



Automotive

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TÜV SÜD Automotive Tire Benchmark Test - 2009

205/55 R16 91 V: Wet & Dry Performance - Lifetime - Rolling Resistance/Fuel Economy

Report No. 76236753-2

TÜV SÜD Automotive GmbH

TÜV®

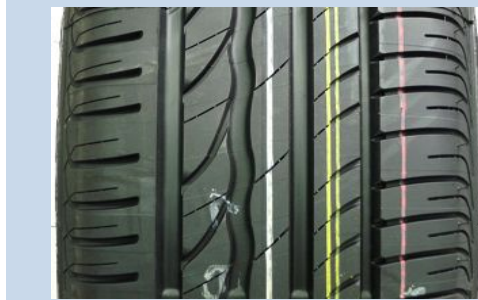
TIRE BENCHMARK TEST 205/55 R16 V



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TEST TIRES

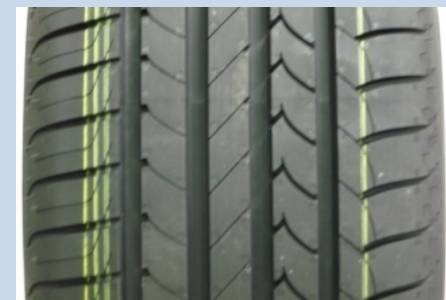
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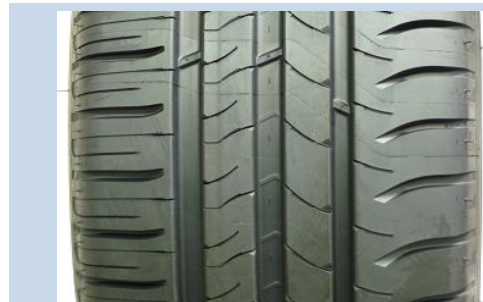
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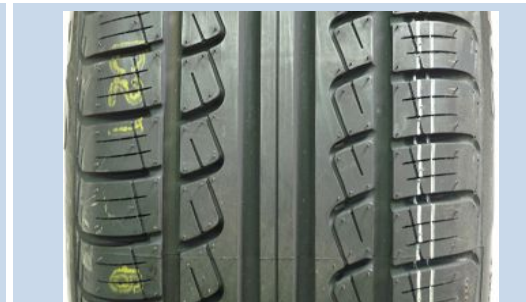
CONTI PREMIUMCONTACT 2



GOODYEAR EFFICIENTGRIP



MICHELIN ENERGY SAVER



PIRELLI P6 CINTURATO ECOIMPACT

SCOPE OF TESTS

■ Environment & Lifetime

- Mileage
- Rolling Resistance
- Fuel Economy



■ Dry Performance

- Braking (ABS, 100 – 5 km/h)
- Handling



■ Wet Performance

- Braking (ABS, 80 – 20 km/h, low & high μ)
- Lateral Wet Grip
- Handling





FRAMEWORK

■ Test Locations:

- Wet & Dry Performance: Goodyear PG Mireval
- Tread Wear & Fuel Economy: Public roads in the South of France (Area of Montpellier)
- Rolling Resistance: TÜV SÜD Automotive Test Lab, Garching

■ Test Vehicles

- Test Vehicles Wet & Dry Performance: VW Golf VI 2.0 TDI (110 hp)
- Test Vehicles Tread Wear & Fuel Consumption Test: VW Golf V 1.9 TDI (105 hp)

