

# Can tyres be both **Greener** and Safer?



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# Can tyres be both **Greener** and Safer?

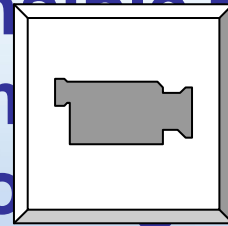
**Tyre Performance**

**Independent Tests**

**New Tyre Regulations**

# What is a tyre's contribution to fuel consumption?

Tyres are responsible for 20% of the fuel consumption of a car (due to rolling resistance)



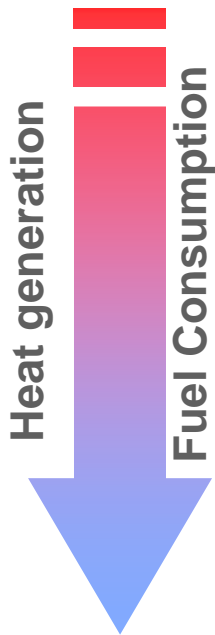
- Even more when under-inflated

# Rolling Resistance



# Grip

To reduce fuel consumption → less heat generation



At 60 mph the wheel rotates approximately 15 times / sec

HEAT is generated in the body of the tyre

# Rolling Resistance

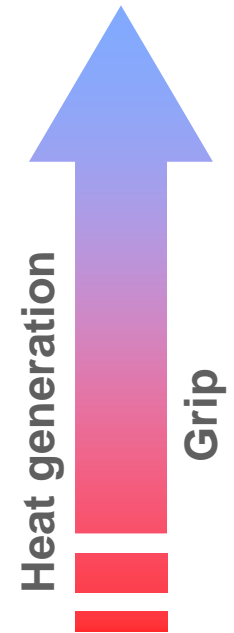
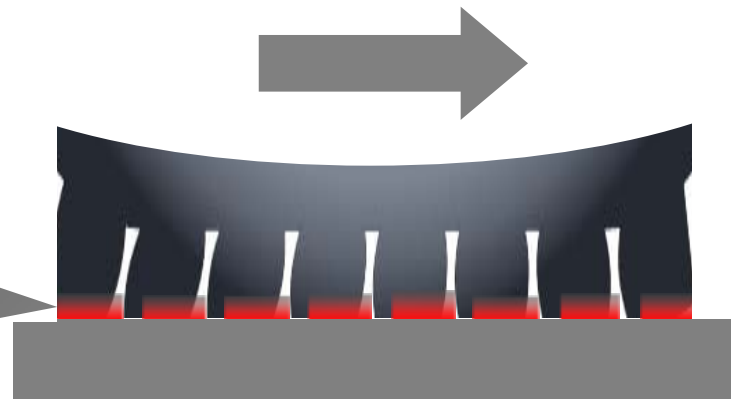


# Grip

For more grip → we need more heat generation

In emergency braking  
excitation frequency  
is 100,000 cycles/sec.

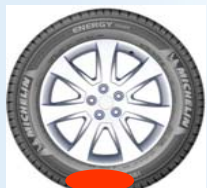
HEAT generation is  
on the tyre surface



