TRUE OR FALSE?

PUTTING AN END TO MISCONCEPTIONS ABOUT REGROOVING AND RETREADING
Competitiveness, safety, and respect for the environment are all major issues facing transport professionals. Solutions improving company performance and cost efficiency are therefore welcome!

In this field, tire management plays a considerable role.

Tire management consists of carefully choosing original products and having regrooving and retreading work done, extending their service life.

Every company should heed their tires’ “multi-life” timetable to get the most out of them based on company needs.

This white paper provides transparent answers to those of you wondering “When is the right time to use these solutions? Up to what point? And under which conditions?”

Everything you have ever wanted to know about multi-life tire solutions can be found here. Enjoy your read and drive safe! ...and may your tires live long!
Regrooved tires are synonymous with safety?

Regrooving is authorized by local traffic regulations and recommended by ETRTO (European Tire and Rim Technical Organisation). In addition to recreating your tires sharp biting edges and a tread depth of between 6 to 8 mm, regrooving extends their lifespan and increases safety.

Such tire work improves lateral grip and drive by up to 10% (1).

REGROOVED TIRES MAKE FOR SAFER DRIVING, ON TWO CONDITIONS:

- The original tires must be designed for regrooving
- Regrooving must be carried out by a professional

Regrooving is authorised by local traffic regulations and recommended by ETRTO (European Tire and Rim Technical Organisation). In addition to recreating your tires sharp biting edges and a tread depth of between 6 to 8 mm, regrooving extends their lifespan and increases safety.

Such tire work improves lateral grip and drive by up to 10% (1).

REGROOVED TIRES ARE SYNONYMOUS WITH SAFETY?

TRUE

- The original tires must be designed for regrooving
- Regrooving must be carried out by a professional

Regrooving is authorised by local traffic regulations and recommended by ETRTO (European Tire and Rim Technical Organisation). In addition to recreating your tires sharp biting edges and a tread depth of between 6 to 8 mm, regrooving extends their lifespan and increases safety.

Such tire work improves lateral grip and drive by up to 10% (1).

- Some manufacturers design tires with an even layer of rubber thick enough for good quality regrooving without affecting the solidity or durability of the product. These kinds of premium tires are due for work when the tread pattern depth reaches 2 to 4 mm.

- Regrooving is not recommended if the tread shows signs of major damage (cut to cords, tearing, visible metal ply on the crown). MICHELIN strongly advises against regrooving tires subjected to extreme off-road driving.

(1) Compared with the performance of the same tires when worn out.
MICHELIN references - test conducted on polished concrete.
REGROOVING SAVES YOU MONEY?

This may come as a surprise, but regrooved tires are economical... They wear out more slowly than a new tire and reduce fuel consumption! Tires are regrooved when their rolling resistance is lowest. The rubber blocks of worn tires are shallower and therefore more rigid than those of new tires. This rigidity has the benefit of limiting road friction, reducing tire wear and... helping you save on fuel!

CHOOSING YOUR TIRES WISELY AND LOOKING AFTER THEIR LONG-TERM MAINTENANCE IS GOOD FOR YOUR WALLET!

When performed in compliance with rules set out by the manufacturer, regrooving gives you
- Up to 25% more mileage
- Fuel savings of 2 litres every 100 km
- 70 kilos of raw materials saved through regrooving 4 tires, the equivalent of a new tire (1)

(1) Internal MICHELIN references: average measurement for the 4 principal sizes on the market (315/80 R 22.5, 315/70 R 22.5, 385/65 R 22.5 and 13 R 22.5)
ENTRUSTED TO A SPECIALIST, REGROOVING MEANS 3 ADVANTAGES FOR THE TRUCKING BUSINESS

SAFER DRIVING

10% EXTRA SIDE GRIP
and drive (1)

HELPING THE ENVIRONMENT

1,6 TONNES
less CO₂ per set per annum (2)

EQUIVALENT TO ONE NEW TIRE

70 KG
of raw materials saved by 4 regrooved tires (3)

SAVING FUEL

Up to 25% MORE KILOMETERS

Nearly 2L fuel saved per 100 KM

(1) In relation to the period in which the tread pattern was worn down. Michelin references – test conducted on polished concrete.
(2) Example of a set of tires used to cover 120,000 km per annum with 25% of regrooved tires in contact with the road surface.
(3) Internal Michelin references: average measurement for the 4 principal sizes on the market (315/80 R 22.5, 315/70 R 22.5, 385/65 R 22.5 and 13 R 22.5).