■ Acquisition and Evaluation of Results

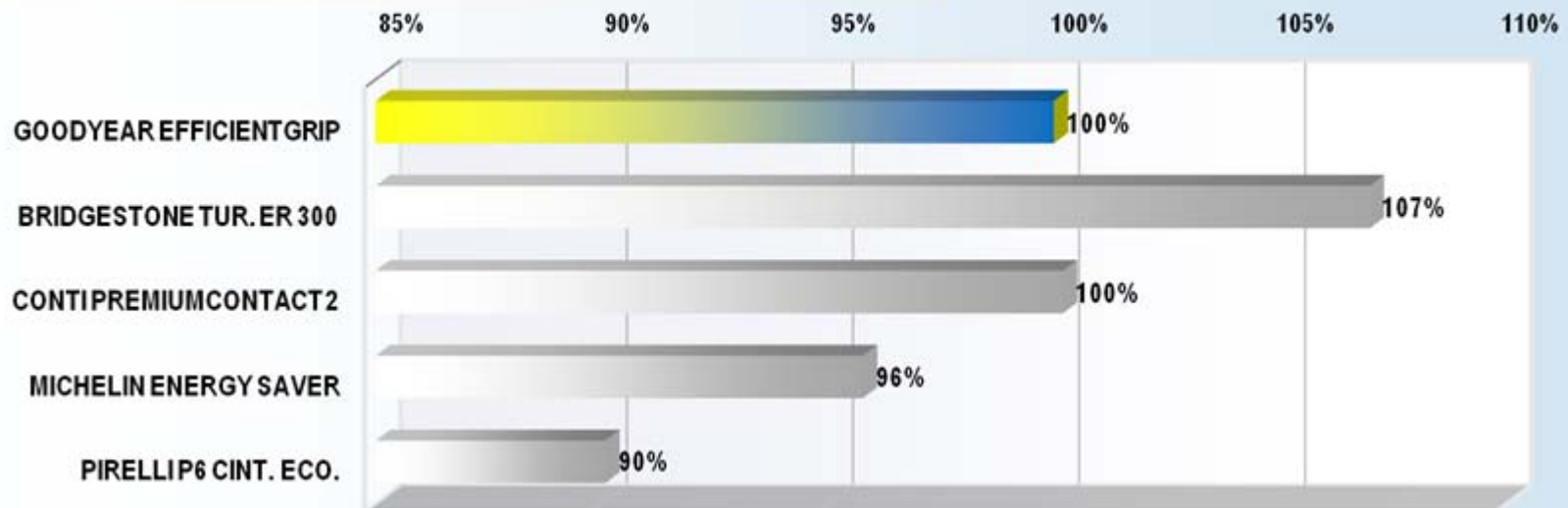
- All tests were exclusively carried out by TÜV SÜD Automotive personnel
- Performance of competitors assessed relative to Goodyear EfficientGrip
- above 100% means better, below 100% means worse

TEST RESULTS

WET BRAKING, LOW μ

- ABS-braking
- GPS based metrology equipment (V-Box)
- 80 to 20 km/h
- Braking distances: ~ 38 m (BRI) to 46 m (PIR) \cong 5.0 to 6.0 m/s²

WET BRAKING PERFORMANCE, ASPHALT, LOW μ (MEAN DECELERATION, COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)



TIRE BENCHMARK TEST 205/55 R16 V



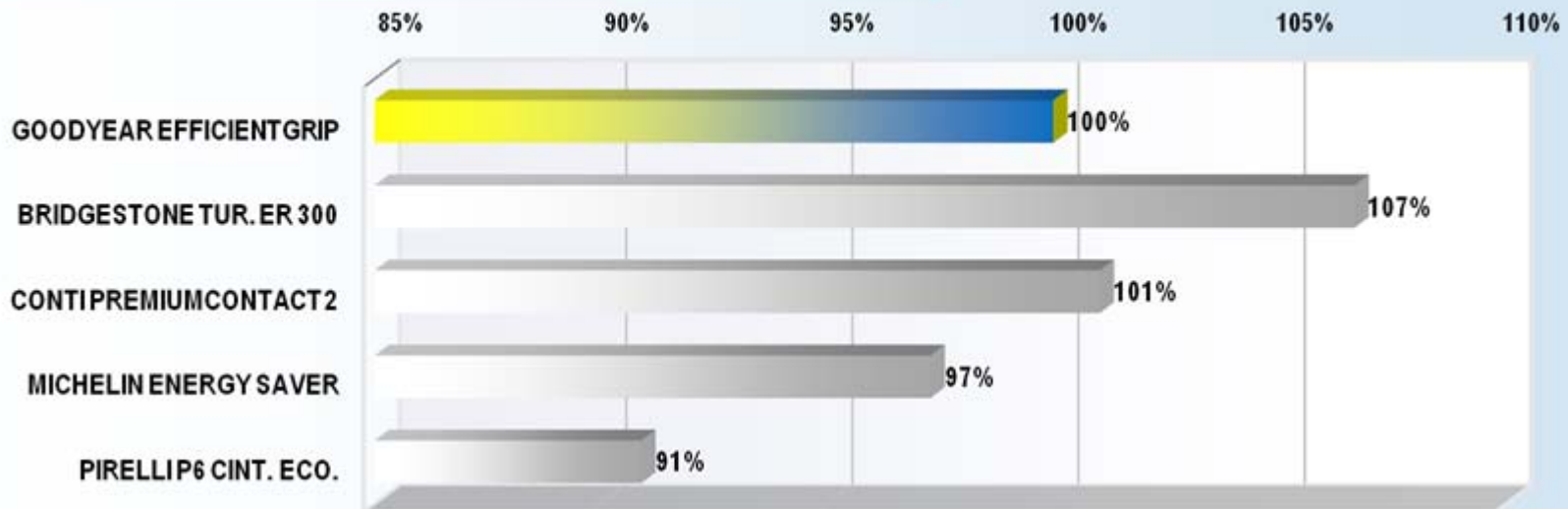
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TEST RESULTS

