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## TÜV SÜD Automotive Tire Test 2010

Benchmark Test – Goodyear Eagle F1 Asymmetric 2 - 255/40 R19

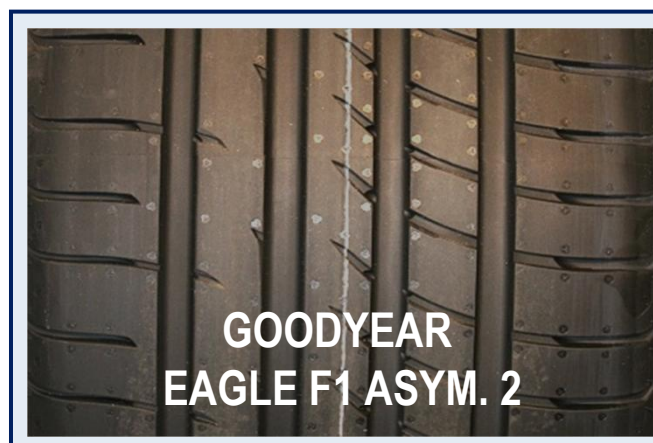
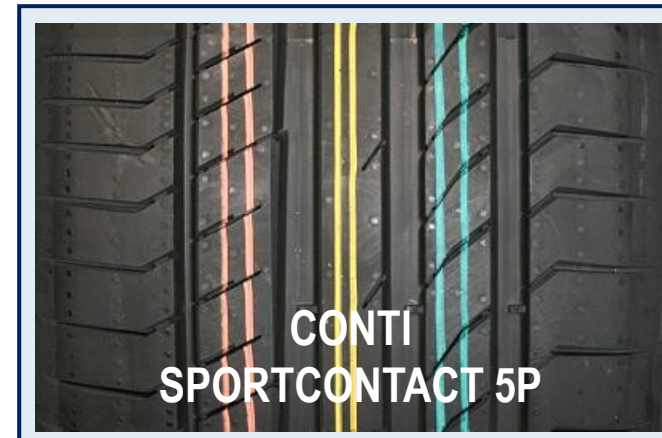
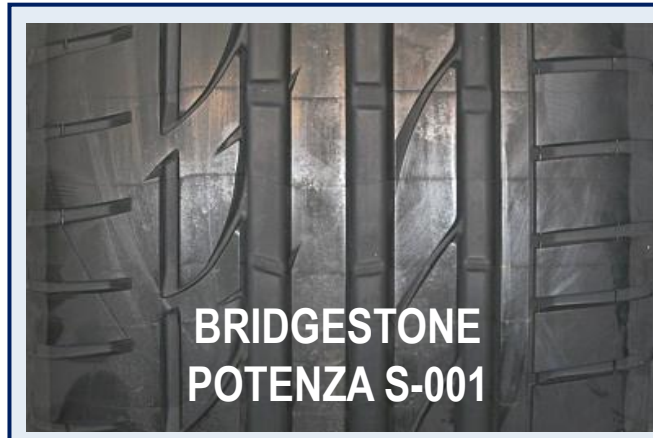
Report No. 76244706-1

Test Period: December 2010

## TIRE DETAILS

**DIMENSION: 255/40 R19 100Y**

**TEST TIRES:**





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## SCOPE OF TESTS & TEST DETAILS

### ■ Scope of tests

- Wet performance: Braking high and low  $\mu$  (from 80-20 km/h), Handling (subjective assessment & lap times)
- Dry performance: Braking (from 100 km/h), Handling (subjective assessment & lap times)
- Fuel economy: Test of rolling resistance (acc. to ISO 28580)

### ■ Test Locations:

- Wet & Dry Performance: Goodyear PG Mireval (F)
- Rolling Resistance: Tire Test Lab of TÜV SÜD Automotive, Garching

### ■ Test Vehicle

- Audi A7 3.0TDi quattro (180 kW)

### ■ Acquisition and Evaluation of Results

- All tests were exclusively carried out by TÜV SÜD Automotive personnel
- Firstly, the performance of each tire is assessed relative to the best tire in each individual test (i.e. the performance of the best tire  $\triangleq$  100%)
- Secondly, the performance of the new Goodyear Eagle F1 Asym. 2 is assessed relative to the average performance of the competitors. In this case, the average performance of the competitors represents the baseline of 100%.
- The conversion of the results into a percentage value is done in a way that >100% always means better, <100% means worse.



