



Tech Articles

Understanding Your Tires

by Byron R. Daugherty

Tires are a complete mystery. First of all, its difficult to imagine what sort of tire will fit the needs of your driving habits. Sure, you can tell my dry weather driving habits by the scraps on the door handles (No, my Fiero doesn't lean in corners that badly, I'm exaggerating!) But I require a lot of good rain and snow traction as well. Getting a good answer about what is truly the best tire for a Fiero is like searching for the Holy Grail--everyone has an answer but it seems to come up lacking.

Writing on the (Side)Wall

To get closer to this answer, we need to under stand a little more about the shoes were going to saddle our Fieros up with. First, lets examine how to read a tire. A tire can give you a lot of information in all those letter and number combinations. Check *figure 1* to follow along.

Tire Size Designation - This gives you the dimensions of the tire. In *figure 1* the tire is 225/50-R-16. 225 is the tire tread width in millimeters, 50 is the profile or aspect ratio (ratio of the sidewall height to the tread width), R denotes its a radial, and 16 is the rim diameter in inches. See. Confusing, they use both inches and millimeters.

Speed Rating Index - The speed at which the tire is designed to maintain proper dissipation of friction generated heat. Some examples, H-Rated is up to 130 MPH the tire can resist temperature buildup, which in turn avoid overheating of the tires which causes failure. Z rated is 149+. Some people mistakenly believe that a Z rated tire has more traction than an H. This is no always true as the rating is based solely on heat dissipation. It is true that a lower speed rating can mean less road noise and a little more comfort.

Speed ratings: S=112 MPH / 160 KPH, T=118/190, U=124/200, H=130/210, V149/240, W=168/270, Y=186/300, Z=149+/240+

UTQG Marking - Uniform Tire Quality Grading, a rating of tread wear, traction, and temperature resistance of a tire.

- **Tread wear** is specified by the manufacturers and, therefore, is most accurate in comparing tires of the same brand. It is graded on percent, ex. a 150 grade tire is 1.5 times longer lasting than a 100 grade tire (given same driving habits, etc.)

- **Traction** is represented by a grade of A, B, or C with A being the highest. This is tested on the tires ability to stop on a straight-ahead braking test on asphalt and concrete, no wet cornering is tested. A means the tires performed well on both asphalt and concrete--B

means performed well on at least one and C means the tire performed badly on at least one surface.

- **Temperature Resistance** is also A, B, or C. It measures the tires ability to dissipate heat at high speeds. Grade C is minimum for a passenger car under Federal Motor Vehicle Safety Standards. Temperature Resistance ratings are not required on winter and light truck tires.

Original Equipment Code - Optionally on tires, this specifies if this tire meets the design and construction specifications for car companies to be original equipment on certain cars. Usually Porsche and Ferrari cars have these codes on their original equipment tires.

Now, you've understood some of the markings and what they mean, and how that can show you a clearer path to understanding a tire, you step into the muddy path of wanting to get slightly larger wheels with lower profile tires for looks and handling. Does it cause a problem? Well, yes. Not only can you risk damaging your car by placing improper sized or offset wheels on it, but if the wheel and tire clears everything, you still might be messing up your speedometer and odometer.

Plus One

The "Plus 1" concept fixes this problem. Looking at *figure 2*, we can see that if you add 1 inch to rim size, you can obtain a close outer tire dimension if you go with a lower profile tire. Remember the profile number from above? The percentage of the height of the sidewall of the tire to tread width. If you set your sights on keeping that outer dimension the same, you can put a larger rim on your Fiero with a wider, lower profile tire, and still come within +/- 2 tenths of an inch difference in diameter, or +/- 4 tenths of a MPH speedometer difference. Warning! Some 16" and 17" and above rims REQUIRE suspension modification on the Fiero!

Tire Categories

Now lets get into specifics. You are looking for a certain type of tire but are wondering what tires are closer to your needs. Here are some tire "buzz words" you can use when shopping for the tire for your needs and their qualifications.

Competition - Autocross, Solo II or track DOT street legal tires. S, H, V, or Z speed rated and 12-17" rim diameter.

Ultra High Performance - You want killer dry road performance, and have your snow tires in the garage. These tires are going to be V or Z rated and a profile of 55 or lower.

Ultra High Performance All-Season - Great performance in the sun, and enough to get you past rain and snow without changing tires. These tires are M&S (mud & snow) rated, and are V or Z speed rated, and profile of 55 or lower.

High Performance - Great performance, but a little less noise and slightly smoother ride. Look for U or H speed rating and profile of 60 or lower.

High Performance All-Season - Same as above except for light snow & rain. M&S rated, U or H speed rated, and profile of 60 or lower.

Performance All-Season - Good performance, appearance and price. M&S rated, S or T speed rated. Profile of 60, 65, or 70.

Touring - Performance, but comfort and low noise is important. M&S, speed rating of S, H or V, and profile of 60, 65 or 70.

All-Season - Basic tires to get you to work and back. M&S, speed of none or S, and profile of 80, 75 or 70.

More Information

Now, lets throw some more information into the mix. Compounds. Recently, large strides in rubber compounds have been made that make a huge difference in tire longevity and performance. Yes, you think, the stock Fiero tires were an unimaginable leap far beyond the old bias-plys of the 60s. But, strides have been made in the past couple of years that far eclipse even that difference in terms of traction and heat dissipation. Currently, Pirrelli and Continental tire companies have developed compounds that not only give their high end tires incredible traction in summer that rivals summer only tires, but whose wet and snow traction can rival the best all-season tires today. These tires also have an incredible tread life. Unfortunately, they also carry an unforgettable price as well!

Lets go shopping!

You're probably thinking to yourself, "That's a lot of information, will I remember it when Im shopping for tires?" Well, yes. Heres how. Keep this article handy, and call either the Tire Rack, or Discount Tires Direct. Tell them your habits and information, and they will recommend tires in your price range. Get a quote from them, then you can see if you can beat it elsewhere, but you wont find the knowledge anywhere else as good. In fact, the Tire Rack sends their employees 10 days a year to training for wheels and tires. You most likely to get a good answer there first, before you hit the local K-MARTs auto department to buy the generic specials.

Personal Testimony

When I first bought my '86 GT, it needed tires. I took it to a tire place in Downers Grove, and told them what tires I wanted put on. I had heard that Bridgestone Potenza HP41s, all-season high-performance tires were good. Having lived with those crummy Eagle GTs and then GT+4s in the winter before, I wasn't going to make that mistake again! My HP41s have lasted over 50,000 miles and were incredible in the rain, great in the snow, and did well on the autocross course. But now, they are too noisy (always had a lot of noise) and not much traction. We re-shod our '87 with Pirelli P4000 Super Touring, a Touring tire, and man, you can roll down your windows, and you still cant hear these tires on the road! They're more comfortable too, and have great traction in rain. Unfortunately, you also cant hear these tires squeal when you are sliding, rain or dry. Great tires for the "cruiser", not the "bruiser". Our '88 has Eagle GTs in front and Dunlops on back. The previous owner couldn't find all of one tire in stock where he had them put on at. They seem OK, but the suspension is too different for me to voice a clear comparison. The Mercedes is the best comparison of speed ratings. It came stock with Z rated Pirellis that seemed harsh, but we replaced them with the same tire, only in a H rating. The car did not have any loss in traction, dry, snow, or rain, yet the ride was less noisy and less sharp on bumps. My choice for my '86. I'm going to go with a Pirelli High Performance All-Season tire, staying with my H speed rating.

References

The Tire Racks [Inside Track On-Line](#), Road & Track Magazine (various issues), [Discount Tire Direct](#).