WET BRAKING, HIGH μ

- ABS-braking
- GPS based metrology equipment (V-Box)
- 80 to 20 km/h
- Braking distances: ~ 30 m (BRI) to 36 m (PIR) \cong 6.5 to 7.7 m/s²

WET BRAKING PERFORMANCE, ASPHALT, HIGH μ (MEAN DECELERATION, COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)

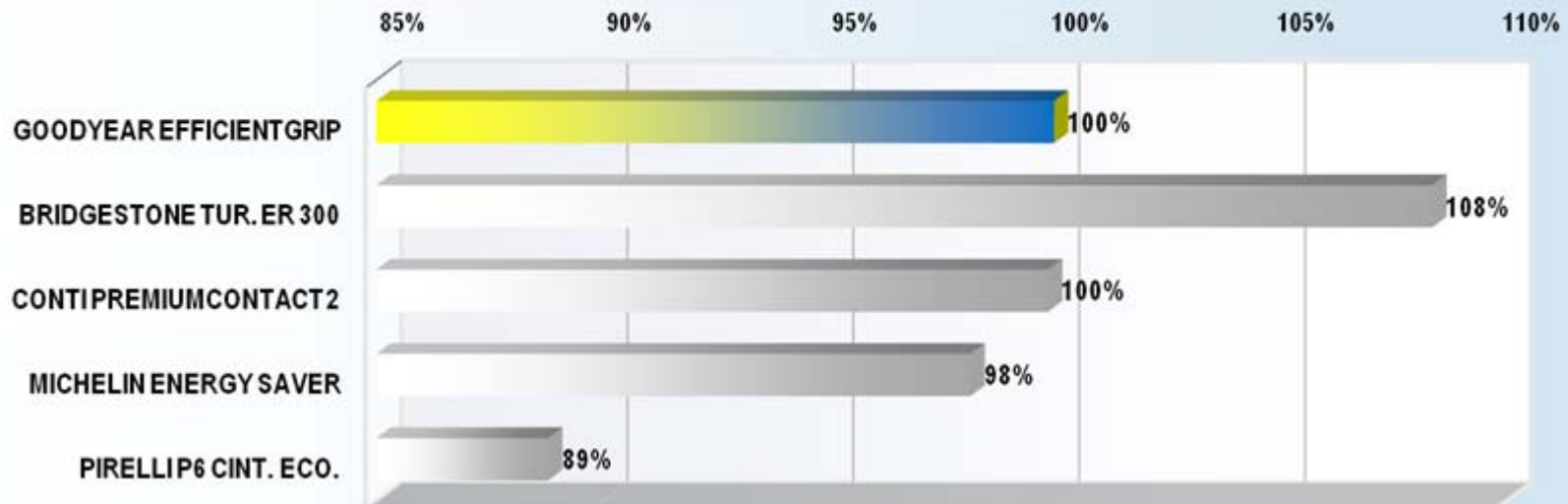


TEST RESULTS

■ LATERAL WET GRIP

- ESP off
- Lap times by light sensor
- Radius 42 m
- Lap times: ~ 16.8 s (BRI) to 18.6 s (PIR) \cong 5.1 to 6.0 m/s²

LATERAL WET GRIP PERFORMANCE (MEAN LATERAL ACCELERATION, COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)

