

# ***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, 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?

TRUE

## 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%** <sup>(1)</sup>.

■ 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?



**TRUE**

### 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** <sup>(1)</sup>!

*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!*

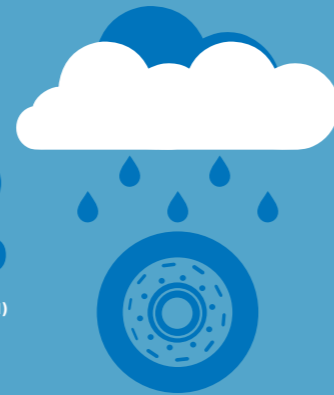
(1) Internal MICHELIN references: average measurement for the 4 principal sizes on the market (315/80 R 22.5, 315/70 R 22.5, 385/65 R 22.5 and 13 R 22.5).

## WHY REGROOVE?

ENTRUSTED TO A SPECIALIST,  
REGROOVING MEANS 3 ADVANTAGES FOR THE TRUCKING BUSINESS

### SAFER DRIVING

**10%**  
**EXTRA SIDE GRIP**  
and drive <sup>(1)</sup>



### SAVING FUEL

Up to  
**25% MORE**  
**KILOMETERS**



Nearly  
**2L**  
fuel saved per

**100 KM**



### HELPING THE ENVIRONMENT

**1,6**  
**TONNES**  
less CO<sub>2</sub> per set  
per annum <sup>(2)</sup>



**70 KG**  
of raw materials saved  
by 4 regrooved tires <sup>(3)</sup>,

**EQUIVALENT TO  
ONE NEW TIRE**

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

**Find out more: [trucks.michelin.eu](https://trucks.michelin.eu)**

(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).

