

Why Use Nitrogen in Your Vehicle's Tires

By: Ralph Seekins

Question: I've been told that I should replace the compressed air in my truck's tires with nitrogen. Is there any benefit?

Answer: Absolutely. There is a growing trend toward using pure nitrogen in regular vehicle tires. The benefits are many. For example, as I will explain below: nitrogen filled tires experience less pressure loss thereby resulting in a more stable, consistent tire pressure; nitrogen filled tires run cooler, experience longer tread life, have less oxidation of tire rubber; and nitrogen filled tires have less wheel rim and wheel corrosion. The end result - you experience increased tire life, better fuel mileage, better handling, and increased tire safety.

The benefits of pure nitrogen are recognized by other users. NASCAR, Indy, Le Mans and Formula One racing tires are filled with nitrogen. Military aircraft, commercial aircraft, military vehicles, heavy construction vehicles, the Space Shuttle, Air Force One – all have tires filled with nitrogen. Even Tour de France bicycles use nitrogen in their tires.

Tires today are mostly filled with compressed air, which is about 78 percent nitrogen, 21 percent oxygen and one percent other gasses. Additionally, in some cases, water vapor has been found to make up as much as 5 percent of the volume of air in a tire. When properly inflated with nitrogen, no moisture is left in the tire and the smaller oxygen molecules which have a way of working their way through tire rubber are replaced with much larger nitrogen molecules that migrate much slower through a tire. In fact, nitrogen is the slowest of all gases to flow through a permeable barrier such as a tire. It leaks out of a tire three to four times slower than does oxygen.

Then, because nitrogen is an inert gas (oxygen is not), it does not fluctuate as much in pressure due to changes in temperature (a huge benefit in our volatile Interior Alaska temperature swings). Remember that a rule of thumb is that a tire filled with compressed air will change one pound per square inch in pressure for each ten degrees in outside pressure. Nitrogen provides constant pressure and is much less susceptible to accelerated diffusion caused by temperature changes.

Less rubber oxidation (since no oxygen or water is inside the tire) also dramatically slows a tire's aging. The result is a lengthening of the tire's useful life and result of wheel corrosion.

So, in the end, I believe there are some pretty big benefits to replacing the compressed air in your tires with nitrogen. We do it in all our own family vehicles.

Now, even though nitrogen provides constant pressure over longer periods, you still need periodic tire pressure checks. And those checks should be made when a tire is at about the same temperature as the surrounding air temperature. So having a good calibrated tire pressure gauge and using it regularly is still a must for proper and safe vehicle operation.

And there is also one other huge factor. From a number of technical reports I have read from all around the country, folks who fill with nitrogen experience an increase in fuel economy somewhere between 4% - 10% - something that should interest all of us.

There are a number of places around Fairbanks that provide nitrogen tire service. We do at our own Quick Lane and provide a road service policy to go along with it that provides free top offs for up to a year. This much we know – once you have filled your tires with nitrogen – you'll never go back to less reliable compressed air.

Good luck and safe driving.