

# NitroPro® Nitrogen Tire Filling Systems

## Offer the Most Productive and Profitable Solution.

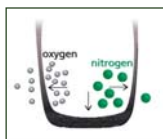
Why is the industry switching to nitrogen?

### How nitrogen works and what it does

Nitrogen (N<sub>2</sub>) makes up the majority of the air that we breathe and is contained in the protein of all life on earth. It is colorless, tasteless, and non-toxic. The next most common component of air is oxygen (O<sub>2</sub>). Together N<sub>2</sub> and O<sub>2</sub> make up approximately 99% of the air we breathe and traditionally fill tires with.

#### N<sub>2</sub> is a larger molecule than O<sub>2</sub>.

Therefore, it cannot escape as easily as oxygen



through porous material such as a rubber tire wall (carcass). Leaking at a much slower rate than oxygen, a tire filled with a higher percentage of N<sub>2</sub> maintains its proper pressure roughly three to four times longer than air-filled tires. Proper inflation provides better fuel economy, superior handling, longer tire life, and increased safety by reducing the likelihood of low pressure related loss of control, blowouts and other tire failures.

#### N<sub>2</sub> is a dry, inert gas.

O<sub>2</sub> in a tire provides unwanted oxidation. Over time, this reaction destroys the tire carcass and corrodes wheels. A tire is prematurely aged by O<sub>2</sub> from the inside-out as the pressurized air in the tire makes the O<sub>2</sub> try to escape through the tire carcass, speeding up the damaging oxidation process. N<sub>2</sub> on the other hand, is a harmless inert gas that does not react negatively with tires and wheels. N<sub>2</sub> filled tires also reduce tire heat, thereby decreasing rolling resistance and increasing fuel economy.

#### N<sub>2</sub> is non-flammable.

O<sub>2</sub> is a flammable gas while N<sub>2</sub> is an extinguishing gas. Thus, a large number of mass transportation companies around the world fill their tires with N<sub>2</sub> for added fire and explosion safety. In a vehicle fire, ruptured air-filled tires fuel the fire. N<sub>2</sub> filled tires slow the fire.



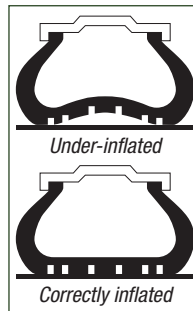
N<sub>2</sub> has been used in tires for many years on aircraft, military vehicles, off road trucks, racecars, and even Tour de France bicycles.

### Nitrogen inflated tires are safer and longer lasting than tires inflated with air

- Nitrogen inflated tires do not age as quickly as air inflated tires
- Nitrogen inflated tires minimize blowouts
- Nitrogen inflated tires improve vehicle handling through proper inflation
- Nitrogen is an inert, non-combustible and non-flammable gas
- Nitrogen is a stable gas providing more constant pressure
- Nitrogen is a dry gas with no corrosive properties as found in compressed air

### Correct inflation versus under-inflation

Correct inflation is highly significant when considering tire life and performance. It is not always possible to look at a tire and detect



under-inflation. However, under-inflation can cause many tire-related problems. As inflation pressure largely determines a tire's load capacity, under-inflation results in an overloaded tire. An under-inflated tire operates at high deflection resulting in decreased fuel economy, sluggish handling and may result in excessive mechanical flexing and heat build up, leading to catastrophic tire failure. *(more on next page)*



### Facts & Testimonials

*"The RTI NitroPro machine is great. After looking at NADA and other sources, we found it more versatile than other nitrogen tire systems. We sold 588 services in our first full month at \$29.95 each. That more than paid for both of our machines in their first month of operation."*

—Sammy Hayes, Service Director, Sam Galloway Ford

*Dunn Tire L.L.C. is pleased with its nitrogen decision. Dunn Tire charges \$5 per tire. So far one store in two months sold more than 1,100 nitrogen fill-ups, which adds up to about \$5,500. Mr. O'Neill added that the fill-ups will pay for the equipment in a "very short period of time."*

—*"Dealers: N<sub>2</sub> inflation gamble a good move,"* by Lisa Aichlmayr, Tire Business staff ©, AKRON, November 10, 2004

*"One thing government and tire-industry officials agree on is the importance of keeping tires properly inflated. The risks of underinflation, which stresses tires by causing their sidewalls to flex more and the air temperature inside to rise, were highlighted during congressional hearings two years ago into the Firestone tire problems. Underinflation was identified as a factor in the failure of Firestone tires."*

—Wall Street Journal, September 25, 2002

*Using nitrogen instead of compressed air has distinct advantages, which lead to immediate benefits for the vehicle owner.*

1. It has more mass, so it migrates through the tire three to four times slower. The result: Tires hold their psi longer.
2. It runs about 20% cooler. Less heat results in less tire degradation.
3. It drastically reduces oxidation on the rim and inner-liner (nitrogen systems almost totally eliminate oxygen—the cause of oxidation—from the mix).
4. It is environmentally safe.

—Bob Ulrich, Modern Tire Dealer, July, 2004

*TMC (Technology & Maintenance Council of American Trucking Association) says that about 90% of tire failures causing tire road debris is caused by underinflation.*

—TMC Tire Air Pressure Study, May, 2002

*Bridgestone says air inflated tires lost an average of 2.7 psi per month and nitrogen inflated tires lost an average of 0.7 psi per month.*

—Guy Walenga, Clemson Tire Conference, March, 2004

*Michelin Supports the use of nitrogen based on its ability to better retain pressure over a period of time.*

—Michelin Technical Bulletin, November, 2003

*"Goodyear says 15% under-inflation equals 8% less tread mileage and 2.5% decrease in fuel economy."*

—Goodyear Radial Truck Tire and Retread Service Manual, Page 40

*"Having tires inflated to the maximum recommended pressure can improve gas mileage by as much as 6 percent."*

—Ann Job, "Fuel Saving Tips," MSN Autos, September 19, 2005

*Pirelli says 20% under-inflation equals 15% shorter tire life.*

*United States Department of Energy says the United States loses over 2 million gallons of fuel each day due to under-inflation.*