TRUE OR FALSE?

PUTTING AN END TO MISCONCEPTIONS ABOUT REGROOVING AND RETREADING
REGROOVE OR RETREAD?
YOU DECIDE!
**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, tyre management plays a considerable role.

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

Every company should heed their tyres’ “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 tyre solutions can be found here. Enjoy your read and drive safe!

...and may your tyres live long!
REGROOVED TYRES ARE SYNONYMOUS WITH SAFETY?
REGROOVED TYRES MAKE FOR SAFER DRIVING, ON TWO CONDITIONS:

- The original tyres 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 Tyre and Rim Technical Organisation). In addition to recreating your tyres sharp biting edges and a tread depth of between 6 to 8 mm, regrooving extends their lifespan and increases safety. Such tyre work improves lateral grip and drive by up to 10% (1).

- Some manufacturers design tyres 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 tyres 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 tyres subjected to extreme off-road driving.

(1) Compared with the performance of the same tyres when worn out. MICHELIN references - test conducted on polished concrete.
REGROOVING SAVES YOU MONEY?
CHOOSING YOUR TYRES 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 tyres, the equivalent of a **new tyre** (1)

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

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(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).
WHY REGROOVE?

SAFER DRIVING

10% EXTRA SIDE GRIP and drive (1)

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 tyres used to cover 120,000 km per annum with 25% of regrooved tyres 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).
ENTRUSTED TO A SPECIALIST, REGROOVING MEANS 3 ADVANTAGES FOR THE TRUCKING BUSINESS

HELPING THE ENVIRONMENT

1.6 TONNES

less CO₂ per set per annum (2)

70 KG

of raw materials saved by 4 regrooved tyres (3),

EQUIVALENT TO ONE NEW TYRE

...IF CARRIED OUT BY A SPECIALIST, REGROOVING A TYRE HAS NO IMPACT ON ITS ACCEPTABILITY FOR RETREADING

Find out more: trucks.michelin.eu
ALL OF YOUR TYRES CAN BE RETREADED?
NOT ALL TYRES 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.
- Tyres must be professionally maintained on a regular basis.

Certain manufacturers are always looking for new ways to get the most from tyre casings. MICHELIN, with 60 years of tyre retreading expertise, is one of them. As a result, 80% of all MICHELIN casings are retreaded!
ALL RETREADING PROCEDURES PROVIDE THE SAME BENEFITS?
YOU CAN CHOOSE FROM TWO KINDS OF RETREADING DEPENDING ON YOUR PRIORITIES:

**HOT RETREADING**

The entire prepared casing is covered with uncured rubber (crown + sidewalls). This is placed in a mould giving the retreaded tyre its final profile. Vulcanisation takes place inside a curing press heated to approx’ 160°C for about an hour, similar to the process for making a new tyre.

**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.

**COLD RETREADING**

A pre-moulded tread band with its final tread pattern is mounted on the prepared casing. Vulcanisation in an autoclave, heated to approx’ 115°C for about three hours ensures cohesion of the whole product.

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

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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 tyres.
YOUR NEW TYRES BENEFIT FROM YOUR OLD TYRES?
A THOROUGH UNDERSTANDING OF CONDITIONS OF USE GUIDES THE EVOLUTION OF STRUCTURES AND MATERIALS TO BE USED IN FUTURE GENERATIONS OF TYRES

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

Upon their arrival at retreading factories, your tyres 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 tyres. The brand’s engineers interpret these to enhance next-generation tyres.
YOUR RETREADED TYRES HAVE THE SAME KEY PERFORMANCE INDICATORS AS NEW TYRES?
YOU CAN ACHIEVE THE KEY PERFORMANCES OF NEW TYRES WHEN USING RETREADED TYRES 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®: for most reference points, 97% of the key performances of a new MICHELIN tyre in the same dimension.

Certain retreader-manufacturers, such as MICHELIN, use the same rubbers and patented tread designs on their retreaded tyres as on their new tyres, recreating the initial architecture:

- This ensures quality, giving you the key performances of new MICHELIN tyres.
- This also boosts fuel efficiency, as your retreaded MICHELIN Remix® tyres remain regroovable in the future.
RETREADED TYRES SAVE YOU MONEY?
RETREADING HELPS YOU CUT COSTS IN THREE DIFFERENT WAYS WITHOUT COMPROMISING ON SAFETY:

- A retreaded tyre is **40% less expensive** than an equivalent new tyre (1).
- A **100% increase in mileage potential**: retreading a good-quality casing, performed by an expert, will extend the life span of your tyres at a lower cost.
- **Multiple retreadings**: internal and external analysis of the casing permitting, a tyre 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 tyres depends on your activity and fleet management. Pay close attention to the factors affecting their wear pattern:

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

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(1) 2014 Internal MICHELIN price reporting conducted by an external organisation.
(2) For optimal performance MICHELIN UK chooses to only retread each casing twice.
TYRES ALSO AFFECT THE FLEXIBILITY OF YOUR USAGE?
YOU CAN ADAPT YOUR VEHICLES’ TYRES TO SUIT YOUR BUSINESS’S NEEDS

- For optimal management of your stock, **you have different options for fitting tyres on your vehicles**. After retreading, a tyre can be refitted on **to an axle other** than the original (1).

- **You can adapt your tyres 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 tyres more **usage flexibility** (2).