# Rolling Resistance

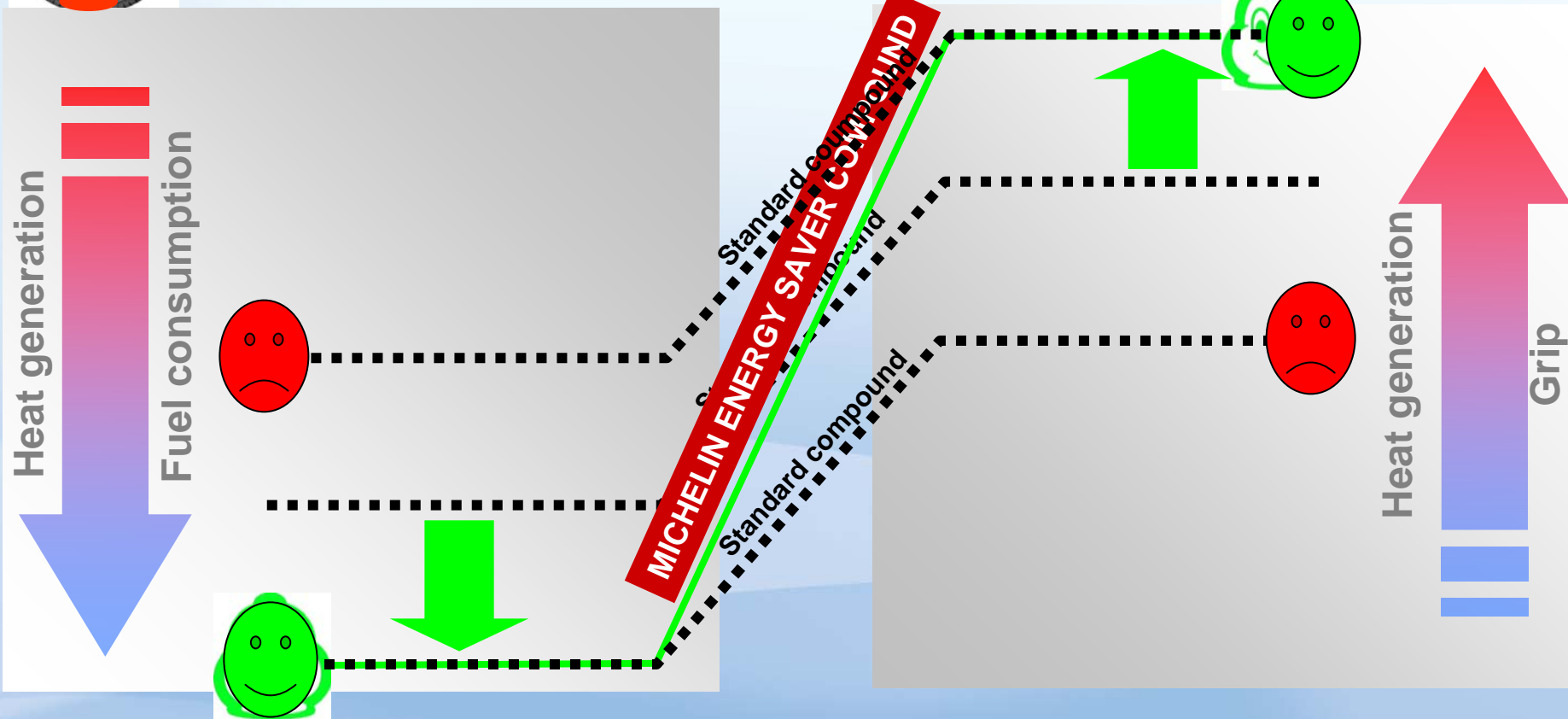


# Grip



ROLLING RESISTANCE  
Constant speed

GRIP  
Emergency braking



# Technology behind the new MICHELIN Energy Saver

## Rubber Compound composition

- Latest generation Full Silica compounds
  - Reduced fuel consumption
  - More grip

# Technology behind the new MICHELIN Energy Saver

## Mixing process

- Mixing process exclusive to Michelin
- Perfect control of the mixture consistency



Better wear resistance



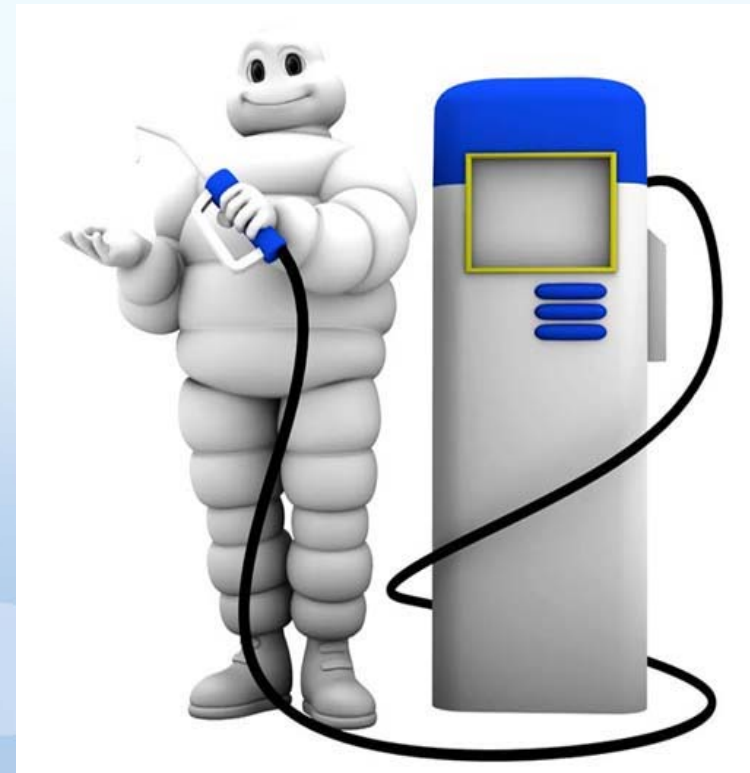
# Technology behind the new MICHELIN Energy Saver