## ALL OF YOUR TIRES CAN BE RETREADED?



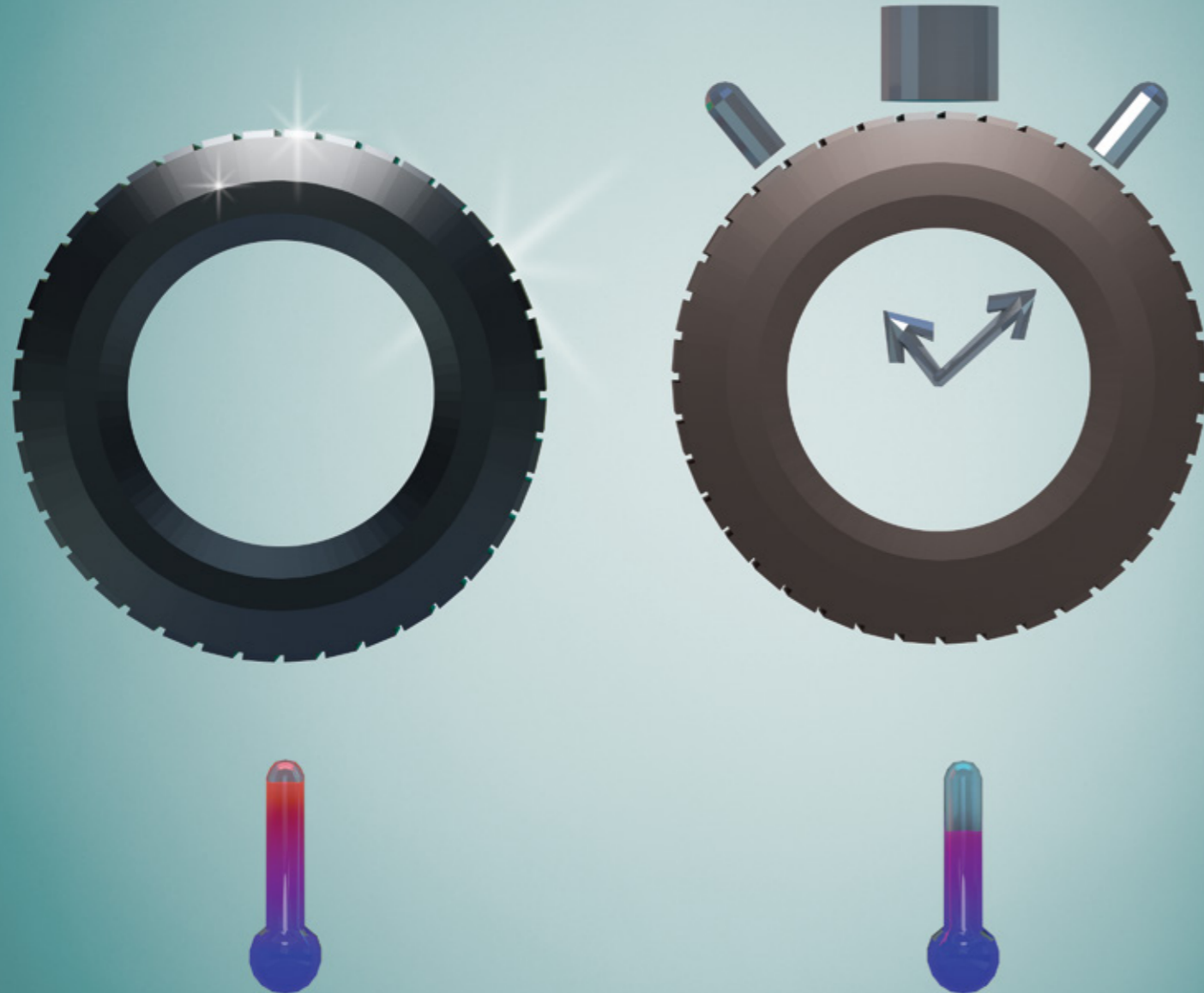
**TRUE,  
ALTHOUGH...**

**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!*

## ALL RETREADING PROCEDURES PROVIDE THE SAME BENEFITS?



**FALSE**

### 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 tire 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 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.



#### 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.

***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.*

## YOUR NEW TIRES BENEFIT FROM YOUR OLD TIRES?



**TRUE**

### 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?

**TRUE  
...IF**

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

- The original **casing** is of **excellent** quality, robust and sturdy <sup>(1)</sup>.
- The **retreader's equipment, technology, skills and professional experience** are **excellent**; these are vital to achieve **premium retreading**.

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

- This **ensures quality**, giving you the **key performances** of new MICHELIN tires.
- This also **boosts fuel efficiency**, as your **retreaded MICHELIN Remix®** tires remain regroovable in the future.

(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 tire in the same dimension.

# RETREADED TIRES SAVE YOU MONEY?

**TRUE**

## 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 <sup>(1)</sup>.
- 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 <sup>(2)</sup>, for even more mileage potential!

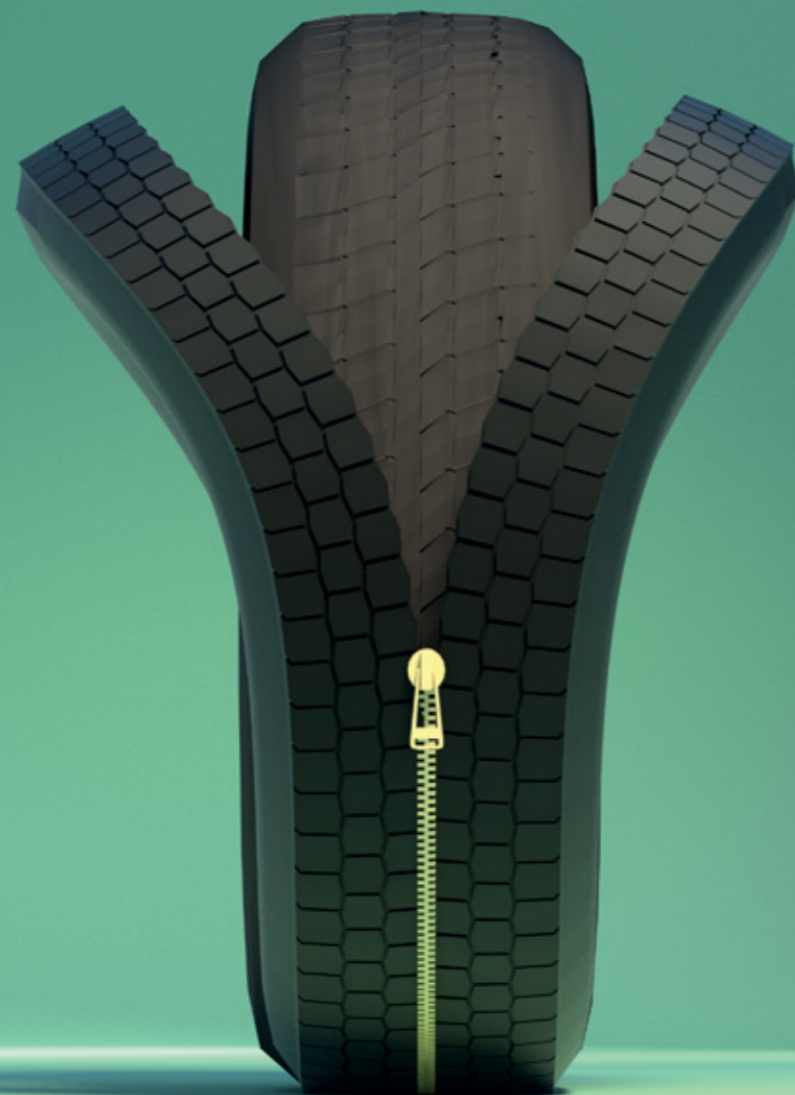
## YOU CAN HAVE YOUR ORIGINAL CASING RETREADED MULTIPLE TIMES!