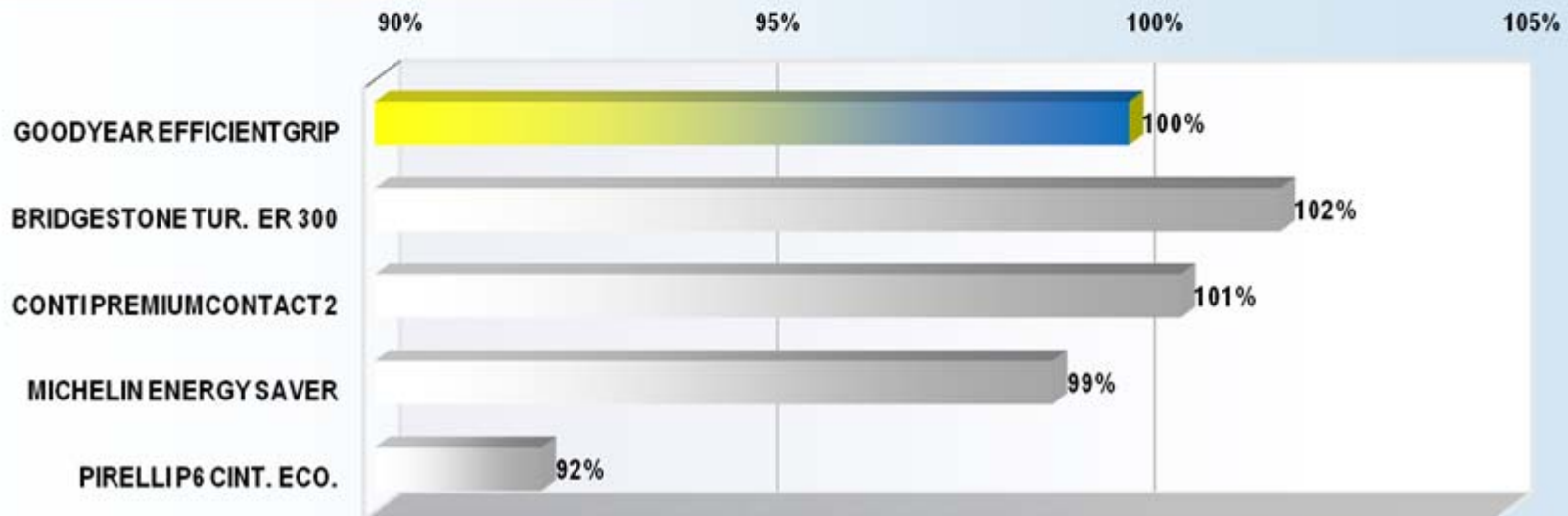


TEST RESULTS

■ WET HANDLING

- ESP off
- Subjective assessment & Lap times
- Lap times by light sensor
- Track length 1700m
- Lap times: ~ 63.6 s (BRI) to 71.1 s (PIR) \cong 75 to 83 km/h

WET HANDLING PERFORMANCE (COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)