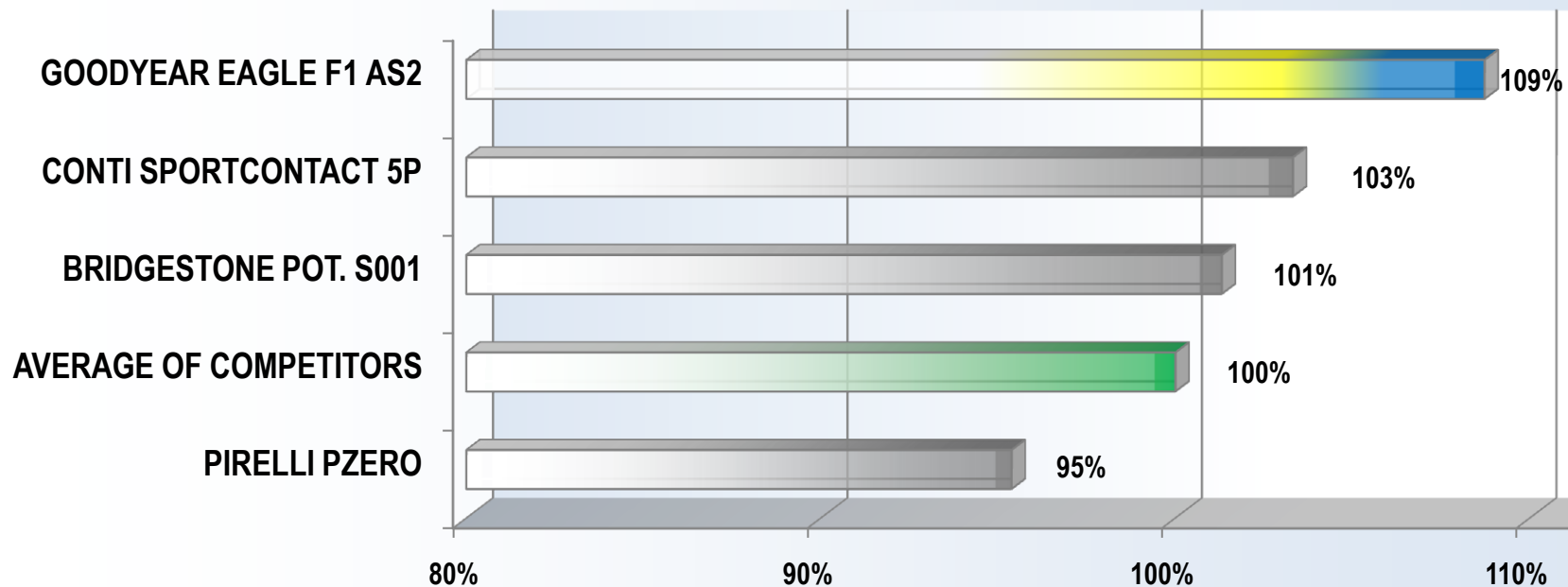
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## TEST RESULTS

### WET BRAKING (LOW $\mu$ )

- ABS-braking on wet asphalt (low  $\mu$ )
- Speed range: 80 to 20 km/h
- Ø Stopping distance Goodyear Eagle F1 AS2: 36.3 m

