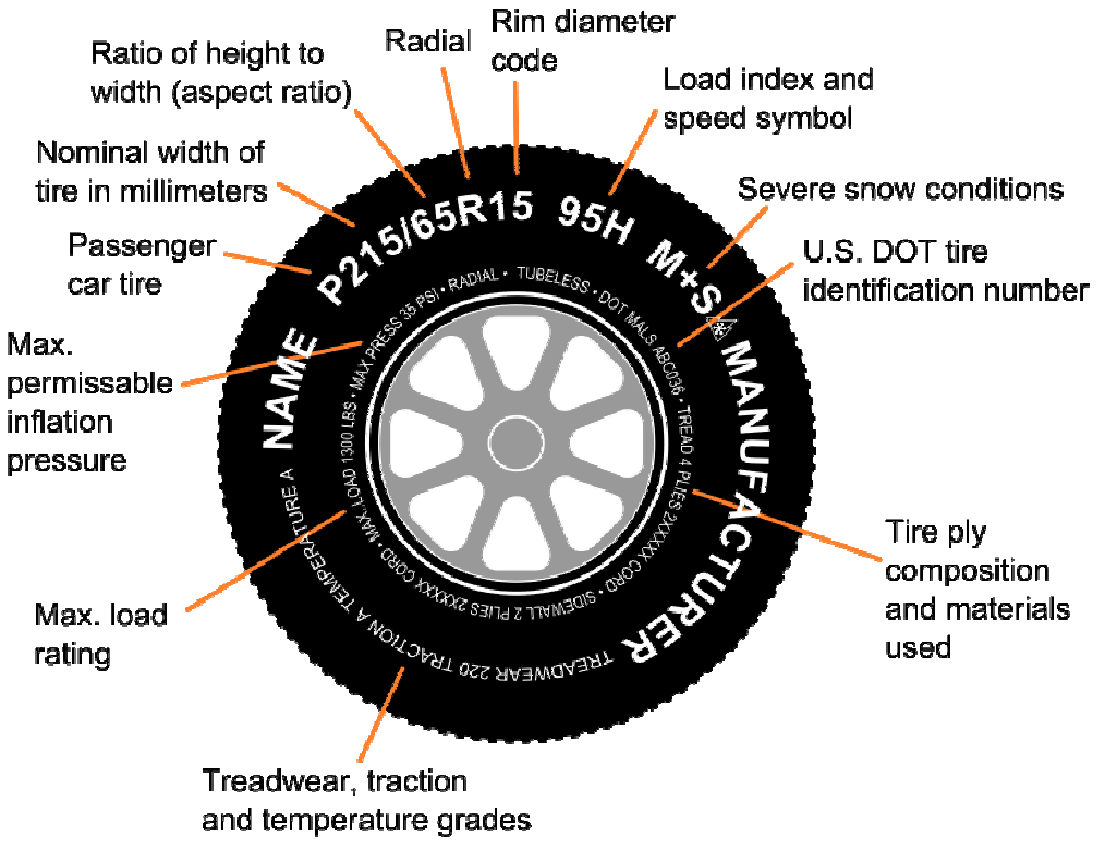
Place a penny into several tread grooves across the tire. If part of Lincoln's head is always covered by the tread, you have more than 2/32" of tread depth remaining.

Place a quarter into several tread grooves across the tire. If part of Washington's head is always covered by the tread, you have more than 4/32" of tread depth remaining.

Place a penny into several tread grooves across the tire. If the top of the Lincoln Memorial is always covered by the tread, you have more than 6/32" of tread depth remaining.

According to most states' laws, tires are legally worn out when they have worn down to 2/32" of remaining tread depth. To help warn drivers that their tires have reached that point, tires sold in North America are required to have indicators molded into their tread design called "wear bars" which run across their tread pattern from their outside shoulder to inside shoulder.

Tire Identification Diagram



P

The "P" indicates the tire is for passenger vehicles.

Nominal Width

This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Aspect Ratio

This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R

The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Rim diameter code

This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Load index

This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law. (e.g., "95" means the tire can support 1,521 pounds).

Severe snow conditions

The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings.

Speed Rating

The speed rating identifies the maximum speed a tire can sustain for an extended period of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below.

Note: You may not find this information on all tires because it is not required by law.

Q	99 mph	**H**	130 mph
R	106 mph	**V**	149 mph

S	112 mph	**W**	168 mph*
T	118 mph	**Y**	186 mph*
U	124 mph		

*For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

Treadwear

The treadwear rating is a measurement of the tire's durability, but not the projected tread life. It is important to remember that road surfaces, driving habits, and other factors determine actual tread life. Each tire manufacturer independently determines treadwear through their own tests. Treadwear is not based on any one industry or government standard.

Traction

The traction indicates the tire’s ability to stop on wet pavement at max inflation pressure. Traction grades include AA, A, B, and C, with AA being the highest grade available.

Temperature Grades

The temperature rating is a measurement of a tire's resistance to heat generation under normal operating conditions at recommended inflation pressures. Temperature grades range from A to C, with A being highest rated and therefore most resistant to heat generation.