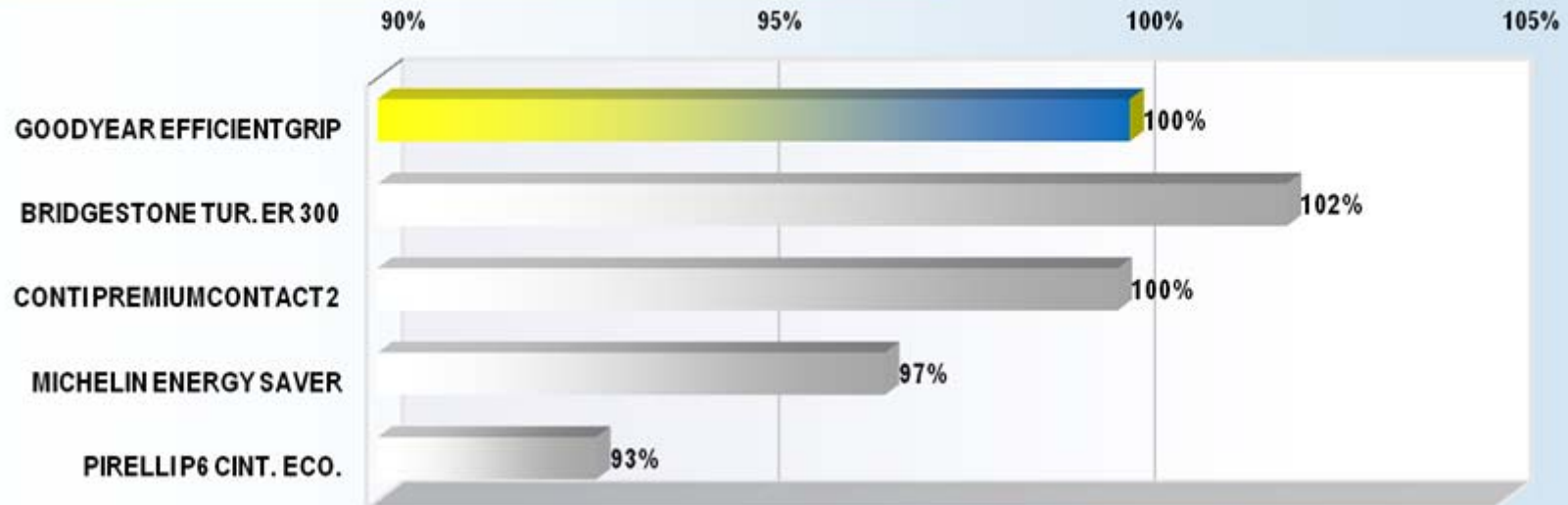


TEST RESULTS

■ DRY BRAKING

- ABS-braking
- GPS based metrology equipment (V-Box)
- 100 to 5 km/h
- Braking distances: ~ 35.7 m (BRI) to 39.4 m (PIR) \cong 9.8 to 10.8 m/s²

DRY BRAKING PERFORMANCE (MEAN DECELERATION, COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)

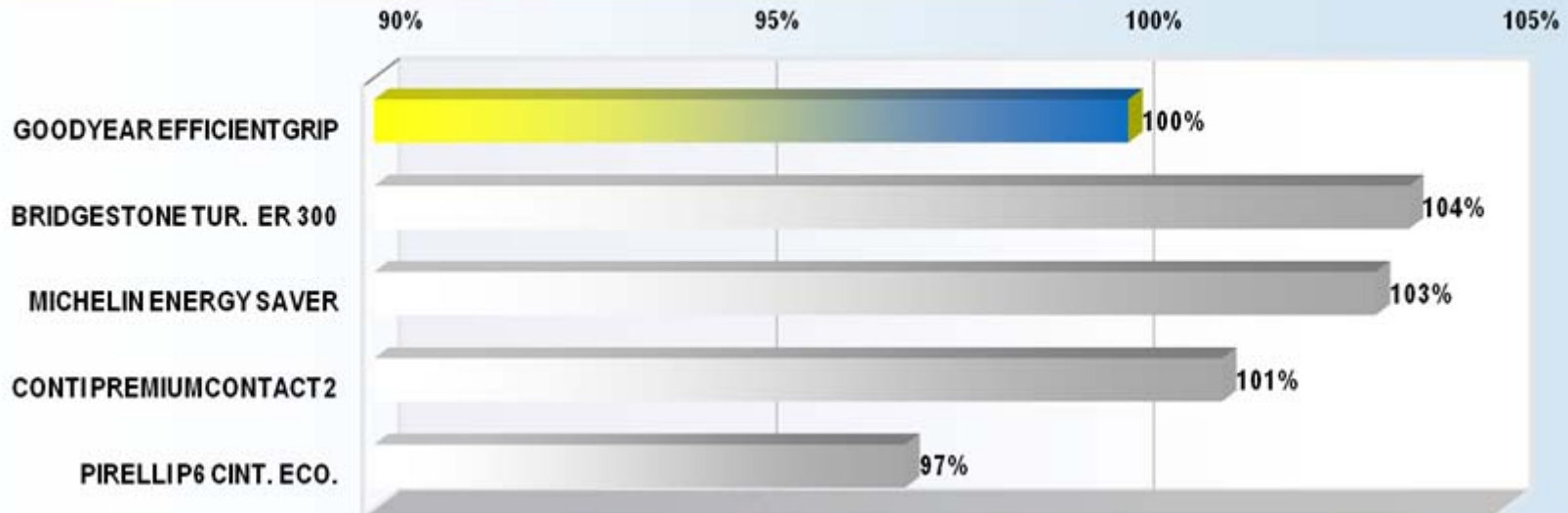


TEST RESULTS

■ DRY HANDLING

- ESP off
- Subjective assessment & Lap times
- Lap times by light sensor
- Track length 3300m
- Lap times: ~ 104.7 s (MIC) to 107.4 s (PIR) \cong 110.6 to 113.4 km/h

DRY HANDLING PERFORMANCE (SUMMARIZED SPEED & SCORES, COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)