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.

## ***TIRES ALSO AFFECT THE FLEXIBILITY OF YOUR USAGE?***



***TRUE***

### **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 <sup>(1)</sup>.
- **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** <sup>(2)</sup>.

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.

## IT IS ALWAYS YOUR TIRE YOU GET BACK?



**FALSE**

### IN THE UK, THERE ARE TWO OFFERS:

- **Casing Bank.** A system where your casing asset can be held until you require **retreaded products**.<sup>(1)</sup>
- The **direct standard replacement** of your tires is an even faster solution.

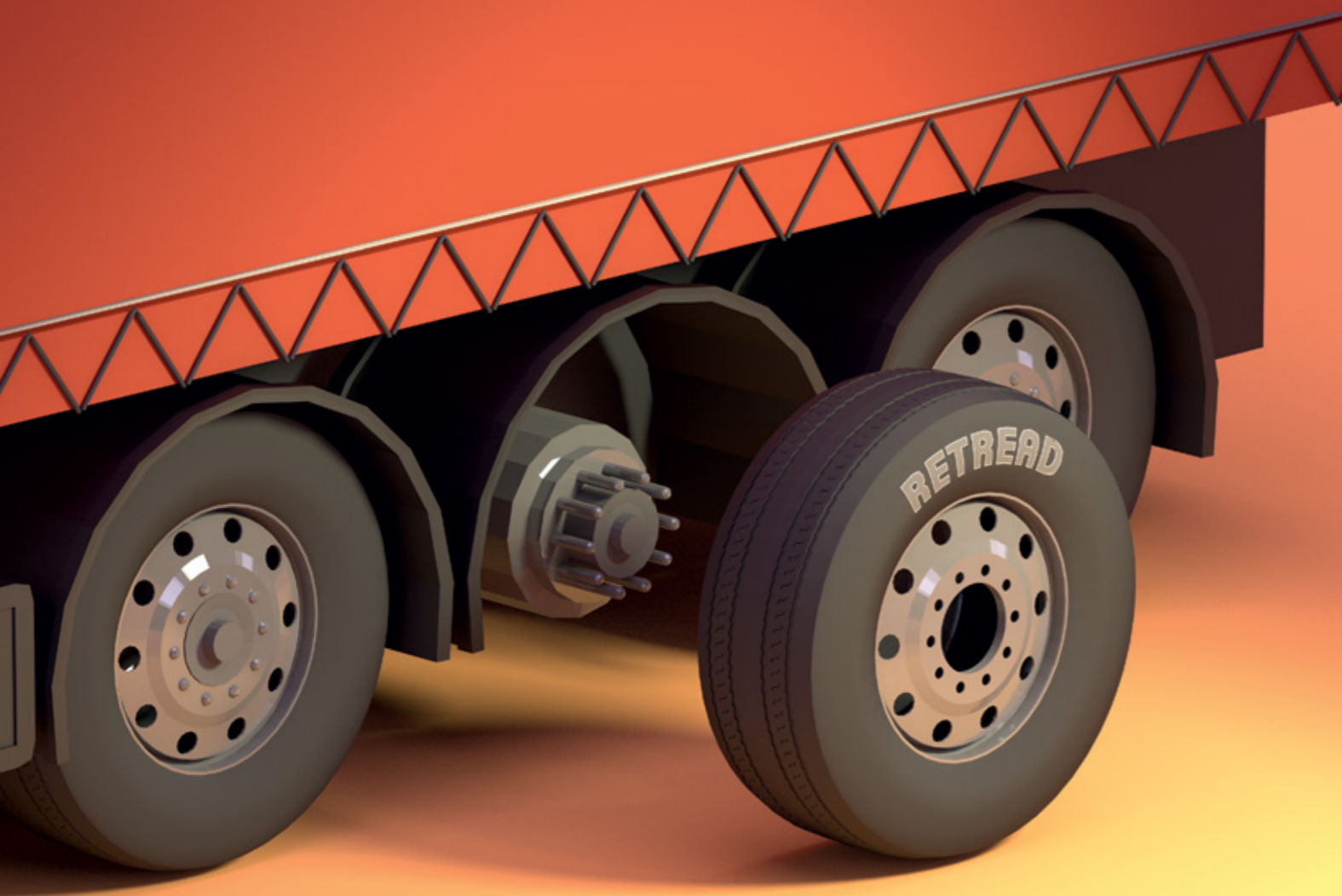
*MICHELIN tires can be identified using an **individual serial number** which is part of their technical marking. Comparable to an "identity card", it enables you to track a tire throughout its service life.*

*Eventually, RFID chips embedded in MICHELIN tires<sup>(2)</sup> will enable them to be identified and tracked automatically, complementing the ID number.*

<sup>(1)</sup> Terms & conditions apply to the use of a Casing Bank

<sup>(2)</sup> Radio Frequency Identification: automatic identification technology.