## Tyre weight reduction

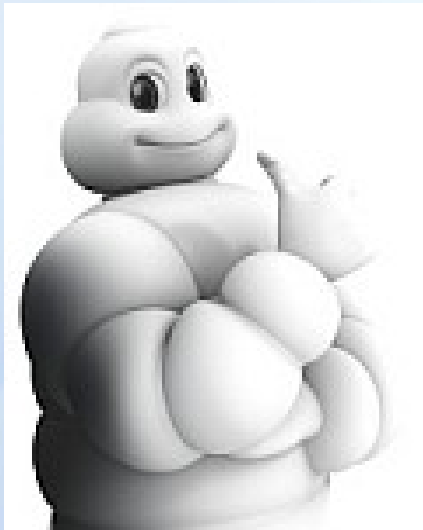
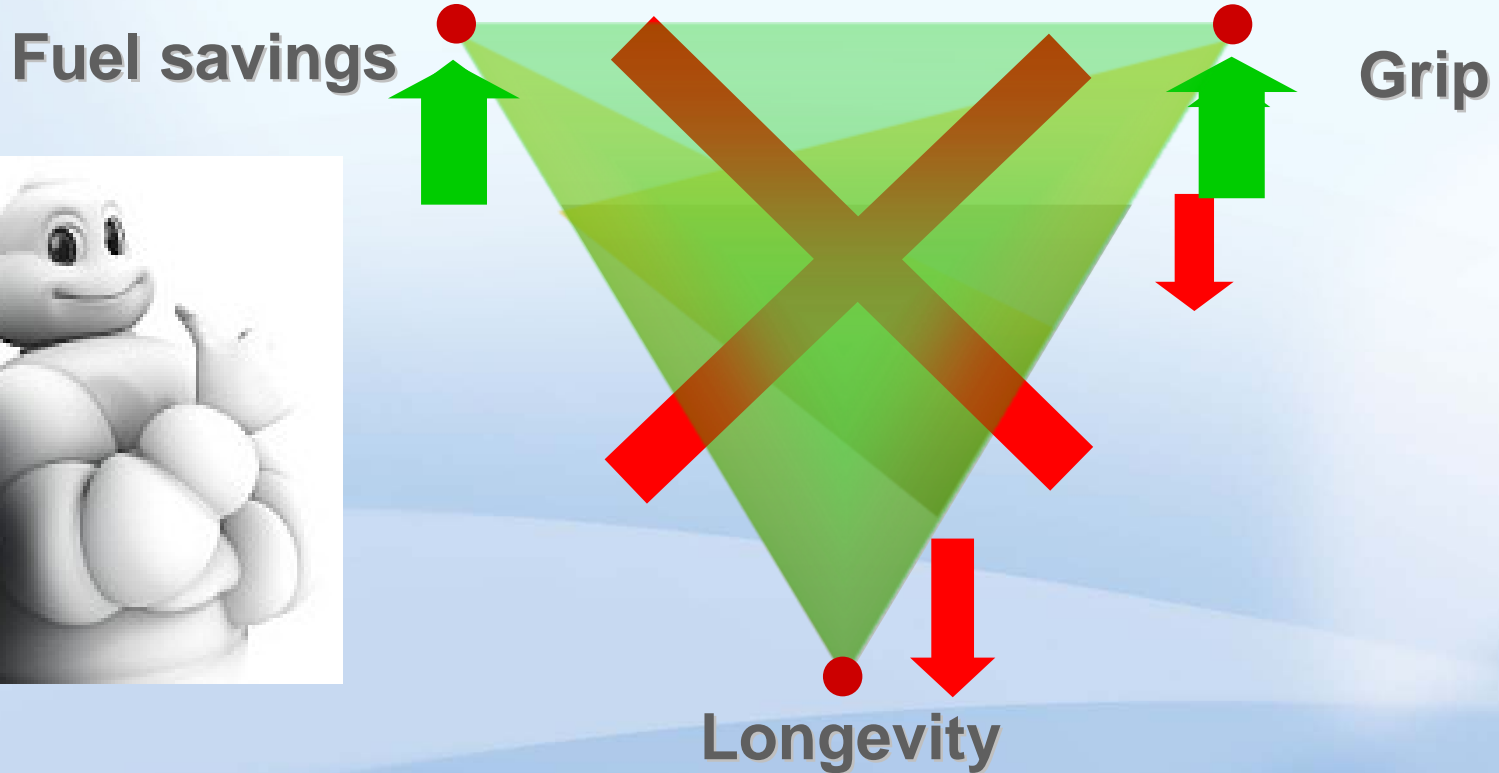
- 800g lighter than the previous generation of Michelin Energy