TEST RESULTS

■ ROLLING RESISTANCE

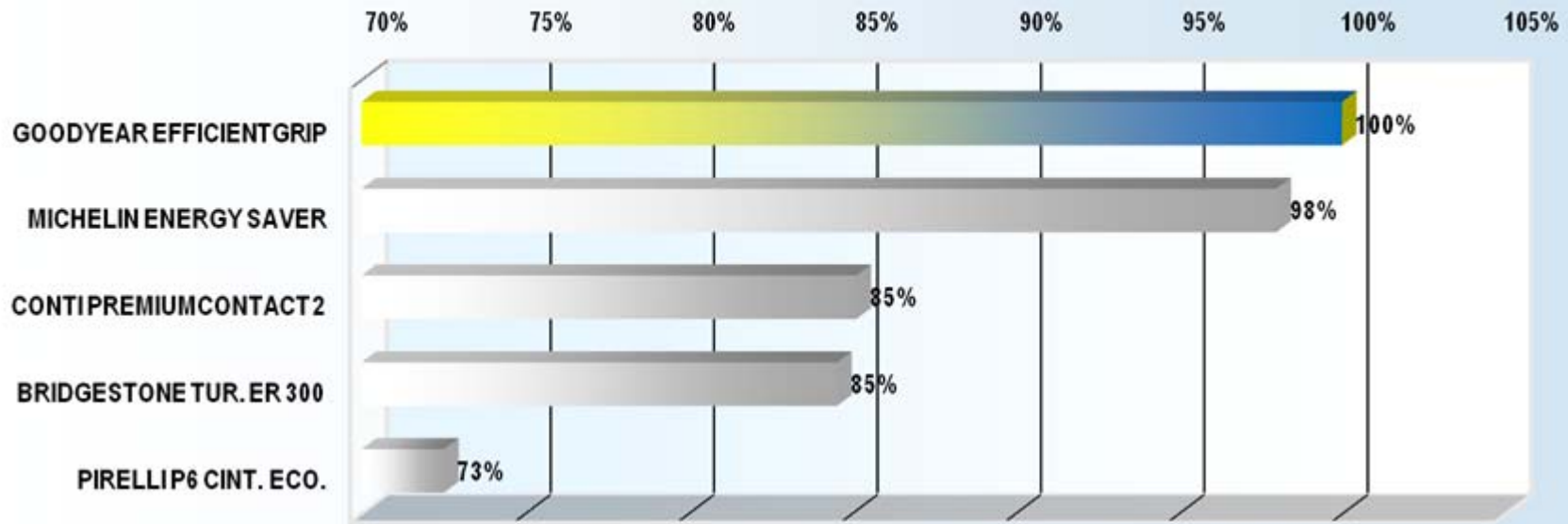
- Measured according to ISO 18164
- Inflation pressure 2.1 bar

- Test speed: 80 km/h

- Test Load: 492 kg

- Rolling Resistance Forces: ~ 41 N (GYR) to 52 N (PIR) $\cong c_R \sim 8.5$ to 10.8 kg/t

LOW ROLLING RESISTANCE INDEX [%]