## YOU CAN MOUNT RETREADED TIRES IN THE SAME WAY AS NEW TIRES?



**TRUE**

### UNDER CERTAIN CONDITIONS, A RETREADED TIRE CAN REPLACE NEW TIRES <sup>(1)</sup>:

- 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 <sup>(2)</sup>.*
- **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 <sup>(2)</sup>.*
- **Construction** (radial or diagonal).
- **Speed rating.**
- **Permissible load carrying capacity.**


(1) MICHELIN advises against fitting a retreaded tire 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 tires from different retreaders on the same axle, regardless of the make of casing.

## WHY RETREAD?

TO MAKE SAVINGS, PLAY A ROLE IN SUSTAINABLE TRANSPORT  
AND BENEFIT FROM FLEXIBLE USE

### SAVINGS

 **2x** MORE  
**KILOMETERS<sup>(1)</sup>**

 **40%**  
**CHEAPER**

than new tires  
and multiple retreads are possible <sup>(2)</sup>

### FLEXIBILITY



**GET  
THE  
BEST**

**FROM YOUR  
RETREADED TIRES**

**Choose 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 <sup>(3)</sup>

**YOUR BRAND AND  
ARE HERE TO**

**YOUR DISTRIBUTOR  
ADVISE YOU**

### PROTECTING THE ENVIRONNEMENT

Retreading

**DOUBLE  
THE LIFE SPAN**

of your tire and saves  
natural resources <sup>(1)</sup>



**A retreaded tire =**

**-70%**

**raw materials**  
than a new tire! <sup>(4)</sup>

...WITHOUT  
COMPRO-  
MISING ON  
SAFETY

<sup>(1)</sup> Internal tests in 2013. Life span of a MICHELIN Remix® tire = 97% of the life span of a new tire of the same dimension.

<sup>(2)</sup> European average, internal pricing information in 2014 and Internet price study carried out by an external organization in.

<sup>(3)</sup> 350 retread/new tire combinations available with MICHELIN Remix® retreading.

<sup>(4)</sup> 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.

**Find out more: [trucks.michelin.eu](https://trucks.michelin.eu)**

## REGROOVING AND RETREADING HELP PROTECT OUR ENVIRONMENT?



**TRUE**

### REGROOVING AND RETREADING SAVE OUR NATURAL RESOURCES AND 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 CO<sub>2</sub>** → Up to - **1.6 tonne per year**. A vehicle with regrooved tires consumes less fuel and gives off less CO<sub>2</sub> <sup>(2)</sup>.
- **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 4 regroovings <sup>(3)</sup>.

#### THE BENEFITS OF RETREADING FOR THE ENVIRONMENT:

- **Lower CO<sub>2</sub> emissions** → **For every 100 retreaded tires**, 5 tonnes of material are saved and **over 6 tonnes of CO<sub>2</sub> 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!

#### A CLEANER WORLD, A CIRCULAR ECONOMY

*In Europe, **all used tires are recycled** <sup>(4)</sup>. 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.*

(1) Source: (France) Agency for Environment and Energy Management, 2014.

(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.

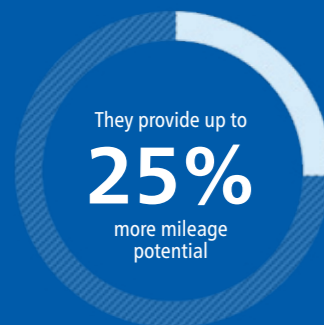
## DESIGNED FOR MORE

POUR FAIRE DES ÉCONOMIES, ÊTRE ACTEUR D'UN TRANSPORT DURABLE ET PROFITER D'UNE FLEXIBILITÉ D'USAGE



SOME TIRES ARE DESIGNED TO BE

### REGROOVABLE



### RETREADABLE \*



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

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 <sup>(2)</sup>



up to **-2L/ 100 km**  
fuel saving



Your operating performance

$$4 \times \text{REGROOVED TIRES} = 1 \times \text{NEW TIRE SAVED}$$

REGROOVED TIRES

NEW TIRE SAVED



**70 kg**  
of raw materials saved <sup>(3)</sup>

Regrooving of truck tires 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 =



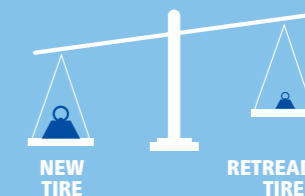
**2x more**  
KILOMETERS <sup>(4)</sup>



**40%**  
SAVING ON PURCHASE PRICE <sup>(5)</sup>



Comparison of raw material consumption <sup>(6)</sup>



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.

\* Depending on the casing

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](https://trucks.michelin.eu) website