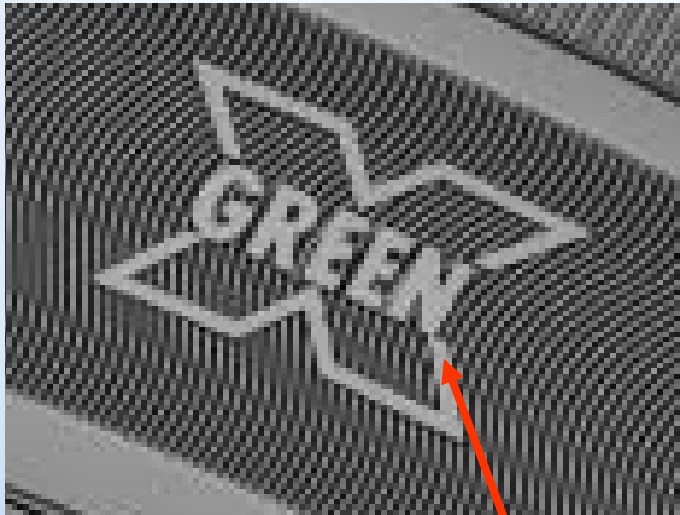
less fuel consumption



# The performance compromise



# MICHELIN GREEN X marking



**Identifies Michelin  
fuel efficient tyres**

**Present on most new  
Michelin Car, Van &  
Cold Weather tyres**

**No compromise in  
safety and longevity**



# The Proof



# Independent Tyre Tests 2009



Tyre life  
Fuel economy  
(Narbonne)



