

Drexan Corporation

Tire Pressure Change vs. Tire Pressure Loss

Now that it's wintertime in Canada, some customers who have had their tires inflated with Nitrogen may notice that their tire pressure is a little low. That's normal, as you'll see below. So it's a good time to review the difference between tire pressure change vs. tire pressure loss.

Did you know that most sports balls in sports stores are inflated with Nitrogen? Football, soccer ball, and basketball manufacturers discovered that customers didn't like buying balls that felt soft. Customers thought the balls were leaky – but it was just the compressed air migrating through the rubber wall of the ball. So the ball manufacturers started inflating the balls with Nitrogen. With Nitrogen, they stayed firm and they were sold! This is an example of volume loss, not volume change. Exactly the same thing happens with your tires. If tires are filled with air, the compressed air leaks out through the tire wall much faster than Nitrogen.

If you think about the above case, the temperature in the stores was the same for air filled and Nitrogen filled balls. The pressure in the balls changes over time – but the time is a lot longer for Nitrogen. Now here is a story that also involves basketballs. In this story, we're going to change the temperature and not the time.

Last winter, one of my customers told me that he wanted to play basketball with his daughter. They took the basketball from their house (warm) and went outside (cold). The ball didn't bounce too well, so they went to their neighbor's house to borrow the neighbor's pump. They started to chat inside the neighbor's heated garage, as neighbors do. Then after 5 minutes, the neighbor started to dribble the ball and asked: "Why do you need the pump? The ball bounces fine." This is an example of volume change, not volume loss. The mass of gas inside the tire is the same, but the volume changes with temperature.

Nitrogen is an ideal gas, but compressed air is not. Compressed air contains lots of moisture – even cold air in winter has moisture. When it condenses and falls, we call it snow. Nitrogen still changes volume with temperature, but it does not change pressure as much as compressed air does.

It is very important for fleets and for tire service companies to understand volume change, and to account for it in fleet operations and customer service. Tire pressure is still critical and must be monitored. For fleets doing north/south runs, fleet managers must balance the road running pressure of the tires in cold climates and how that will change as the truck heads south into warm weather. The gas will expand and pressure will increase for sure. But it is very important to note that Nitrogen expands less than compressed air.

For more information, request your copy of "Nitrogen Tire Inflation for Commercial Trucking Fleets" from your Drexan sales representative.

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