WHITE PAPER

REGROOVING IS A WINNER

NOT REGROOVING IS A WASTE

MICHELIN

YOU WOULDN’T DO THAT IN EVERYDAY LIFE!

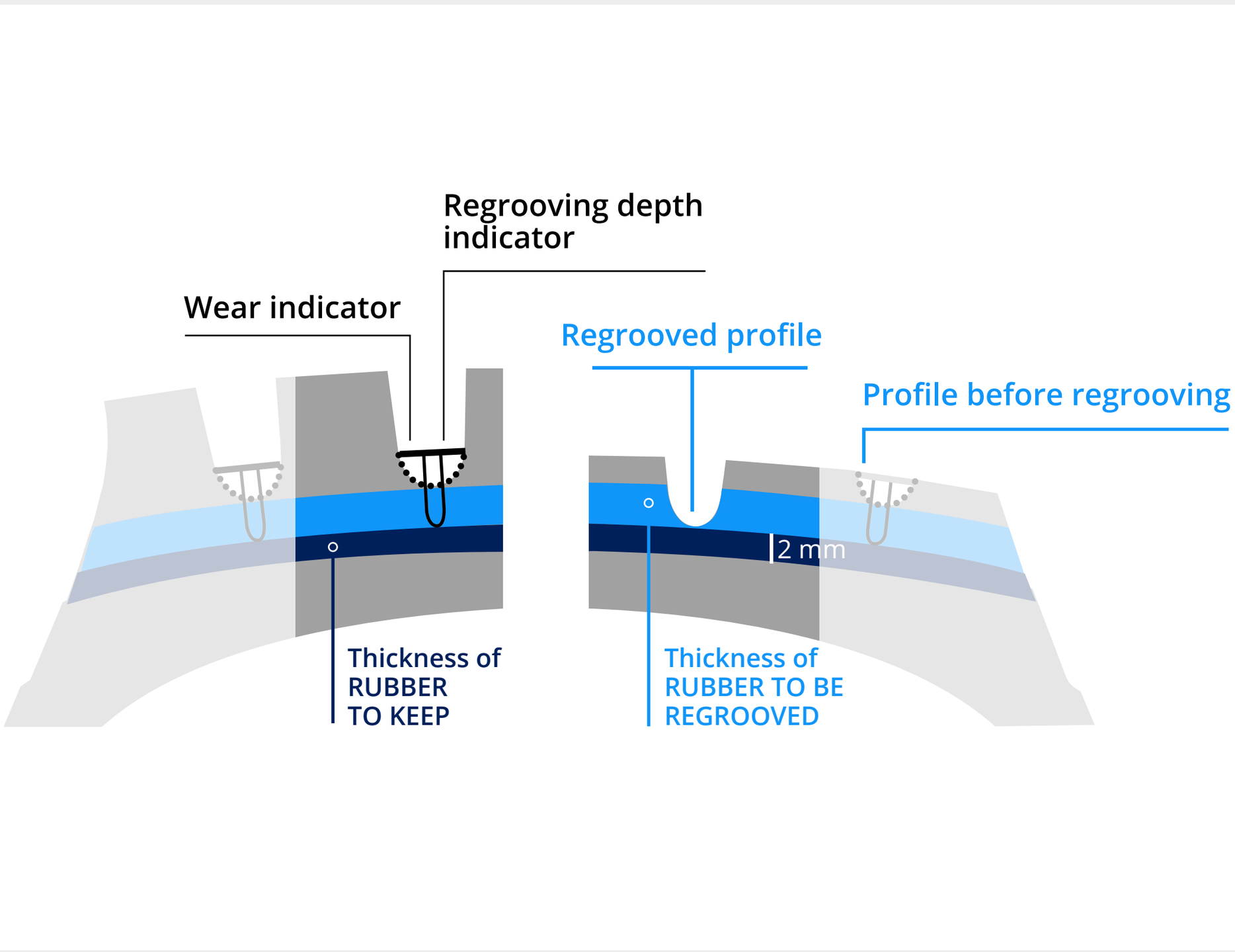
WHAT IS
REGROOVING?

Regrooving a tyre is an operation consisting in removing rubber from the existing rubber cushion in order to return depth to the tread.