Wet braking

# TüV SÜD results for MICHELIN Energy Saver wet braking tests



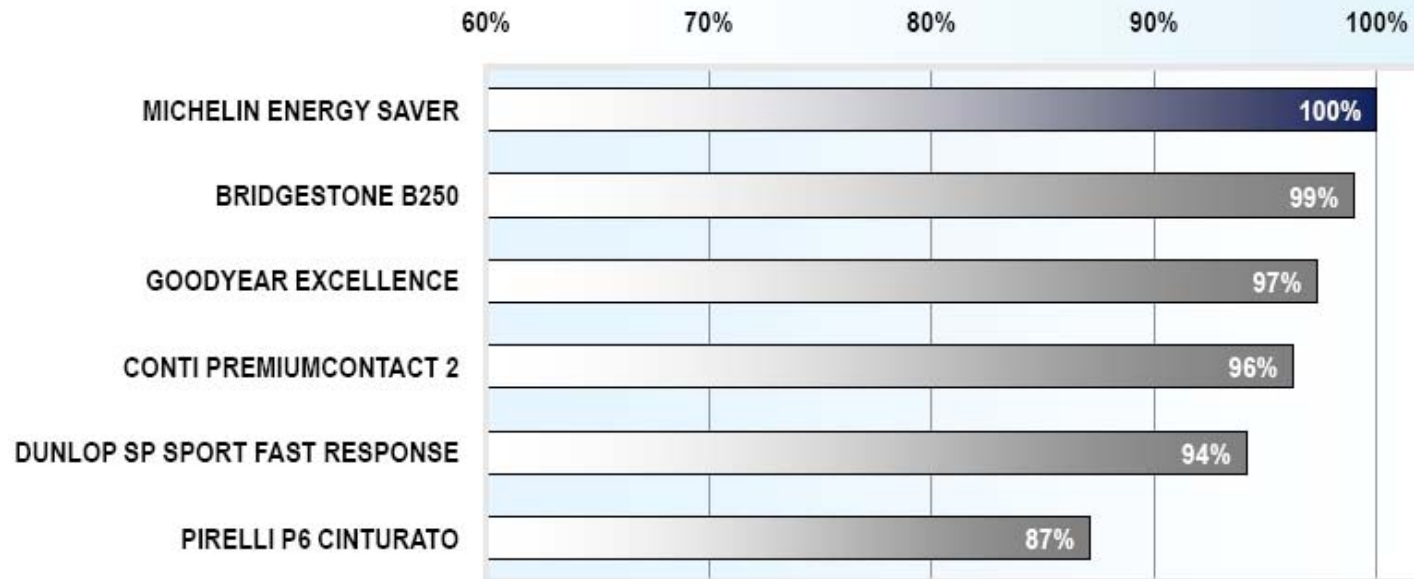
Automotive

## Wet Braking Performance

### Test Results

### 195/65 R15 H: Wet Braking Performance

**TIRE SEGMENT 195/65 R15 - WET BRAKING**  
**RELATIVE PERFORMANCE, BEST TIRE IN SEGMENT = 100%**

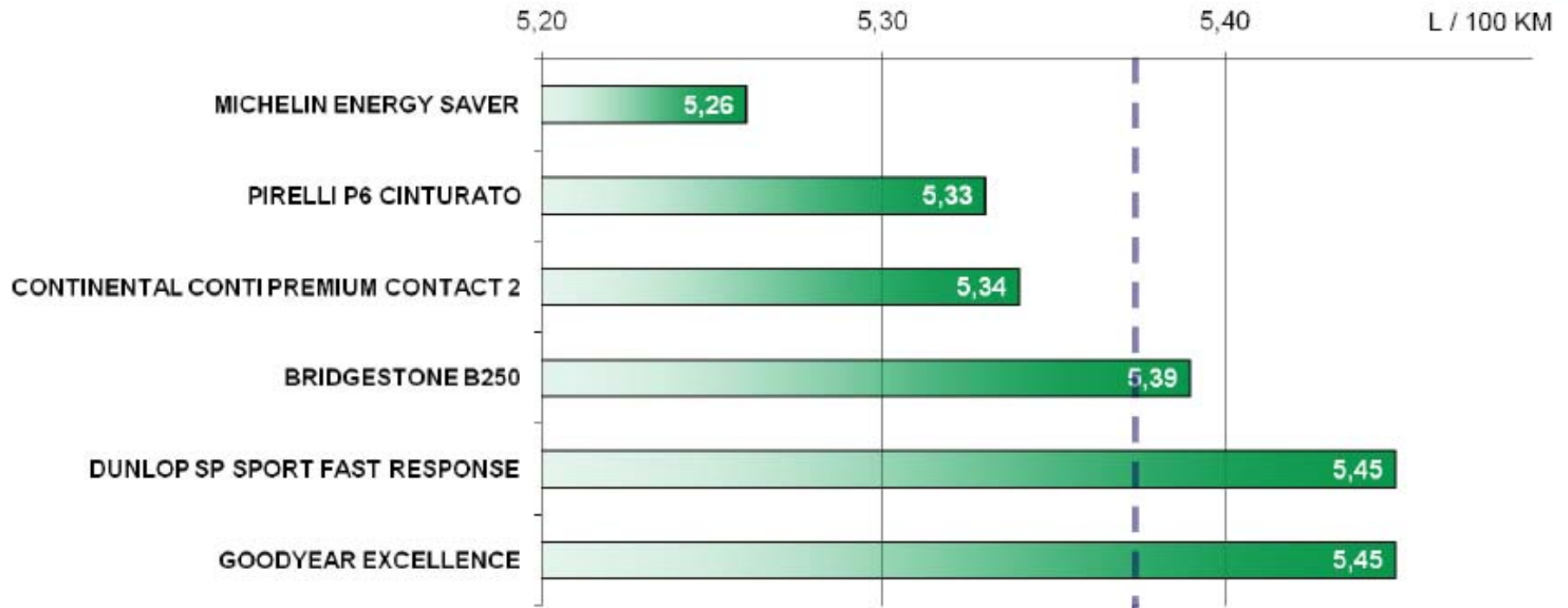