### WET BRAKING PERFORMANCE, LOW $\mu$ (RELATIVE, AVERAGE OF COMPETITORS = 100%)



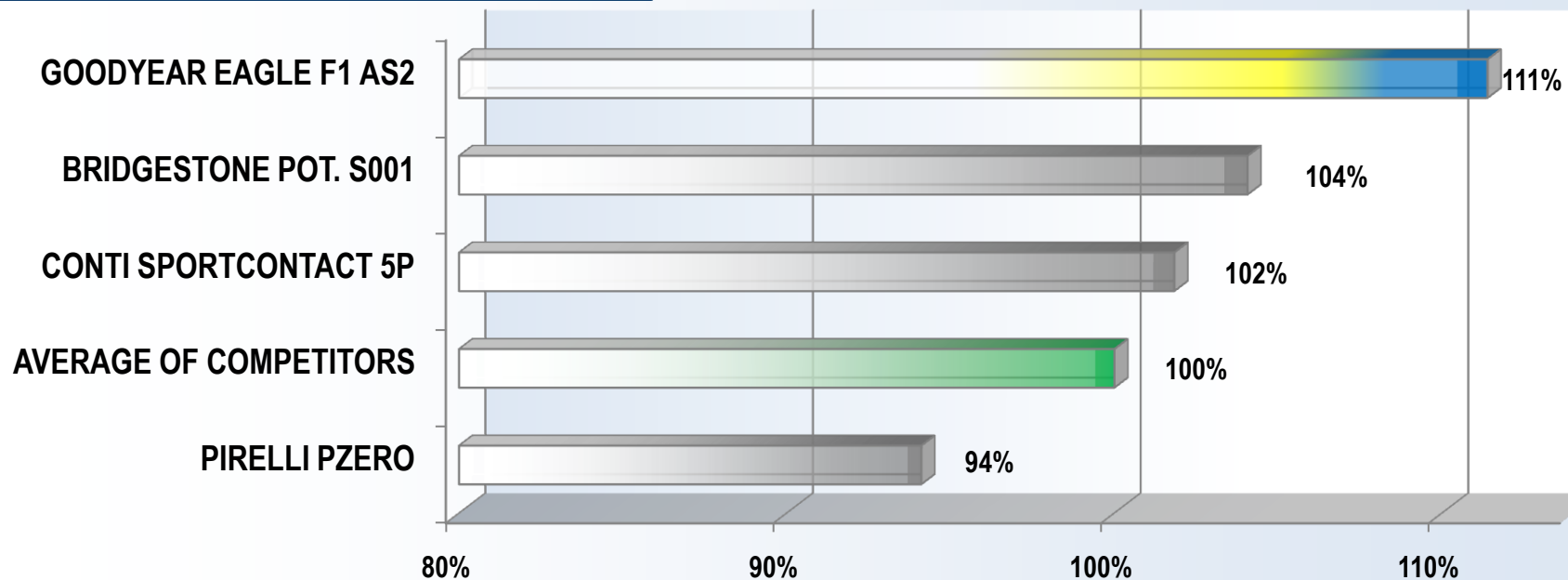


## TEST RESULTS

### WET BRAKING (HIGH $\mu$ )

- ABS-braking on wet asphalt (high  $\mu$ )
- Speed range: 80 to 20 km/h
- Ø Stopping distance Goodyear Eagle F1 AS2: 29.4 m