The regrooving of truck tyres is an operation authorized by the French Highway Code (Art. 4 of the Decree of 10/24/1994) and recommended by the E.T.R.T.O. and the A.F.N.O.R. (standard NFR12714) for the resulting safety and increased yield.

ALL MICHELIN TRUCK TYRES ARE REGROOVABLE

The ability of MICHELIN tyres to be regrooved is a serious advantage.
They are designed from the outset with an additional rubber thickness intended for regrooving and have the U symbol or the word ‘Regroovable’ on their side walls.



NOW IS NOT THE TIME
TO BE WASTEFUL!

The transport sector is currently
having to cope with two demands:

INFLATION

On the one hand, businesses are tackling inflation and are doing everything they can to protect their operating margins, and on the other, they are obligated to take urgent measures to effectively reduce their environmental footprint.

ENVIRONMENTAL PRESSURE

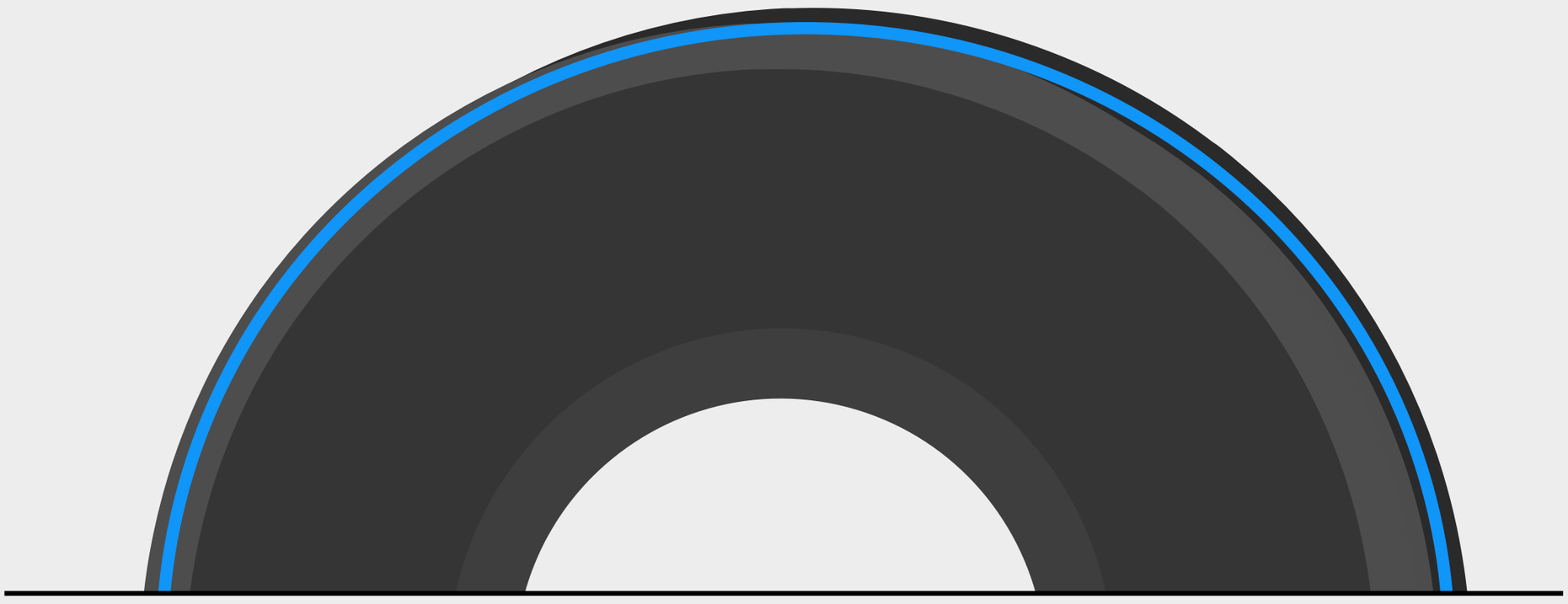
Every kg of CO_2 saved counts more than ever.

So how do you reconcile the two?

SAY NO TO WASTING TYRES!

Too many tyres are scrapped when they could still cover many miles.

BY ASSISTING WITH IMPLEMENTING THE MICHELIN MULTI-LIFE MODEL, MICHELIN ALLOWS:



carriers to make substantial savings on their tyre budget.

less use of the materials and energy needed to manufacture new tyres.