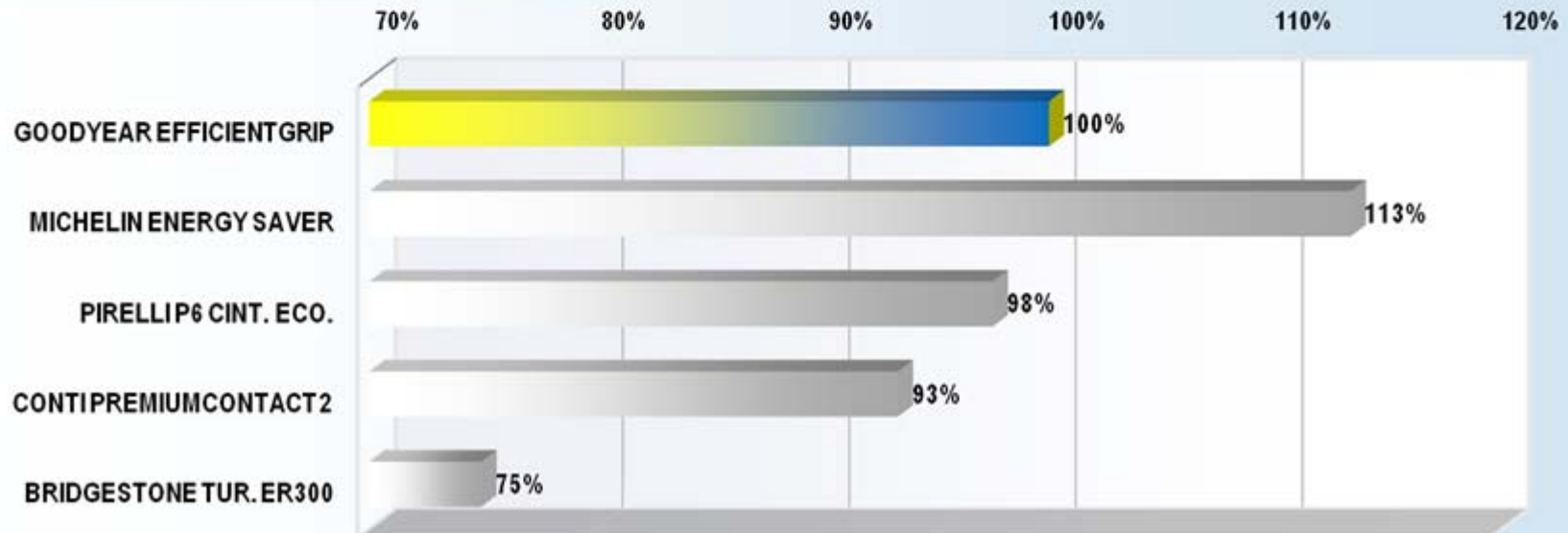


TEST RESULTS

■ TREAD WEAR / SERVICE LIFE TIME

- Identical cars in convoy - Regular rotation of drivers, tires and convoy positions - Tread depth measured every ~3500km
- Lifetime extrapolation after 20,292 km - Extrapolated lifetime: : ~ 37,100 km (BRI) to 57,800 km (MIC)

EXPECTED MILEAGE (Ø of most worn axle) [%] (COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)