### WET BRAKING PERFORMANCE, HIGH $\mu$ (RELATIVE, AVERAGE OF COMPETITORS = 100%)



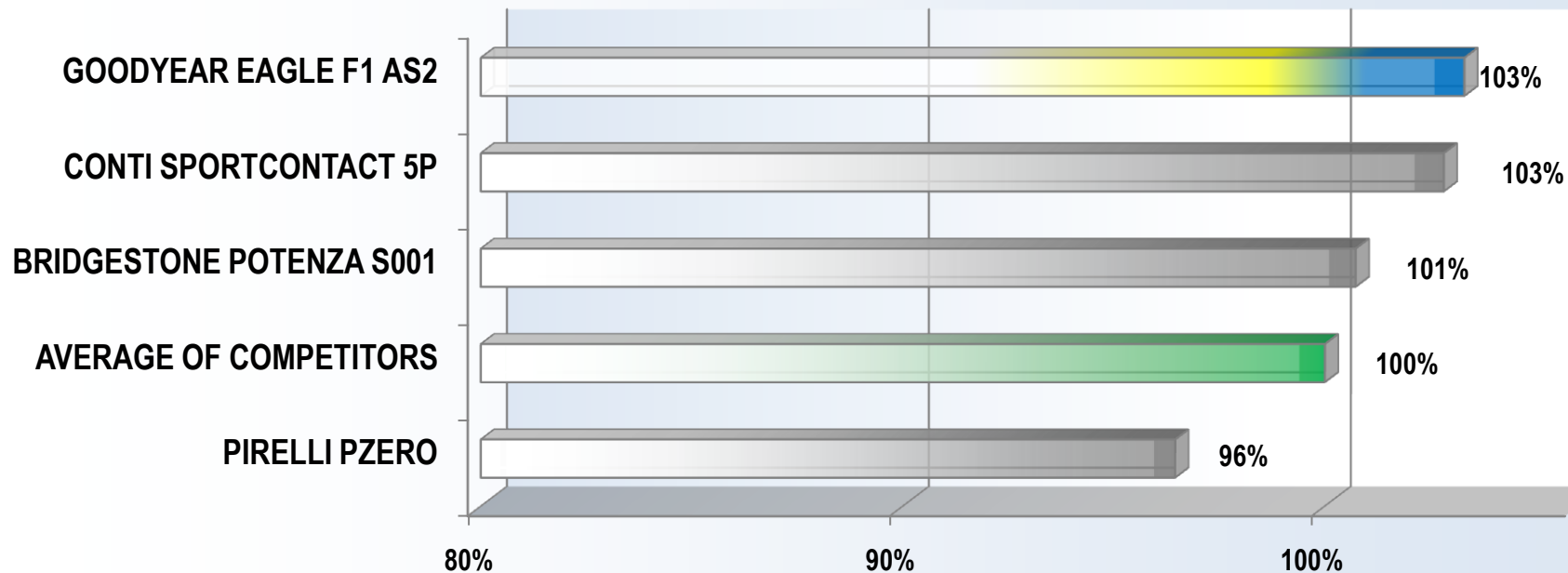


## TEST RESULTS

### WET HANDLING

- ESP off (switch)
- Subjective assessment & Lap times
- Track length 1700m
- Goodyear Eagle F1 AS2: Ø Speed : ~87.5 km/h    Ø Rating: 8.5 (out of max. 10)

### WET HANDLING, OVERALL PERFORMANCE (RELATIVE, AVERAGE OF COMPETITORS = 100%)



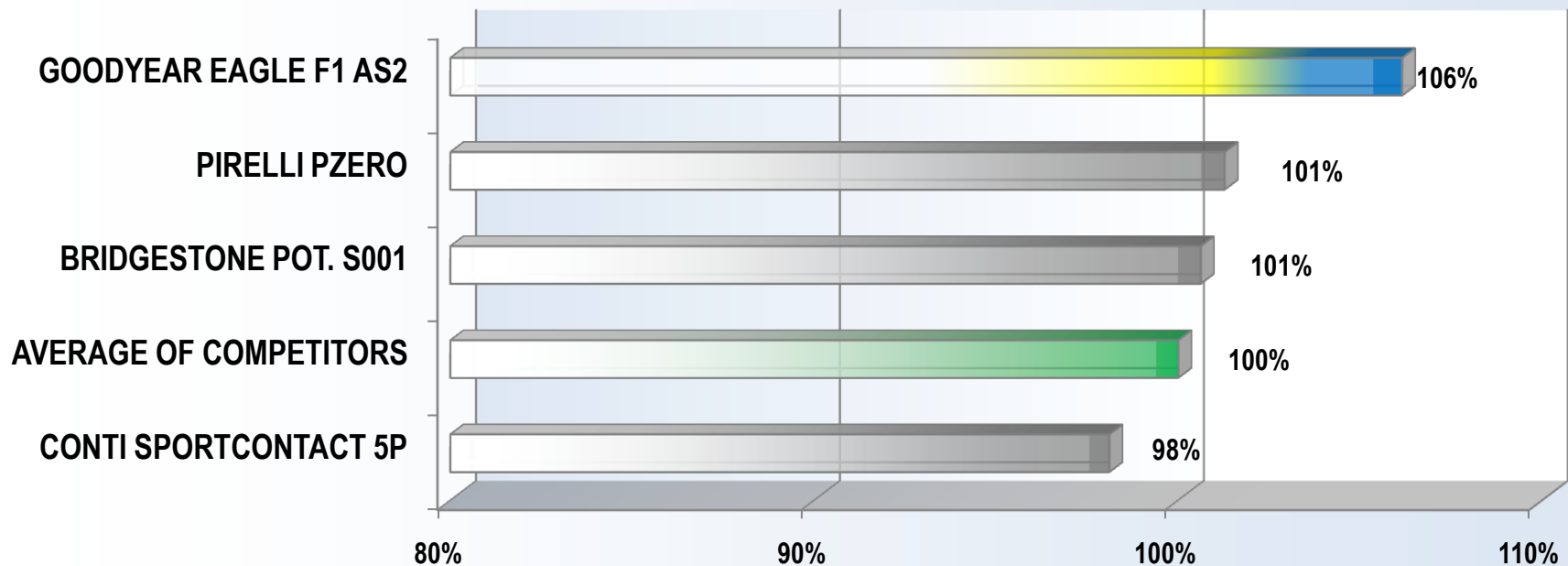


## TEST RESULTS

### ■ DRY BRAKING

- ABS-braking on dry asphalt surface
- Speed range: 100 to 0 km/h
- Ø Stopping distance Goodyear Eagle F1 AS2: 32.6 m