REGROOVING, IS A WINNER ON EVERY LEVEL!

As the tyres approach their wear limit, their rolling resistance reduces.

For the PLANET

Less materials and energy consumed[6]

Less CO_2[4] and [6]

Up to 10% more grip[3]

For CARRIERS

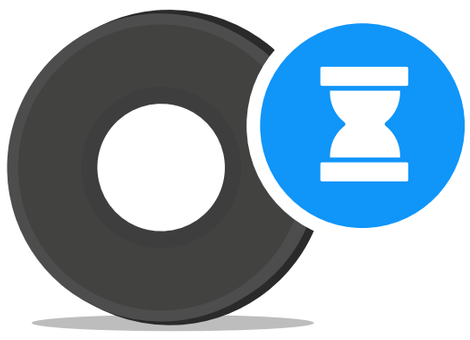
4 regrooves = 1 new tyre saved[7]

1 regroove = up to 25%[2] more mileage

Legal statements to be found on page 10.

THE 6 MAIN MYTHS ABOUT REGROOVING TRUCK AND MICHELIN'S RESPONSE

REGROOVED TYRES
DON'T LAST AS LONG

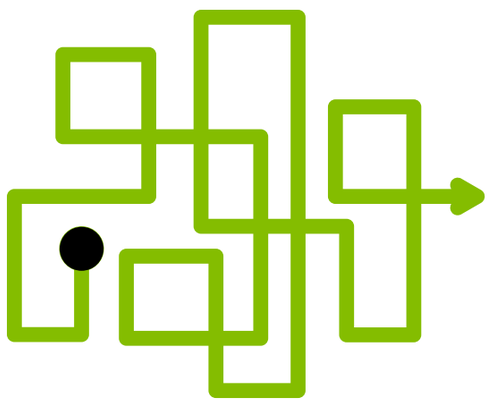


False - regrooved tyres **offer up to 25% more mileage[2].**

REGROOVED TYRES
AREN'T AS SAFE

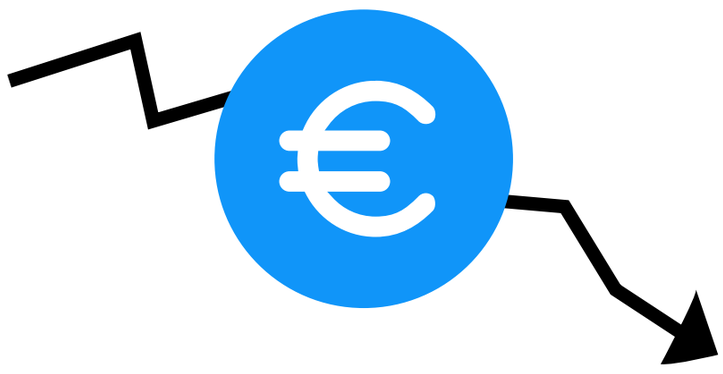
False - on wet ground, regrooved tyres offer approximately 10% greater transverse grip and traction compared to the same worn tyres[3]. Regroovable MICHELIN tyres have the word "regroovable" on the side walls. They are designed to be regrooved. Consequently, regrooving improves tyre grip when performed in line with best practices.

REGROOVING
IS COMPLICATED



False - > the carrier simply has to keep sets of tyres in stock to prevent immobilization
> 4 regrooved tyres = 2.5 hours' work
> Michelin offers regrooving diagrams

REGROOVING
IS NOT PROFITABLE

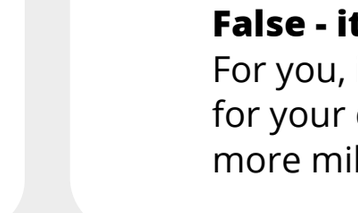


False - it's a win-win!
For you, its an additional service margin, for your carrier customers, it's up to 25% more mileage[2].

REGROOVING MEANS TAKING THE RISK OF LOSING RETREADABILITY

False - with MICHELIN Remix®, whether or not tyres are regrooved has no impact on whether they can be retreaded[8].

REGROOVED TYRES
ARE PROHIBITED IN WINTER



False - even in Norway you can fit regrooved tyres in winter! In order to reassure drivers, remember to tell them that regrooved tyres offer approximately 10% greater transverse grip and traction compared to the same worn tyres[3].

