

FACTORS AFFECTING TYRE LIFE:

The following are the main factors which affect tyre performance and consequently their life

➤ Inflation

The tyres must be inflated according to the specification of the original vehicle manufacturer both the under inflation as well as the over inflation are detrimental to tyre life. Some operators wrongly think that it would be safe to overload a tyre by over-inflating. This is entirely

Under-inflation or over-inflation of your tyres can generate cost and danger. Tyre life, driving comfort, good traction and braking: these performances can be influenced by inappropriate inflation pressure.

Under-inflation generates excessive flexing of the tyre casing which results in tyre overheating, increase of rolling resistance and premature wear. In extreme cases, under-inflation can cause tyre damages.



Under-inflation

Likewise, **over-inflation** can affect tyre life. This leads to reduced grip and irregular wear, especially in drive axle fitment.



Over-inflation

Michelin has carried out surveys to measure pressures of vehicles in actual operations. Two significant tendencies are observed: under-inflation at front axle vs over-inflation at drive axle.

Pressure of inflation

The inflation pressures of tyres for commercial vehicles must be adapted to the load, speed and conditions of use. Respecting the pressure of inflation is a prime factor in ensuring that the vehicle is safe when driving.

How do I determine the pressure of inflation?

The fully loaded vehicle must be weighed by the axle. In the meantime, you should use the basic pressures in the MICHELIN table "Basic pressures for common conditions of use".

- Over-inflation is bad for comfort, grip, and the tyre's longevity...
- The insufficient pressure of inflation leads to an abnormal rise in the tyre's temperature, leading to irreversible deterioration of its inner parts. This may cause the destruction of the tyre with a sudden blow-out.

The consequences of running with the insufficient pressure of inflation are not necessarily immediate and may even become apparent after correction. The pressure of inflation should be regularly checked "when cold" each time the vehicle returns to the garage using an accurate and regularly checked pressure gauge (according to the marker's recommendations). When operating in very cold temperatures, consult the Michelin Truck Bus Tyre Service Manual for correct inflation

procedures. Additionally, altitude can have a slight effect on air pressure. For every 300 meters increase in altitude above sea level, air pressure will increase approximately 0.5 psi.

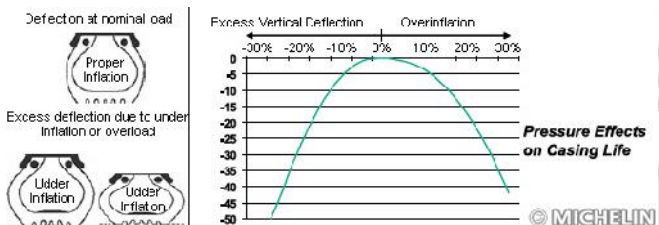
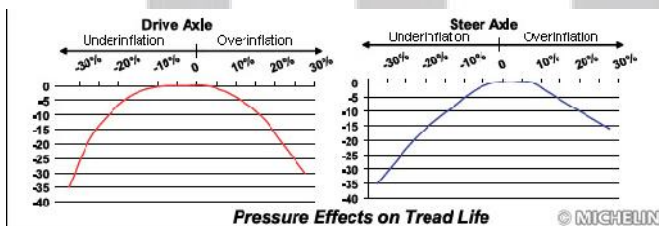
Important:

Don't forget the spare tyre.

Never deflate a tyre "when hot", just after running

Inflation Pressure

The most critical factor in tyre maintenance is proper inflation. No tyre or tube is completely impervious to loss of air pressure. To avoid the hazards of under inflation, lost air must be replaced. Inflation pressure has a direct impact on tyre performance - both tread life and endurance - as shown in the following charts:



Correct pressure	20% underinflation (steer)	20% overload
Price : 100%	Price : 100%	Price : 100%
Mileage : 100%	Mileage : 85%	Casing Life : 73%
Invested Capital - 100% = 1	Ratio of Cost / Kilometre Invested Capital - 100% = 1.17	Invested Capital - 100% = 1.37
Mileage - 100%	Mileage - 85%	Casing Life - 73%
Correct = 100%	Extra Cost = 17%	Extra Cost = 37%

With inflation cage

- Follow the maker's instructions.
- The cage must be placed in a fitting area and clear area.



Without inflation cage

The tyre must be inflated in two stages.

● 1st stage:

- Pre-inflation up to 1.5 bar.
- General inspection of the tyre: if there is any blistering, distortion or any doubt, the tyre must be removed and inspected by a specialist.



● 2nd stage:

- Inflate to the correct pressure.
- To protect him/herself from any blow-out that may occur, the operator should be positioned in line with the tread pattern, at a distance of 3 metres.