### DRY BRAKING PERFORMANCE (RELATIVE, AVERAGE OF COMPETITORS = 100%)



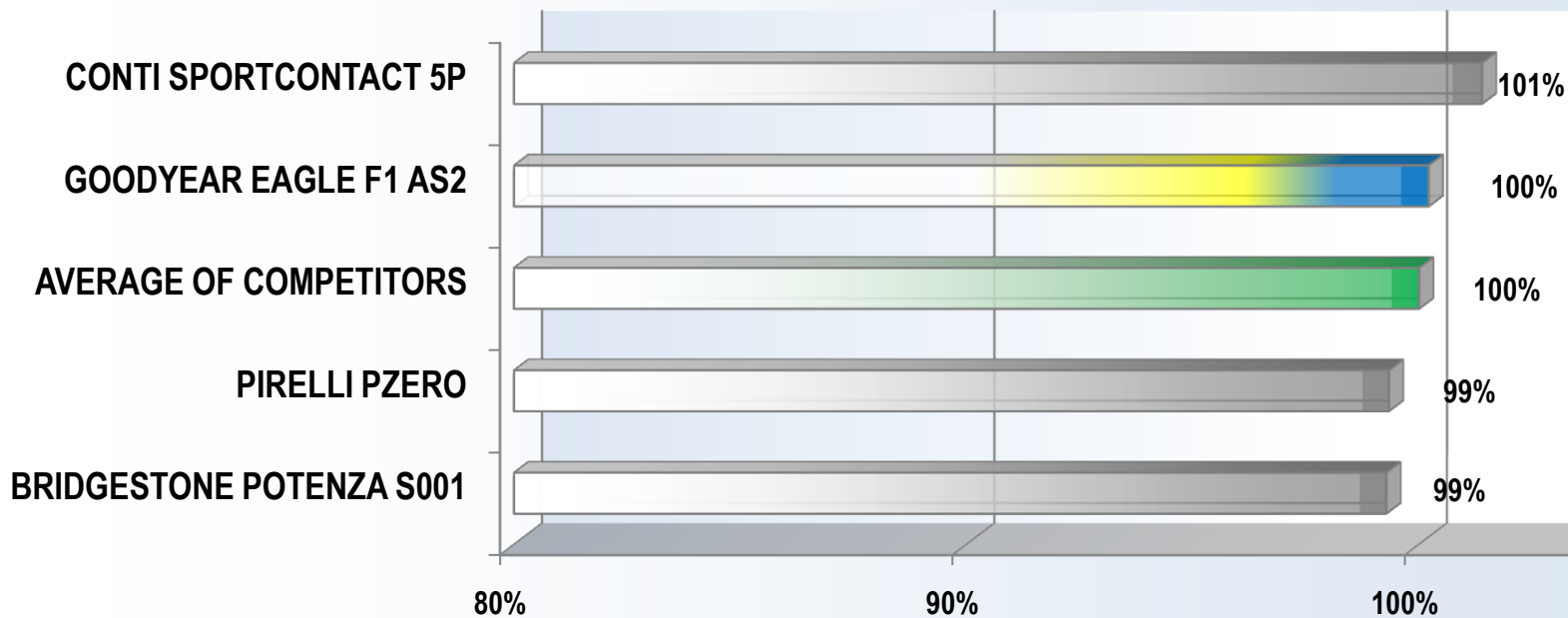


## TEST RESULTS

### ■ DRY HANDLING

- ESP off (switch)
- Subjective assessment & Lap times
- Track length: 3300m
- Goodyear Eagle F1 AS2: Ø speed : ~121.3 km/h
- Ø Rating: 8.4 (out of max. 10)