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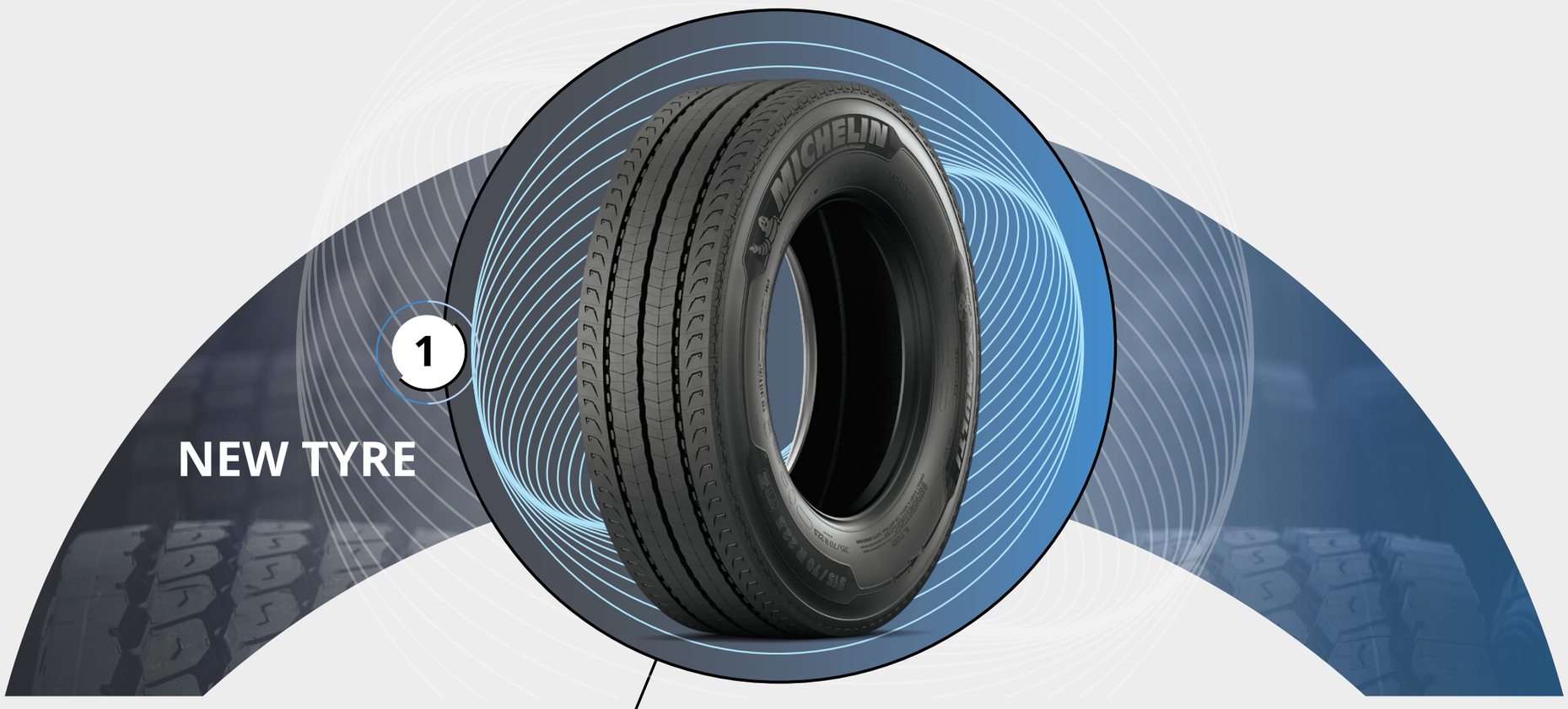
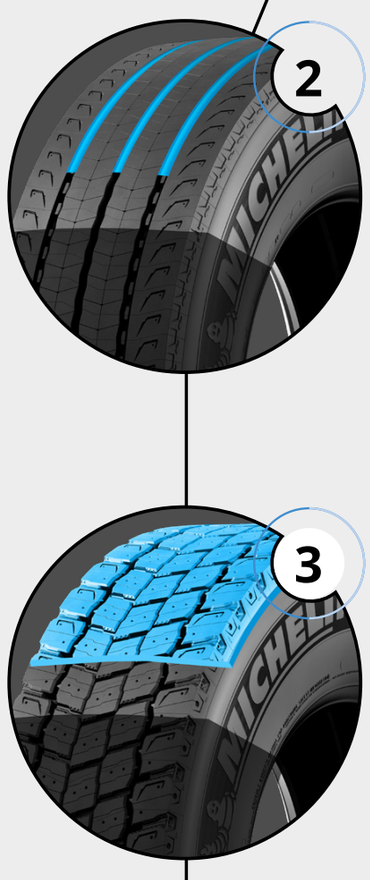
MICHELIN TYRES
HAVE MULTIPLE LIVES