# DEKRA results for MICHELIN Energy Saver fuel consumption

## TIRE LONGEVITY AND FUEL CONSUMPTION TESTS



### RESULT OF TIRE SEGMENT 195/65 R 15 H : FUEL CONSUMPTION TEST



--- Arithmetic average of tested tires

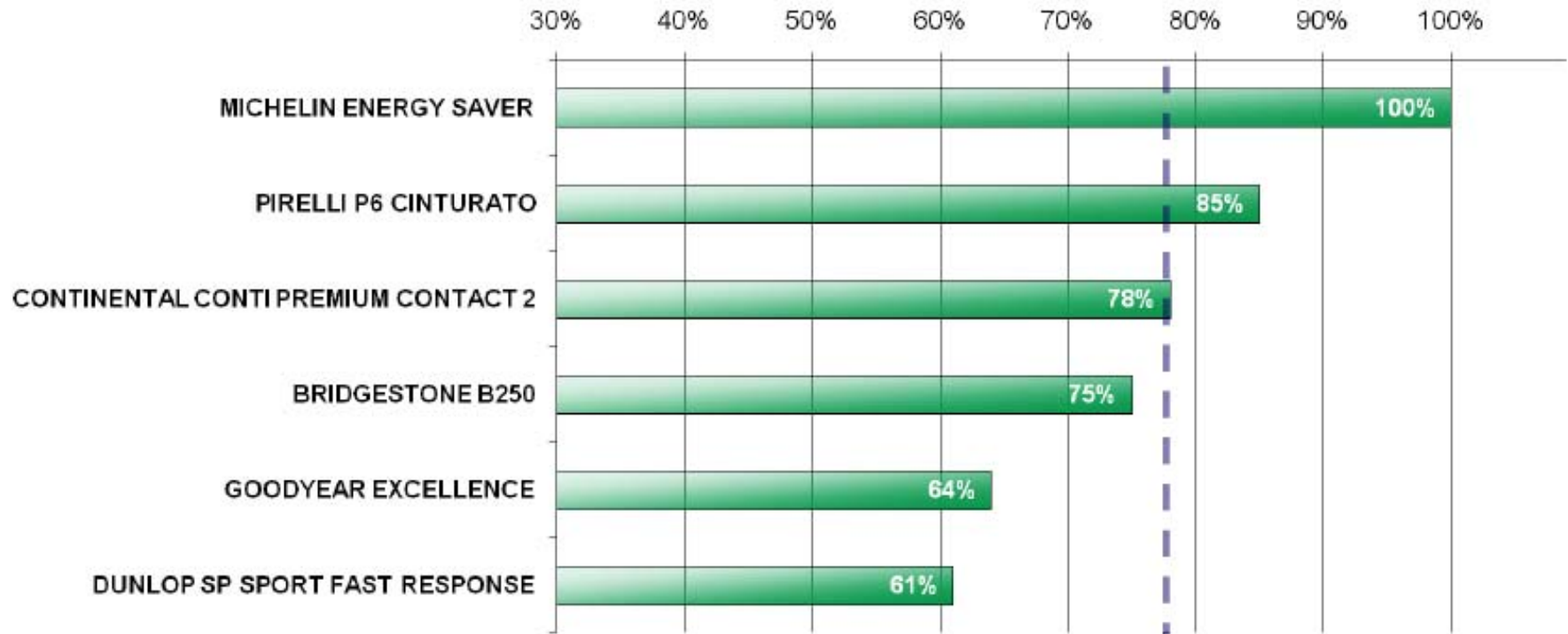
Fuel consumption calculation determined from volume consumed by each set of tires during 10 000 km driven for the test.