Find out more: trucks.michelin.eu
ALL OF YOUR TIRES CAN BE RETREADED?

NOT ALL TIRES HOLD UP WELL WHEN SUBJECTED TO THE RETREADING ACCEPTANCE TEST. TWO CONDITIONS ARE REQUIRED TO PASS THE TEST:

- They must be designed from the beginning for optimal retreading. Only those whose casing is sturdy enough to survive the rigours of multiple use pass inspections by scrupulous retreaders.
- Tires must be professionally maintained on a regular basis.

Certain manufacturers are always looking for new ways to get the most from tire casings. MICHELIN, with 60 years of tire retreading expertise, is one of them. As a result, 80% of all MICHELIN casings are retreaded!
Managing the retreading process speeds up return times. It also increases tread pattern change possibilities.

A pre-moulded tread band with its final tread pattern is mounted on the prepared casing. Vulcanisation takes place inside a curing press heated to approx’ 160°C for about an hour, similar to the process for making a new tire.

Its advantages:
- This procedure, performed by manufacturers, lets you exploit the full performance capacity of your original casings.
- Its dimensional uniformity makes for more even wear, irrespective of the original casing.
- Its appearance is comparable to a new tread, with recut sidewalls and marking diagrams, improving the vehicle’s appearance.

The entire prepared casing is covered with uncured rubber (crown + sidewalls). This is placed in a mould giving the retreaded tire its final profile. Vulcanisation takes place inside a curing press heated to approx’ 115°C for about three hours to ensure cohesion of the whole product.

Its advantages:
- Managing the retreading process speeds up return times.
- It also increases tread pattern change possibilities.


d YOU CAN CHOOSE FROM TWO KINDS OF RETREADING DEPENDING ON YOUR PRIORITIES:

**HOT RETREADING**

The hand-crafted expertise of retreading operators is crucial to the selection, inspection, repair, and preparation of casings and for ensuring finished products’ quality and reliability. In MICHELIN retreading factories, for example, two million casings are inspected each year using cutting-edge technology; An invaluable process relying on qualified technicians who meticulously inspect and prepare every last inch of your tires.
A THOROUGH UNDERSTANDING OF CONDITIONS OF USE GUIDES THE EVOLUTION OF STRUCTURES AND MATERIALS TO BE USED IN FUTURE GENERATIONS OF TIRES

A few large manufacturers retread tires themselves. Some of them make use of inspections conducted on casings on arrival in their retreading factories to better analyse the impact of real tire usage. This data, gathered over several years, complements laboratory and test track trials, providing precious information to tire designers.

Upon their arrival at retreading factories, your tires are subjected to a thorough inspection (MICHELIN uses 86 points of inspection, for example). Compiling this diagnosis supplies a wealth of information about the current state of the tires. The brand’s engineers interpret these to enhance next-generation tires.
YOUR RETREADED TIRES HAVE THE SAME KEY PERFORMANCE INDICATORS AS NEW TIRES?

YOU CAN ACHIEVE THE KEY PERFORMANCES OF NEW TIRES WHEN USING RETREADED TIRES IF:

- The original casing is of excellent quality, robust and sturdy.\(^1\)
- The retreader’s equipment, technology, skills and professional experience are excellent; these are vital to achieve premium retreading.

\(^1\) Internal MICHELIN test carried out in 2013 on retreaded MICHELIN Remix® tires. For most reference points, 97% of the key performances of a new MICHELIN tire in the same dimension.
RETREADED TIRES SAVE YOU MONEY?

RETREADING HELPS YOU CUT COSTS IN THREE DIFFERENT WAYS WITHOUT COMPROMISING ON SAFETY:

- A retreaded tire is **40% less expensive** than an equivalent new tire (1).
- **A 100% increase in mileage potential**: retreading a good-quality casing, performed by an expert, will extend the life span of your tires at a lower cost.
- **Multiple retreadings**: internal and external analysis of the casing permitting, a tire can potentially be retreaded several times (2), for even more mileage potential!

YOU CAN HAVE YOUR ORIGINAL CASING RETREADED MULTIPLE TIMES!

The retreadability of your tires depends on your activity and fleet management. Pay close attention to the factors affecting their wear pattern:

- The tire’s inherent properties (robustness and endurance, rubber type and volume, tread patterns suited to your needs).
- Tire inflation pressure.
- Load carried by each axle.
- The vehicle’s mechanical condition (axle alignment, vehicle geometry).
- Driving style.

---

(1) 2014 Internal MICHELIN price reporting conducted by an external organisation.
(2) For optimal performance MICHELIN UK chooses to only retread each casing twice.
For this operation, follow your brand’s recommendations and the advice of your distributor.