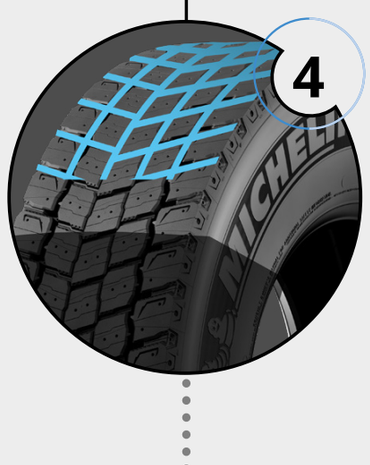


1ST REGROOVE

- Up to 5% less fuel(1)
- Up to 25% more mileage(2)
- Safety and grip(3)
- Save up to 251 kg of CO_2(4)

1ST RETREAD MICHELIN REMIX

- Up to 100% more mileage(5)
- Save up to 115 kg of CO_2(6)

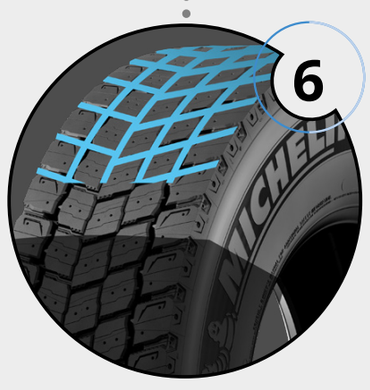


2ND REGROOVE MICHELIN REMIX

- Up to 5% less fuel(1)
- Up to 25% more mileage(2)
- Safety and grip(3)
- Save up to 251 kg of CO_2(4)

2ND RETREAD MICHELIN REMIX 2

- Up to 100% more mileage(5)
- Save up to 115 kg of CO_2(6)



3RD REGROOVE MICHELIN REMIX 2

- Up to 5% less fuel(1)
- Up to 25% more mileage(2)
- Safety and grip(3)
- Save up to 251 kg of CO_2(4)

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YOU CAN FIND ALL OF THE REGROOVING DIAGRAMS FOR MICHELIN TRUCK TYRES IN THE TRUCK TECHNICAL BROCHURE, OR ON *MyTechXpert*

DOWNLOAD THE APP FREE OF CHARGE FROM

GET IT ON Google Play

Download on the App Store

LEGAL STATEMENTS

(1) 5.4% save in fuel consumption: internal study carried out at the Michelin test tracks in Ladoux (France) on 5 May 2021, under DEKRA supervision (report No. 21CPAEXT-030). For the comparison between new tyres and regrooved tyres (R5 mm), two identical Volvo FH500 trucks were used, fitted with 315/70 R 22.5 MICHELIN X® LINE™ ENERGY™ Z2 & D2 tyres and each towing a fully loaded (40 tonnes) Schmitz Cargobull trailer fitted with 385/55 R 22.5 MICHELIN X® LINE™ ENERGY™ T tyres at identical pressures (8.5 b, 7.5 b and 9.0 b). Results may vary depending on weather conditions, road type, tyre size and driving style.

(2) Compared to a worn, non-regrooved MICHELIN tyre. Information based on the recommendations made by the French tyre manufacturers' federation (TNPF) in 2019, according to which the regrooving of worn tyres increases tyre life by using all the available rubber.

(3) On wet ground, regrooved tyres offer approx. 10% greater transverse grip and traction compared to the same worn tyres. Internal study carried out by Michelin on a polished concrete track at Ladoux (France) in 2010; results may vary depending on the actual conditions of use.