# DEKRA results for MICHELIN Energy Saver wear tests

## TIRE LONGEVITY AND FUEL CONSUMPTION TESTS



### RESULT OF TIRE SEGMENT 195/65 R 15 H : LONGEVITY TEST



--- Arithmetic average of tested tires

Treadlife extrapolation (after a test mileage of 10 000 km) based on the most worn groove on both front tires – Base 100



# New European legislation on Tyre Performance



# There are two new European regulations about to be introduced:

- Regulation 661
- draft Regulation 348

# Why Regulation 661?

1. Safety
2. CO<sub>2</sub> Emissions
3. Environment

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1. Safety – Wet Grip
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3. Environment

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1. Safety – Wet Grip
2. CO<sub>2</sub> Emissions – Rolling Resistance
3. Environment – Noise

# New Tyre Regulations (Reg. 661)

- Starting from 2012 tyres sold in Europe will have to conform to new regulations on:
  - Wet Grip
  - Rolling Resistance
  - Noise
- Maximum levels of Rolling Resistance and Noise will be imposed  
Minimum levels of Wet Grip will be imposed
- Michelin fully supports this initiative which is linked to the improvement of the environment and to road safety
- Car, van and truck tyres only

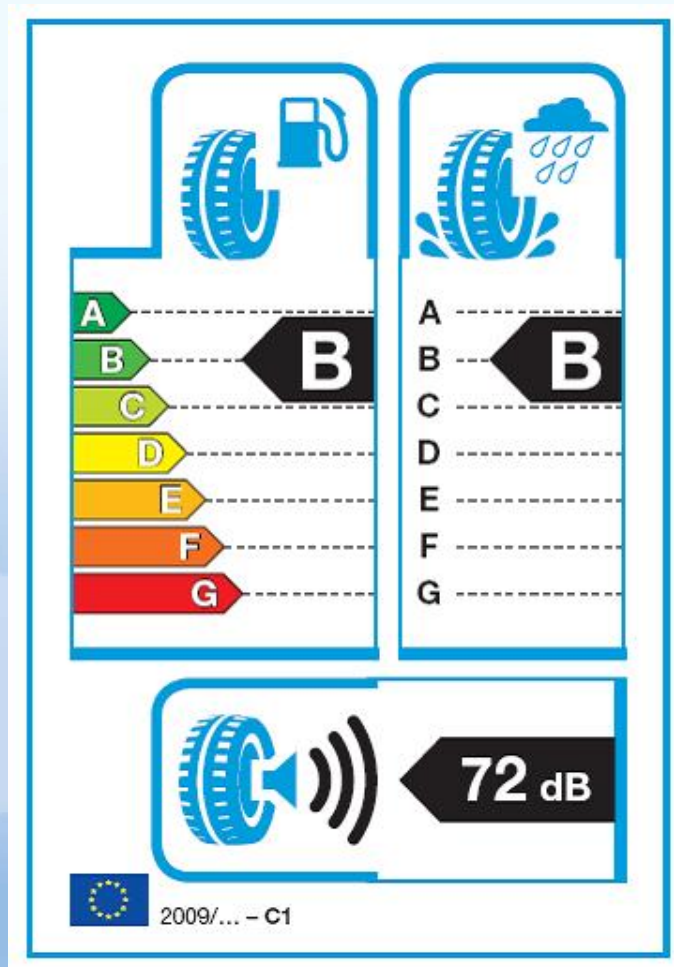


# New Tyre Regulations (draft Reg. 348)

- Discussions are also underway on how to inform customers of the relative performance of all the tyres on the market
- A grading system is proposed, similar to that applied to electrical appliances (e.g. refrigerators). 'A' being the best down to 'G' being the worst
- Customers will be informed in a variety of ways. E.g. manufacturer's documentation, websites, labelling ...



# Proposed Tyre Label (draft Reg 348)



# Summary

- Michelin is making Greener tyres and will never compromise on safety
- Use of innovative technologies is the only way to optimise the key tyre characteristics at the same time.
- This benefits the end user in terms of added value
- Starting from 2012, tyres sold in Europe will have to conform to Regulations on, wet grip, noise and rolling resistance
  - Grading of tyre performance in each of these three categories will enable more informed choice

# Can tyres be both **Greener** and Safer?



# Thank you for your attention