### DRY HANDLING, OVERALL PERFORMANCE (RELATIVE, AVERAGE OF COMPETITORS = 100%)





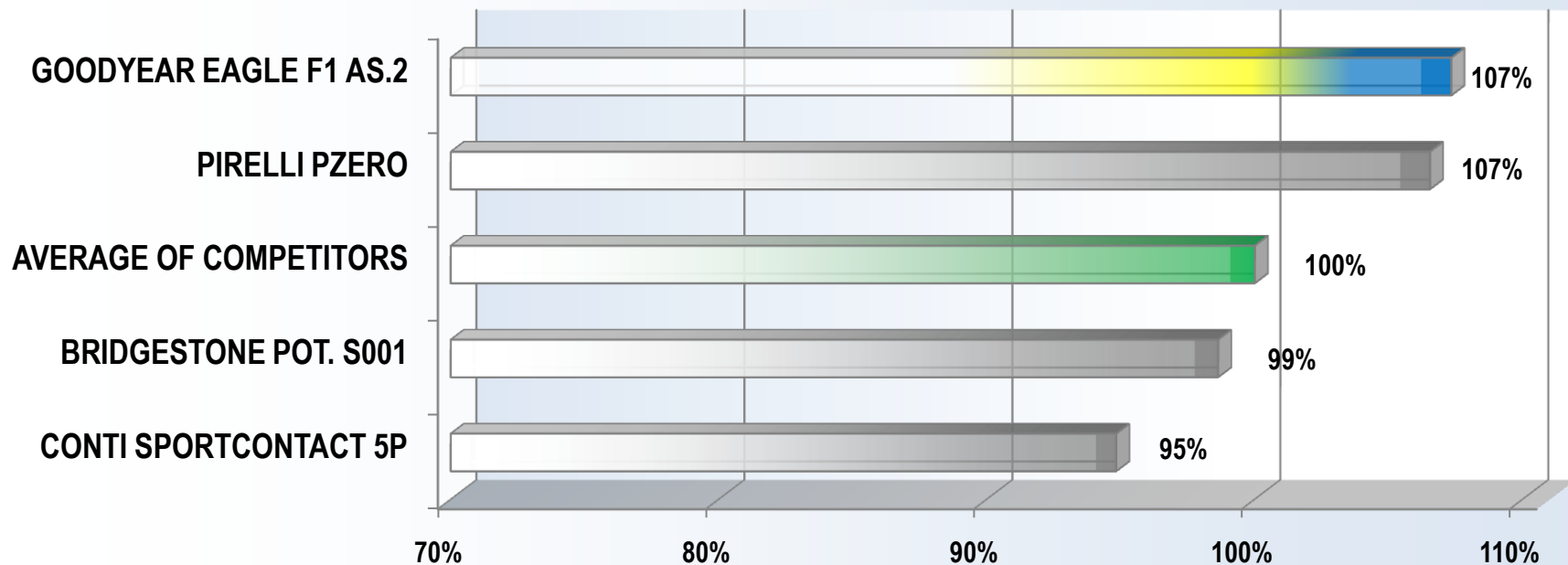


## TEST RESULTS

### ■ ROLLING RESISTANCE

- ISO 28580, electrical power method
- Rolling resistance coefficient of Goodyear Eagle F1 AS2:  $c_R = 9,3 \text{ kg/t}$