For this operation, follow your brand’s recommendations and the advice of your distributor.

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

(2) MICHELIN Remix® offers 350 retreaded/new combinations.
IT IS ALWAYS YOUR TYRE 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 tyres is an even faster solution.

**MICHELIN tyres can be identified using an individual serial number which is part of their technical marking. Comparative to an “identity card”, it enables you to track a tyre throughout its service life.**

Eventually, RFID chips embedded in MICHELIN tyres (2) will enable them to be identified and tracked automatically, complementing the ID number.

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(1) Terms & conditions apply to the use of a Casing Bank
(2) Radio Frequency Identification: automatic identification technology.
YOU CAN MOUNT RETREADED TYRES IN THE SAME WAY AS NEW TYRES?
UNDER CERTAIN CONDITIONS, A RETREADED TYRE CAN REPLACE NEW TYRES (1):

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

TYRES FITTED ON THE SAME AXLE MUST HAVE THE SAME CHARACTERISTICS:

- Retread brand - not applicable in all Countries (2).
- Dimension.
- Category of use (road tyres, special or snow tyres with M + S marking). It is the category of tyre that is important and not the tread pattern. Not applicable in all Countries (2).
- Construction (radial or diagonal).
- Speed rating.
- Permissible load carrying capacity.

(1) MICHELIN advises against fitting a retreaded tyre to a front steering axle; we recommend the drive axle or carrying axle instead.
(2) In accordance with local legislation, however MICHELIN does not recommend mounting tyres from different retreaders on the same axle, regardless of the make of casing.
WHY RETREAD?

SAVINGS

2× MORE KILOMETERS (1)

40% CHEAPER than new tyres and multiple retreads are possible (2)

FLEXIBILITY

GET THE BEST FROM YOUR RETREADED TYRES Choose from several fitting options to optimize your inventory management

YOUR BRAND AND ARE HERE TO

(1) Internal tests in 2013. Life span of a MICHELIN Remix® tyre = 97% of the life span of a new tyre of the same dimension.
(2) European average, internal pricing information in 2014 and Internet price study carried out by an external organization in.
(3) 350 retread/new tyre combinations available with MICHELIN Remix® retreading.
(4) 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 tyre.
TO MAKE SAVINGS, PLAY A ROLE IN SUSTAINABLE TRANSPORT AND BENEFIT FROM FLEXIBLE USE

PROTECTING THE ENVIRONNEMENT

Retreading

DOUBLE THE LIFE SPAN
of your tyre and saves natural resources

ADAPT YOUR TREAD
TO SUIT YOUR NEEDS

350 combinations available
between the original tread and the replacement tread

YOUR DISTRIBUTOR ADVISES YOU

A retreaded tyre =

-70% raw materials
than a new tyre!

Find out more: trucks.michelin.eu
REGROOVING AND RETREADING HELP PROTECT OUR ENVIRONMENT?
REGROOVING AND RETREADING SAVE OUR NATURAL RESOURCES AND HELP PROTECT OUR ENVIRONMENT

These two operations let you extend the lives of used tyres, 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 tyres 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 tyres recycled over the course of 4 regroovings (3).

THE BENEFITS OF RETREADING FOR THE ENVIRONMENT:

- **Lower CO₂ emissions** → For every **100 retreaded tyres**, 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 about 20 kilos of materials are added to a casing, saving 70% compared to a newly manufactured tyre!
- **Less waste** → - **300 kilos** for a three-axle trailer.
  Retreading 6 tyres on 3 axles means 6 fewer tyres needing recycling!

A CLEANER WORLD, A CIRCULAR ECONOMY

In Europe, **all used tyres 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 tyres! That is just the beginning: new research will soon enable us to recycle your tyres in more efficient and innovative ways.

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(2) Example of a road train traveling 120,000 km/year with 25% of running tyres 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 tyres in landfills.
DESIGNED FOR MORE

TO SAVE MONEY, TO SUPPORT SUSTAINABLE TRANSPORT AND ENJOY THE BENEFIT OF FLEXIBLE USE.

SOME TYRES ARE DESIGNED TO BE

REGROOVABLE

They provide up to 25% more mileage potential

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

SOME TYRES ARE DESIGNED TO BE

RETREADABLE *

They provide up to 100% more mileage potential

...and up to 200% for tyres retreaded twice.

WITHOUT COMPROMISING ON SAFETY
**WHY REGROOVE?**

Regrooving carried out by a professional as per manufacturers recommendations =

- +10% more grip and drive (2)
- up to -2L/ 100 km fuel saving
- Your operating performance
  
  \[
  4 \times \text{REGROOVED TYRES} = 1 \times \text{NEW TYRE SAVED}
  \]

70 kg of raw materials saved (3)

Regrooving of truck tyres is authorized by the Motor Vehicle Code and recommended by ETRTO and AFNOR.

**WHY RETREAD?**

Retreading carried out as per recommendations from your manufacturer and service provider =

- 2\times more KILOMETERS (4)
- 40% SAVING ON PURCHASE PRICE (5)

100% NEW TYRE

30% RETREADED TYRE

Waste to recycle

50 kg less waste to recycle for a retreaded tyre

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

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

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(1) In relation to the performance of the same tyre 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® tyre = 97% of the life span of a new tyre 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 tyre.
To find out more about the benefits of multi-life management for your tyres, have a look at the “Designed for more” series on the trucks.michelin.eu website