(4) The CO_2 savings from the Michelin multi-life model, are accentuated thanks to the fuel savings linked to regrooving (up to 5.4%(1)). According to a study under real conditions of use (using 315/70 R 22.5 tyres fitted to the drive and steering axles of a 4x2 truck used for international and national long distance, that have exceeded 50% wear), the average mileage for MICHELIN X® LINE™ ENERGY™ Z2 and MICHELIN X® LINE™ ENERGY™ D2 tyres is 232,200 km before regrooving* (*Michelin internal source and calculation, based on measurements taken by the Michelin teams during customer inspections on 488 axles, in Austria, Belgium, Croatia, the Czech Republic, France, Germany, Greece, Hungary, Italy, the Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Spain, and Turkey, over the period from 2020 to 2023), with a simulation based on the results collected suggesting extrapolation of the lifespan until 3 mm remains. The results may vary depending on the weather and road conditions. The view is that our tyres travel up to 25%(2) further thanks to regrooving, i.e. 58,050 km (232,200 x 25%). The fuel savings are calculated over the distance travelled by the regrooved tyres (58,050 km) at an average consumption of 29.5 L/100 km for new tyres and 27.91 L/100 km for regrooved tyres (source: DEKRA report No. 21CPAEXT-030). 29.5 x 5.4%, i.e., a saving of 1.59 L/100 km for an articulated truck and tri-axle trailer (thus 12 tyres) Consequently, there is a saving of 0.13 L/100 km per tyre (1.59 L/12), i.e., 0.13 L x 58,050 km/100 = 77 litres of fuel saved when driving on regrooved tyres, thus a saving of 77 litres of diesel x 3.24 kg of CO_2 = 251 kg of CO_2. The emissions factor of 3.24 kg of CO_2 for 1 litre of diesel comes from the life cycle assessment conducted by ADEME for pure diesel. It includes emissions during the diesel production stages (17%) and during its combustion (83%). Source: ADEME. Base Empreinte, Étude Carbone, Version 22.0.0, 02/08/2022. Thus 77 x 3.24 kg of CO_2 = 251 kg of CO_2.

(5) The tread compound and pattern of MICHELIN Remix® tyres are largely the same as those used for new MICHELIN tyres. 90% of the MICHELIN Remix® tyre range is manufactured using the same mould and the same materials as new MICHELIN tyres and therefore perform equally well. According to internal tests conducted by the Michelin Research and Technology centre and customer testimonials collected in Europe since 2015.

(6) The CO_2 savings from the Michelin multi-life model are also accentuated by the raw material savings linked to retreading. In terms of material savings, the average weight of a new MICHELIN tyre is 70 kg*. The weight of a tyre ready to be retreaded weighs 50 kg** on average. The CO_2 impact from a retreaded tyre is linked to the material savings, i.e. 50 kg of raw materials saved, or 115 kg of CO_2 at a rate of 2.3 kg of CO_2*** per kg of raw materials.

* Internal study based on the MICHELIN truck tyre sizes most sold on the European market: 315/80 R 22.5, 315/70 R 22.5 and 385/65 R 22.5.

** According to a TNPF publication from 2023: "retreading, which, by reusing the casing represents approximately 70% of a tyre's weight" (sic). As a result, 70% of 70 kg = approximately 50 kg.

*** The emissions factor of 2.3 kg of CO_2 for 1 kg of tyre comes from the life cycle assessment calculations for the cradle to gate production of a tyre, conducted internally by Michelin using the calculation rules developed by the tyre manufacturing profession (via the global body, the Tire Industry Project (TIP), which brings 10 tyre manufacturers together around sustainable development themes). It includes the extraction of raw materials, transportation, manufacturing, and distribution stages. Source: UL Environment Standard, «Product Category Rules for preparing an Environmental Product Declaration for the product category: Tires», v3.05, February 2022. Thus 50 x 2.3 = 115 kg of CO_2.

(7) 1 regroove means up to 25% more miles, thus 4 is up to 100% and therefore the equivalent of one new tyre saved.

(8) Internal source - MICHELIN Remix®: in 2018 and 2019 on 1,190,000 tyres over the 4 main dimensions on the market (315/70 R 22.5, 315/80 R 22.5, 385/55 R 22.5 and 385/65 R 22.5), there was no significant measurable difference in acceptance for retreading.