Throughout inflation:

- The tyre must be standing vertically in a fitting area.
- The operator must be equipped with a hearing protection.



The weight of axle under load is the only way to determine the right pressure.

Important:

A tyre that has been running under-inflated must never be inflated up to pressure again without a meticulous inspection of the interior of the tyre by a specialist. The weight of axle under load is the only way to determine the right pressure.

AIR PRESSURE

The manufacturer of your vehicle specifies the suitable pressure to be maintained and is measured in PSI or BAR pressure. It is important to check tyre pressure regularly. Air from a tyre generally escapes at the rate of up to 2 pounds of air every month. Loss of air pressure from a tyre is pronounced during warm weather, so more regular checks are needed when temperatures rise.

Benefits of correct air pressure:

- **Safety:** Tyres that are under inflated can overheat, and over-inflated tyres can lead to poor vehicle handling on the road.
- **Economy:** Over or under-inflated tyres suffer more damage than those with the correct pressure and need to be replaced more frequently. Vehicles with under-inflated tyres have increased rolling resistance and require more fuel to maintain the same speed.
- **Environment:** Correct tyre pressures help maintain optimum fuel efficiency. This can equate to lower carbon dioxide (CO₂) emissions from your vehicle than those from a vehicle with incorrect tyre pressure. Thus by maintaining the recommended air pressure in your tyres, you contribute towards a cleaner environment.

Role of Valves:

- Valves help maintain tyre pressure and permit air to be added or removed.
- The valve in your wheel is a small but very important part of your vehicle as far as safety and tyre life is concerned. It holds the pressure inside the tyre assembly and is the access point to adjust your tyre pressure. A valve cap in good condition is also essential as it provides a secondary seal and prevents dirt from getting inside.

It is recommended to have the valves replaced every time your tyres are changed.

WHEEL ALIGNMENT:

If your car feels as though it's pulling to the left or right - even though you're steering in a straight line - it could suggest a problem with your wheel alignment. Incorrect alignment can result in rapid and irregular tyre wear and can even affect the handling and safety of the vehicle.

Benefits of correct wheel alignment:

- 30% increase in tyre mileage on an average
- 2% increase in fuel economy
- Alignment ensures a vehicle is stable at high speeds
- A vehicle that is properly aligned handles better and is safer to drive

Wheel alignment can be affected by driving against a pavement, hitting a pothole in the road or by excessive wear to steering or suspension components. Alignment of wheels and tyres to the specification required by your vehicle is an important way to guarantee a smooth ride and to get the most out of your tyres.

The direction and angle at which tyres are set are both equally important. Wheel alignment or 'tracking' involves checking the direction and angle against vehicle manufacturers' specifications. These are often described as a toe in, toe out, positive camber or negative camber.

"Toe" refers to whether the front of the tyres are closer or further apart than the rear of the tyres. Different types of vehicles need different toe settings to allow for the way wheels pull either towards each other or apart.

"Camber" is the inward or outward tilt of a tyre. The camber is set by the vehicle manufacturer, and can be affected by potholes in the road and may need to be adjusted periodically.

Correct wheel alignment is achieved by adjusting a car's suspension and steering components to ensure the wheels are perfectly aligned to deliver the least wear on the tyres.

BALANCING:

One of the easiest ways to tell when something is not right with your tyres is from behind the steering wheel. Vibration through the steering wheel can mean that a wheel is out of balance, this results in premature wearing of suspension and steering components, rotating parts and tyres.

Tiny weights are used to counterbalance the heaviest part of the tyre and wheel assembly.

If these weights become loose, the wheel will wobble - more at higher speeds - which will increase tyre wear and is potentially unsafe.

In such a situation you should have your wheels balanced on a wheel balancing machine. The machine rotates the tyre and wheel assembly and automatically calculates the weight and location of the balance counterweight.

Balanced wheels in a vehicle deliver a smoother ride and better wear from your tyres, again saving you time and money.

TREADWEAR

You must ensure that the tyres you are driving on have more than 1.6 mm of tread on them.

Most new tyres have about 8 mm of tread pattern when manufactured but as tyres wear their ability to disperse water reduces. Tyres should be replaced before the tread wears down to the level of the Tread Wear Indicators. This can be checked easily with the help of a tread depth gauge or visiting your nearest Fortune Tire Tech dealer.

Tread Wear Indicators are moulded into all major grooves of tyres in at least four positions around the tyre. These indicators sit at least 1.6 mm above the bottom of the grooves and should be examined regularly and should be replaced when at the wearing limit.