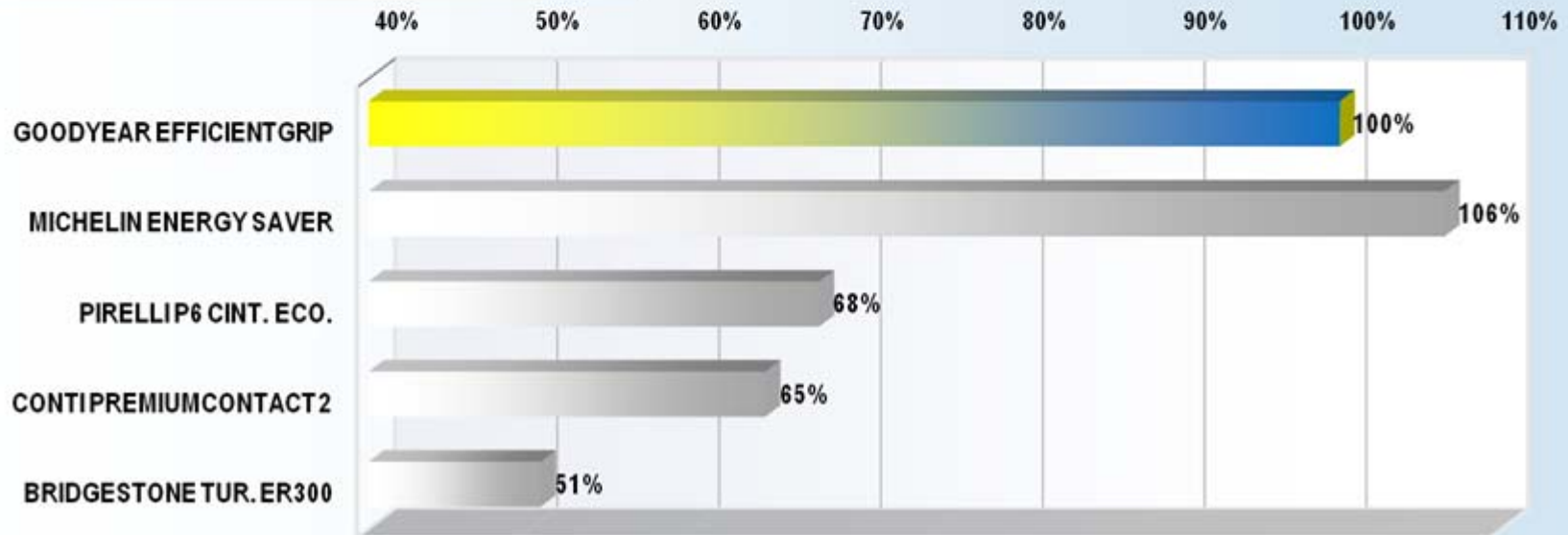


TEST RESULTS

■ TREAD WEAR / SERVICE LIFE TIME

- Identical cars in convoy - Regular rotation of drivers, tires and convoy positions - Tread depth measured every ~3500km
- Lifetime extrapolation after 20,292 km - Extrapolated lifetime: : ~ 69,881 km (BRI) to 146,943 km (MIC)

EXPECTED MILEAGE (Ø of not driven axle) [%] (COMPARED TO GOODYEAR EFFICIENT GRIP, RANKED)

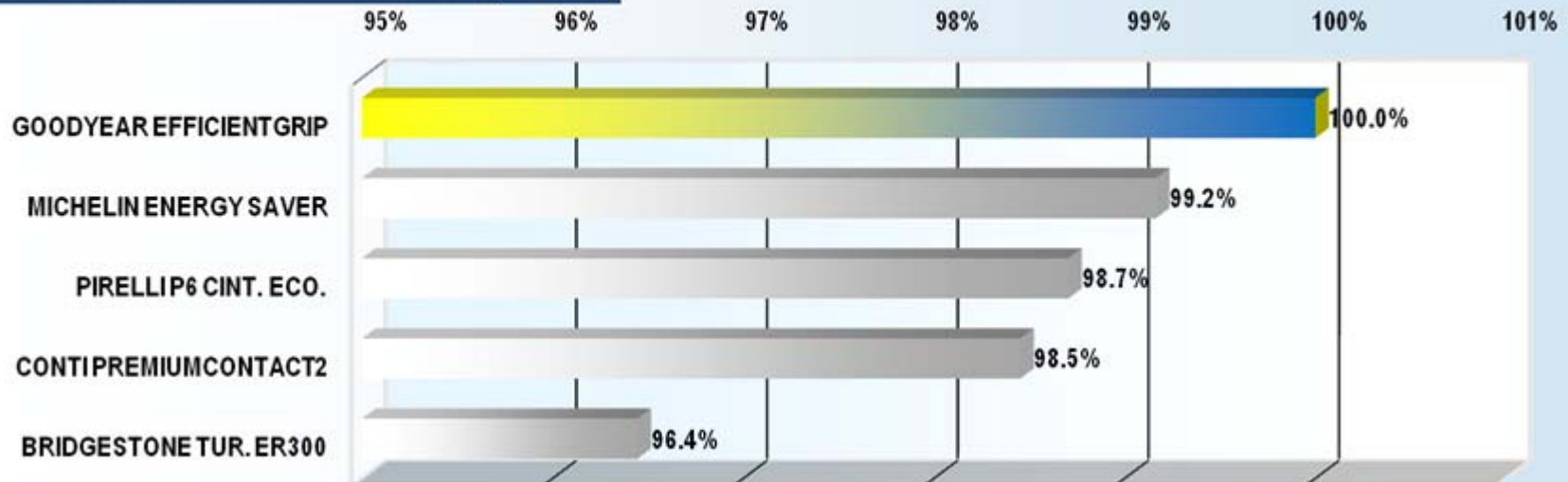


TEST RESULTS

■ FUEL CONSUMPTION

- Tested within the tread wear test over a distance of 20,292 km
- Fuel consumption determined from refueling records (same fuel pump) and board computer readings
- Equal conditions for each tire (same distance with each driver, car and position in convoy)
- Ø Fuel Consumption: 5.83 l / 100 km (GYR) to 6.04 l / 100 km (BRI)

FUEL ECONOMY INDEX [%] COMPARED TO GOODYEAR EFFICIENTGRIP, RANKED



TEST RESULTS

SUMMARY OF RESULTS

- Goodyear EfficientGrip compared to the Ø-performance of the competitors in the test
- Values rounded to the nearest full value (except for fuel consumption)

OVERVIEW OF RESULTS [%]

GOODYEAR EFFICIENTGRIP COMPARED TO Ø OF COMPETITORS