(1) MICHELIN advises against fitting a retreaded tire onto a front steering axle; we recommend the drive axle or carrying axle instead.

(2) MICHELIN Remix® offers 350 retreaded/new combinations.

YOU CAN ADAPT YOUR VEHICLES’ TIRES TO SUIT YOUR BUSINESS’S NEEDS

- For optimal management of your stock, you have different options for fitting tires on your vehicles. After retreading, a tire can be refitted on to an axle other than the original (1).
- You can adapt your tires to suit variations in your activity. For transporters and public works contractors, you can change the tread pattern design at the time of retreading thanks to new tread patterns suited to your activity. All manufacturer-retreaders are capable of giving tires more usage flexibility (2).

For this operation, follow your brand’s recommendations and the advice of your distributor.
IT IS ALWAYS YOUR TIRE YOU GET BACK?

IN THE UK, THERE ARE TWO OFFERS:
- Casing Bank. A system where your casing asset can be held until you require retreaded products. (1)
- The direct standard replacement of your tires is an even faster solution.

MICHELIN tires can be identified using an individual serial number which is part of their technical marking. Comparable to an “identity card”, it enables you to track a tire throughout its service life. Eventually, RFID chips embedded in MICHELIN tires (2) will enable them to be identified and tracked automatically, complementing the ID number.

(1) Terms & conditions apply to the use of a Casing Bank.
(2) Radio Frequency Identification: automatic identification technology.
You can mount retreaded tires in the same way as new tires?

If all of the tires on the same axle are retreaded, they should have the same characteristics (see below).

When mixed on the same axle, new tires and retreaded tires should have the same characteristics (see below); furthermore, MICHELIN do not recommend the twinned (dual) fitment of new and retreaded tires. This should be noted if accidental damage necessitates replacement of a tire!

Under certain conditions, a retreaded tire can replace new tires:

- If all of the tires on the same axle are retreaded, they should have the same characteristics (see below).
- When mixed on the same axle, new tires and retreaded tires should have the same characteristics (see below); furthermore, MICHELIN do not recommend the twinned (dual) fitment of new and retreaded tires. This should be noted if accidental damage necessitates replacement of a tire!

Tires fitted on the same axle must have the same characteristics:

- Retread brand - not applicable in all Countries.
- Dimension.
- Category of use (road tires, special or snow tires with M+S marking). It is the category of tire that is important and not the tread pattern. Not applicable in all Countries.
- Construction (radial or diagonal).
- Speed rating.
- Permissible load carrying capacity.

(1) MICHELIN advises against fitting a retreaded tire to a front steering axle; see recommendations for each category of use elsewhere.
(2) MICHELIN advises against mixing tires from different retreaders on the same axle, regardless of the make of casing.
TO MAKE SAVINGS, PLAY A ROLE IN SUSTAINABLE TRANSPORT AND BENEFIT FROM FLEXIBLE USE

**SAVINGS**

2x MORE KILOMETERS

40% CHEAPER than new tires and multiple retreads are possible

**FLEXIBILITY**

GET THE BEST FROM YOUR RETREADED TIRES

Choosing from several fitting options to optimize your inventory management

ADAPT YOUR TREAD TO SUIT YOUR NEEDS

350 combinations available between the original tread and the replacement tread

**PROTECTING THE ENVIRONNEMENT**

Without compromising on safety

Retreading DOUBLE THE LIFE SPAN of your tire and saves natural resources

A retreaded tire = -70% raw materials than a new tire

Your brand and are here to

Your distributor advise you

WHY RETREAD?

Find out more: trucks.michelin.eu

---

(1) Internal tests in 2013. Life span of a MICHELIN Remix® tire = 97% of the life span of a new tire of the same dimension.
(2) European average, internal pricing information in 2014 and Internet price study carried out by an external organization.
(3) 350 retread/new tire combinations available with MICHELIN Remix® retreading.
(4) MICHELIN Remix® retreading only requires adding, on average, 20% of raw materials, equivalent to a saving of 70% compared with the purchase of a new tire.
REGROOVING AND RETREADING HELP PROTECT OUR ENVIRONMENT?

These two operations let you extend the lives of used tires, saving the equivalent of 17 million tonnes each year throughout the world.

THE BENEFITS OF REGROOVING ON THE ENVIRONMENT:

- Emits less CO₂ ➜ Up to -1.6 tonne per year. A vehicle with regrooved tires consumes less fuel and gives off less CO₂ (2).
- Less materials ➜ -100 kilos of raw materials over the course of 5 regroovings.
- Less waste ➜ -200 kilos of used tires recycled over the course of 6 regroovings (3).