### LOW ROLLING RESISTANCE PERFORMANCE (RELATIVE, AVERAGE OF COMPETITORS = 100%)

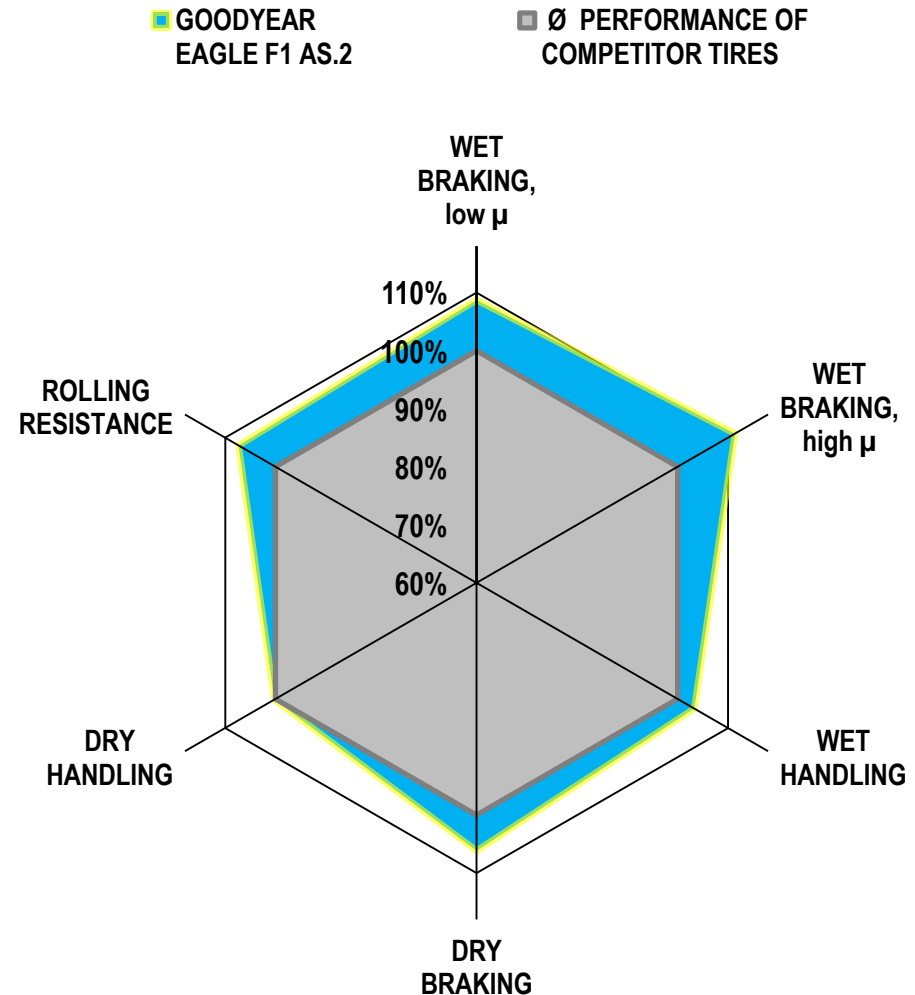




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## SUMMARY OF RESULTS (I.) GY EF1AS2 vs. Competitors

Results of Goodyear EF1 AS2 relative to the average performance of the competitors	GOODYEAR EAGLE F1 AS.2	Ø PERFORMANCE OF COMPETITORS	BEST COMPET.	WORST COMPET.
WET BRAKING, low $\mu$	109%	100%	103%	95%
WET BRAKING, high $\mu$	111%	100%	104%	94%
WET HANDLING	103%	100%	103%	96%
DRY BRAKING	106%	100%	101%	98%
DRY HANDLING	100%	100%	101%	99%
ROLLING RESISTANCE	107%	100%	107%	95%

