

LOWERING FLEET OPERATING COSTS THROUGH FUEL EFFICIENT TIRES AND RETREADS

WHAT YOU NEED TO KNOW TO RUN LEANER

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A retreaded tire can be just as fuel efficient, or even better, than a new tire.

Rolling Resistance: Why it Matters

Rolling resistance is a measurement of the energy it takes to roll a tire on a surface. For truck tires, rolling resistance has a direct and significant correlation to the fuel economy of the vehicle. Whether you run a single truck or an entire fleet, tire rolling



resistance is a crucial element that should be taken into account to minimize fuel costs. Since fuel costs are one of the biggest expenses in trucking operations, as tire rolling resistance decreases, your savings add up.

Tire rolling resistance is measured in a lab using realistic and well-established test parameters relied upon by tire/vehicle manufacturers and government regulators. From this testing, original tires and retreaded tires can be quantified by a rolling resistance coefficient, known as “Crr.” The lower the Crr, the better. Studies have shown that a reduction in Crr can result in real-world fuel savings. For example, a 10% reduction in Crr for your truck tires can reduce your fuel consumption by 3%, and lead to savings of \$1,000 or more per truck per year.¹

KEY TAKEAWAYS

Taking rolling resistance, maintenance, wheel position and tires, both new and retread, into account allows companies to maximize fuel efficiency.

- Rolling resistance has a direct and significant correlation to the fuel economy of the vehicle.
- Tires become more fuel efficient as they are worn due to lessened rolling resistance.
- Even among new and retread tires claiming to be Smartway certified, actual rolling resistance will vary.

What Affects the Rolling Resistance of a Truck Tire?

The Most Common Factors:

- Tire Casing
- Tire Tread or Retread Rubber
- Inflation Pressure
- Wheel Position
- Axle Load

Of the factors that affect rolling resistance, the choice of what casing and tread you use directly impacts your fuel costs. The casing includes the belts, sidewall, beads and rubber that surrounds those components, and is responsible for approximately 50-65% of the overall rolling resistance of a tire. Tread rubber, including the rubber that contacts the road surface, can contribute 35-50% of the tire rolling resistance.

Once tires are put into service, their rolling resistance decreases. The most significant effect is from wear—as the tread rubber is slowly abraded away, the weight of the tire and the energy it takes to roll it decrease. So the tread of a tire that has low rolling resistance when new will deliver even better fuel economy as it wears. Retread rubber will behave the same way.

What about casings? Even though they do not wear like treads, a casing that starts with better rolling resistance characteristics will continue to have those qualities throughout its service life, including when it is used for retreading.

Of course, the better your inflation pressure maintenance, the better the tire rolling resistance and therefore your fuel economy (along with a lot of other benefits, including wear and safety). In addition, the axle loading and position on the vehicle can make a big difference on the effects of fuel economy from tires. For instance, the trailer and drive tires can comprise over 80% of the overall tire rolling resistance effect on a tractor-trailer.

Separating Fact from Fiction: New Tire vs Retreaded Tire Fuel Efficiency

It might surprise you to learn that a retreaded tire can be just as fuel efficient, or even better, than a new tire. This is particularly true if you compare an entry-level, low-cost new tire to a quality retreaded tire with a fuel-efficient casing and tread. In testing of certain entry-level imported tires, we found several that claimed to meet certain rolling resistance levels, but actually did not, some with rolling resistance more than 40% higher (worse) than a Bandag Fueltech retread tire. In other words, new tires chosen just for their low price could drive fuel costs that are about 10-13% greater than using quality casings and Bandag retreading²

In a specific example, a B197 Fueltech tread paired with an R197 Ecopia casing has a Crr index 40% better than certain cost-focused, import tires that were tested. If you were to use those B197 Fueltech/R197 Ecopia retreaded tires in the trailer position instead of the low-cost new tires, you could save up to \$1,840 per truck per year.³

This savings is realized because the casing and tread are designed for fuel efficiency. This is only a single example of the options and possibilities; there are many others where significant savings can be achieved by making the right choices when purchasing and managing your tire assets.

Tire Choice By Wheel Position: Don't Forget the Trailer

As mentioned above, the drive and trailer axles could account for over 80% of the overall tire rolling resistance effect on the truck. Of course, you could maximize the effect of truck tire rolling resistance by selecting the most fuel-efficient tires for each position, but note that tandem trailer axles account for over 40% of that total.

The effect of the trailer tires gets more significant if you haul tandem trailers, making the case for fuel-efficient/low rolling resistance trailer tires even clearer. The trailer is a great place to start making smart choices on tire selection.

Not All SmartWay Tires are Created Equal

SmartWay is a voluntary program created by the U.S. EPA that establishes tire rolling resistance levels if your fleet participates in the program. It is required in the state of California for certain categories of tires, which means fleets operating in California must meet the established rolling resistance levels. SmartWay tires are tested and certified for performance by the manufacturer, and not by the government or an independent agency. There is a standardized test that must be completed that provides a Crr number that is accurate and reproducible. However, when tested by an independent third party, some entry-level imported tires were more than 10% higher than the minimum required for the distinction. In other words, just because your tire is labeled "SmartWay" does not mean that it is giving you the full benefit of a low rolling resistance tire.

Key Takeaways

Understanding the effects on fuel costs as they relate to your truck are critical since tires are one of the biggest decisions you can make to lower your costs.

To maximize fuel efficiency, consider the following:

- Ensure all of your tires are properly inflated before every trip. Use a gauge, and don't neglect inside duals.
- The tires on your trailer can have a big effect—pulling trailers with higher rolling resistance tires can prove costly.
- Retreaded tires can be just as fuel efficient, or even better, than new tires.
- Maximize the use of tires with lower rolling resistance, first when new and again as retreads. Be sure to select a fuel-efficient retread and casing.

Visit americamovesbytruck.com to find out more details on the rolling resistance of tires for your truck.

1. A specific example is provided in the text below. Assumptions for this example include the following: diesel costs - \$3.00/gal; miles per year- 100,000; tandem axle loads -34,000 lbs total
2. Contribution toward the rolling of a tire account for 1/4 to 1/3 of fuel, so a 40% reduction in Crr would be a 10-13% in fuel savings. Assumes comparison of fuel efficient vs. non-fuel efficient tires in all 18 wheel positions
3. Criteria for this example include the following: diesel costs - \$3.00/gal; miles per year- 100,000; tandem axle loads -34,000 lbs total axle load -34,000 lbs.