THE BENEFITS OF RETREADING FOR THE ENVIRONMENT:

- Lower CO₂ emissions ➜ For every 100 retreaded tires, 5 tonnes of material are saved and over 6 tonnes of CO₂ are not released into the atmosphere.
- Fewer materials consumed ➜ 1 retreading = 50 kilos of raw materials saved. On average, only about 20 kilos of materials are added to a casing, saving 70% compared to a newly manufactured tire!
- Less waste ➜ -300 kilos for a three-axle trailer. Retreading 6 tires on 3 axles means 6 fewer tires needing recycling!

The benefits of retreading for the environment:

- Emissions of CO₂ ➜ Up to -1.6 tonne per year.
- Fewer materials ➜ 1 retreading = 50 kilos of raw materials saved. On average, only about 20 kilos of materials are added to a casing, saving 70% compared to a newly manufactured tire.
- Less waste ➜ -300 kilos for a three-axle trailer. Retreading 6 tires on 3 axles means 6 fewer tires needing recycling!

In Europe, all used tires are recycled (4). They are used to create playgrounds, artificial grass, shoe soles, floor tiles, roller skates, and more... MICHELIN achieved a world first by building a 400m 6-lane running track using 9,000 tires! That is just the beginning: new research will soon enable us to recycle your tires in more efficient and innovative ways.

The benefits of retreading for the environment:

- Emissions of CO₂ ➜ Up to -1.6 tonne per year.
- Fewer materials ➜ 1 retreading = 50 kilos of raw materials saved. On average, only about 20 kilos of materials are added to a casing, saving 70% compared to a newly manufactured tire.
- Less waste ➜ -300 kilos for a three-axle trailer. Retreading 6 tires on 3 axles means 6 fewer tires needing recycling!

A CLEANER WORLD, A CIRCULAR ECONOMY

(2) Example of a road train traveling 120,000 km/year with 25% of running tires regrooved.
(3) Internal MICHELIN source: average weight measured on four principle market dimensions (315/80 R 22.5, 315/70 R 22.5, 385/65 R 22.5; 13 R 22.5).
(4) Directive 31 / EC of 26 April 1999 prohibits the dumping of used tires in landfills.
POUR FAIRE DES ÉCONOMIES, ÊTRE ACTEUR D’UN TRANSPORT DURABLE ET PROFITER D’UNE FLEXIBILITÉ D’USAGE

SOME TIRES ARE DESIGNED TO BE

- **REGROOVABLE**
  - They provide up to 25% more mileage potential

- **RETREADABLE**
  - They provide up to 100% more mileage potential

BECAUSE STREAMLINING YOUR BUDGET IS IMPORTANT, WE DESIGN SPECIFIC SOLUTIONS TO EXTEND THE LIFE OF YOUR TIRE

WITHOUT COMPROMISING ON SAFETY

**WHY REGROOVE?**

- Regrooving carried out by a professional as per manufacturers recommendations =
  - +10% more grip and drive
  - up to -2l/ 100 km fuel saving

**WHY RETREAD?**

- Retreading carried out as per recommendations from your manufacturer and service provider =
  - 2x more KILOMETERS
  - 40% SAVING ON PURCHASE PRICE

---

Comparison of raw material consumption:

- Waste to recycle: 50 kg less waste to recycle for a retreaded tire

**SAVE MONEY - SAVE THE ENVIRONMENT - STAY SAFE**

Extending the life and the key performance of your tires while saving money and protecting the environment is something we can all do! By opting for professional, personalised management of your tires, you can safely maximise cost-effectiveness and flexibility!

---

(1) In relation to the performance of the same tire when worn out – Michelin references – test conducted on polished concrete.
(2) Internal Michelin references: average measurement for the 4 principal sizes on the market (315/80 R 22.5, 315/70 R 22.5, 385/65 R 22.5 and 13 R 22.5).
(3) Internal tests 2013. Life span of a MICHELIN Remix® tire = 97% of the life span of a new tire of the same dimension.
(4) European average, internal pricing information in 2014 and Internet price study carried out by an external organization, 2014
(5) MICHELIN Remix retreading only requires adding, on average, 20kg of raw materials, equivalent to a saving of 70% compared with the purchase of a new tire.
To find out more about the benefits of multi-life management for your tires, have a look at the “Designed for more” series on the trucks.michelin.eu website.