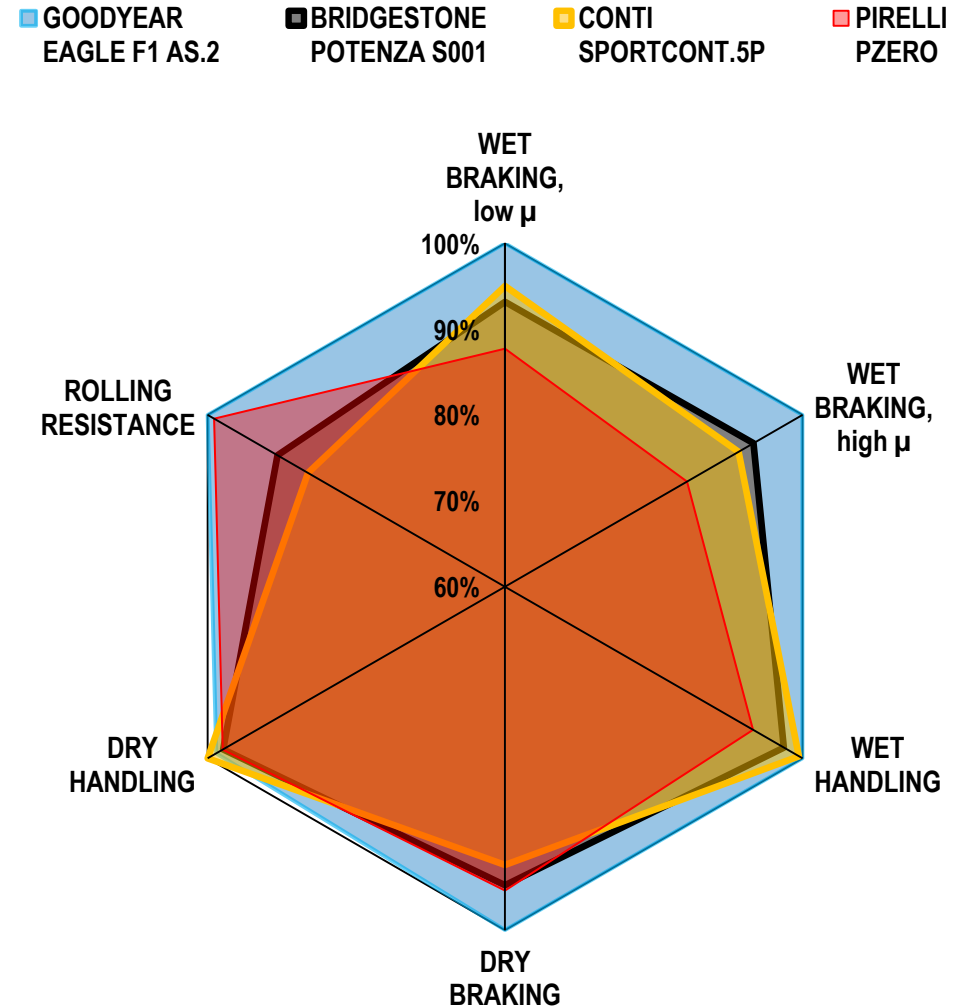




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## SUMMARY OF RESULTS (II.) GY EF1AS2 vs. Competitors

Results relative to the best tire in each test	GOODYEAR EAGLE F1 AS.2	BRIDGESTONE POTENZA S001	CONTI SPORT-CONTACT 5P	PIRELLI PZERO
WET BRAKING, low $\mu$	100%	93%	95%	88%
WET BRAKING, high $\mu$	100%	93%	91%	84%
WET HANDLING	100%	98%	100%	93%
DRY BRAKING	100%	95%	92%	95%
DRY HANDLING	99%	98%	100%	98%
ROLLING RESISTANCE	100%	91%	87%	99%





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## SUMMARY OF RESULTS (III.) Special Considerations

### BRAKING DISTANCES AND REMAINING SPEEDS (corrected over the relative pro-/degression of the control or reference tire)

<b>BRAKING WET, LOW <math>\mu</math></b>	<b>GOODYEAR EAGLE F1 AS.2</b>	<b>AVERAGE OF COMPETITORS</b>	<b>BRIDGESTONE POTENZA S001</b>	<b>CONTI SPORTCONTACT 5P</b>	<b>PIRELLI PZERO</b>
Corrected distance 80 - 20 km/h	36,3	39,5	39,0	38,2	41,4
Remaining speed (when GY is 0):	0,0	22,3	20,9	17,8	28,0
<b>Conclusion 1:</b>	The stopping distance of Goodyear Eagle F1 AS.2 is 3.2 meters shorter than the average stopping distance of the competitors in test.				
<b>Conclusion 2:</b>	When Goodyear Eagle F1 AS.2 has stopped, the average speed of the competitors is still 22 km/h.				

<b>BRAKING WET, HIGH <math>\mu</math></b>	<b>GOODYEAR EAGLE F1 AS.2</b>	<b>AVERAGE OF COMPETITORS</b>	<b>BRIDGESTONE POTENZA S001</b>	<b>CONTI SPORTCONTACT 5P</b>	<b>PIRELLI PZERO</b>
Corrected distance 80 - 20 km/h	29,2	32,6	31,3	31,9	34,6
Remaining speed (when GY is 0):	0,0	25,2	20,5	23,4	31,5
<b>Conclusion 1:</b>	The stopping distance of Goodyear Eagle F1 AS.2 is 3.4 meters shorter than the average stopping distance of the competitors in test.				
<b>Conclusion 2:</b>	When Goodyear Eagle F1 AS.2 has stopped, the average speed of the competitors is still 25 km/h.				

<b>BRAKING DRY</b>	<b>GOODYEAR EAGLE F1 AS.2</b>	<b>AVERAGE OF COMPETITORS</b>	<b>BRIDGESTONE POTENZA S001</b>	<b>CONTI SPORTCONTACT 5P</b>	<b>PIRELLI PZERO</b>
Corrected distance 100 - 0 km/h	32,4	34,4	34,2	35,0	33,9
Remaining speed (when GY is 0):	0,0	23,9	22,8	27,5	21,4
<b>Conclusion 1:</b>	The stopping distance of Goodyear Eagle F1 AS.2 is 2 meters shorter than the average stopping distance of the competitors in test.				
<b>Conclusion 2:</b>	When Goodyear Eagle F1 AS.2 has stopped, the average speed of the competitors is still 24 km/h.				