



Volvo Trucks. Driving Progress



# Tyres and how they impact fuel consumption



**A truck's tyres will contribute around 30%** to the vehicle's fuel economy. Your choice of tyres is therefore one of the biggest direct influences you have on your truck's fuel consumption. But fuel consumption is not the only parameter where tyres play a crucial role. Fuel-efficient tyres - if widely used - could save an estimated 6.6 million tonnes of fuel per year by 2020 according to the [European Union](#). They could also cut CO2 emissions by 4 million tonnes a year, the equivalent of removing 1.3 million passenger cars from EU roads annually.

Whether it's better fuel efficiency, an improved carbon footprint or simply the need to comply with increasingly [stringent emission standards in the EU](#), there is no doubt that your choice of tyres has an important impact on your business.

What follows is a high-level overview of some of the elements that you as a transport owner and operator should take into account when choosing which tyres to buy and how to maintain them. This guide is meant to give an overview of some of the most common considerations and is not a comprehensive guide to tyres for all possible transport assignments. Which tyre to choose for your transport operations is best discussed with a salesperson at your local dealership.



*Before choosing a tyre consider:*

### **Rolling resistance**

Rolling resistance accounts for around 9% of a truck's fuel consumption, and the tyres are the most important factor when it comes to minimising losses. In most cases, tyres come with a rolling resistance grade, which makes it easier to find tyres with the lowest resistance.

For a long-haul truck, the optimal tyre should have a low rolling resistance grade combined with a rubber compound for low friction. Using a non-optimal tyre can not only increase fuel consumption by up to 3%, the tyres can also have a shorter service life.

For new tyres, rolling resistance is higher compared to run-in tyres, leading to a 2–3% increase in fuel consumption.







### **Fuel vs. mileage**

Since low rolling resistance tyres typically have less tread, they are also less durable. It is therefore often a trade-off between fuel efficiency and service life. In terms of total cost of ownership, in long-haul applications it is more effective to prioritise fuel efficiency and choose tyres with low rolling resistance. However, in other application, such as urban transport, it might be better to prioritise durability whereas for construction and mining applications the focus would be on grip and good resistance to external damage.

### **Labels and their limits**

In most countries including the EU, regulations on tyre labelling can provide clear guidance on tyre performance, covering fuel efficiency, wet grip and external rolling noise. Particularly when it comes to fuel consumption the grades range from A to G where A is the most fuel efficient and G the least. As a general rule of thumb, each increase in rolling resistance grade will correspond to an extra 2.5% in fuel consumption.

However, when it comes to determining the total cost of ownership, the EU's labelling system is limited. It does not take into account total performance, durability, cornering, braking efficiency on dry roads, comfort, stability, its ability to compensate for road irregularities or the opportunities for retreading and regrooving.

### **Safety**

The safety of a tyre is determined by how well it grips corners and performs in adverse conditions and different speed levels. Choosing tyres that provide optimum braking distance at on both dry and wet roads is key to ensuring the safety of drivers and other road users as is adopting a responsible attitude towards correct tyre inflation.

*For optimal usage and maintenance:*

### **Check air pressure**

Incorrect tyre pressure – whether it is too high or too low – will not only increase fuel consumption, it can also add to additional wear and tear. Tests show that air pressure as little as one bar too low will increase fuel consumption by approximately 2% and will decrease the tyre's service life by approximately 20%.

Under-inflated tyres will also increase braking distances and led to reduced manoeuvrability and control. Inflation pressure should generally be around 8–9 bars if the truck is usually heavily loaded. The exact amount of air pressure though must be related to the actual axle load.

### **Ensure properly aligned wheels**

Misaligned axles can increase both air resistance and rolling resistance, and by extension increase fuel consumption. On a normal tractor, misalignment can increase fuel consumption by up to three per cent. However, if the wheels on the trailer are also misaligned, then fuel consumption can increase by up to 15%.

In addition, misaligned wheels and axles will also reduce stability and control and increase tyre wear. In fact, around 80% of wear on a truck's front tyres is actually caused by misaligned rear axles.



# Checklist

During the lifespan of a truck tyre, its total performance will depend on the choice of tyre, its usage and maintenance. To ensure you that you get the most out of the investment you make into tyres it's important to ask some key questions about your business. These include:

- **Where are your trucks used?** For example, in tough, off-road conditions or when carrying heavy loads, durability is probably more important than fuel efficiency. Alternatively if you drive travel at high speeds on a highway, you'll want to invest in tyres with a higher speed rating.
- **What road & weather conditions do you drive in?** Commercial truck tyres are designed to meet specific weather conditions. Whether you are driving in areas with hot pavement, a lot of rain or areas with snow and below-freezing temperatures, you'll want to choose your tyres accordingly. It's also important to consider the condition of the roads you travel on. For instance if you operate on bumpy and rough conditions you may want to invest in a more durable tyre that can handle these challenges.
- **How do different tyres affect your total cost of ownership?** Are the fuel savings from low rolling resistant tyres enough to cover the possible increased cost of lower service life?
- **What season is it?** Don't use winter tyres in summer and vice versa.
- **How much are you carrying?** So much of tyre performance boils down to weight. Exceeding the weight limits of a tyre will quickly wreck the tire – and potentially cause accidents. Always know your typical weight scenarios before investing in new tyres.
- **What is the optimal air pressure?** Not only are under inflated tyres a safety risk due to the increased likelihood of tyre failure but you could also save money at the pump simply by making sure your tyres are correctly inflated. We recommend checking the pressure on your tyres weekly or every time you stop to fuel your truck. Investing in a tyre pressure monitoring system like the one from [Volvo Trucks](#) can also enable drivers and owners to identify slow punctures and avoid possible explosions and unplanned stops.
- **How often do you check wheel alignment?** It should be checked at least once a year, ideally every time you service your truck.

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