ACEA - Tyre Performance Study
Extended Program - Tyre Wear

10/02/2022 – 75th GRBP

Extension the previous study GRBP-70-25 (presentation) / GRBP-74-09 (report)
Content

1. Executive Summary
2. Test Program
3. Statistical Analysis & Conclusions
1 – Executive Summary
ACEA Tyre Performance Study presented to GRBP: GRBP-70-25 and GRBP-74-09

Study aimed at determining the inter-dependency between rolling sound, rolling resistance and other main safety performances by carrying out tests according to regulatory or standard procedures.

Performance parameters, i.e., like
- Rolling Sound (coast-by) ➔ Health Protection,
- Rolling Resistance ➔ Environmental Protection (CO2 emission reduction),
- Wet Grip ➔ Safety (braking distance, handling), ...

...affect other performance parameters like
- Longitudinal and Lateral Aquaplaning
- Rolling Sound during Acceleration
- Dry Grip
- Dry Handling
- Wet Performance
- Wear Life
2 - Test Program
Test Program – Tyre Wear

Test sample

6 tyres selected out of 16 tyres from original program
- After Market x 6
- B, C, I, L, O, P

205 55 R16 91H, T, V or W
- Most common size on European after market

Tests Content

Wear
- 6 Vehicles for testing - PEUGEOT 308
- Circuit on open roads 15 000 Km
- The tyres were switched between all cars for each 500 km intervals
- The drivers switched 3 times between cars for each 500 km intervals
- Measurements every 3 000 km

The wear study was carried out from 25/05/21 to 27/07/21
3 - Statistical Analysis & Conclusion
The table summarizing the tests described in UTAC CERAM test report AFFSAS1801813 is updated after integration of the results of wear study.

Selection of 6 tyres references of the 16 initial ones. Selected 6 tyres represent a good mix of rolling sound, wet grip and handling.
Weight and groove evolution of tyres

<table>
<thead>
<tr>
<th>Tyres identification</th>
<th>Tyres position</th>
<th>Mean initial weight (kg)</th>
<th>Mean final weight (kg)</th>
<th>Mean loss (kg)</th>
<th>Mean loss (%)</th>
<th>Mean initial depth (mm)</th>
<th>Mean final depth (mm)</th>
<th>Mean loss (mm)</th>
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Mean values for each axle, with absolute and relative values of weight loss and groove depth loss, at the final state at 15,000 kms.

Axle composed of tyres A and B

\[
\text{Mean\_Weight\_Axle} = \frac{(\text{Weight\_A} + \text{Weight\_B})}{2}
\]

\[
\text{Weight loss} = \text{Mean\_Weight\_Axle (t2)} - \text{Mean\_Weight\_Axle (t1)}.
\]
Spider diagrams – Wear study

> Wear in terms of tread depth is not necessarily correlated with the tyre wear in terms of loss of material
Difficult to draw conclusions on interactions between wear, noise and grip ability

- Tendency is quite clear for 3 of 6 tyres references (B, C, P), with a combined evolution between the three features
- A better grip tends to result in a higher rolling sound emission and increased tyre wear
- This tendency is not that clear for other tested tyres

To confirm the tendency, the study should be extended based on more mileage and for a larger number & variety of tyres. This will strengthen the results of the Principal Component Analysis.

- Study findings are drawn from restricted mileage of 15,000 km & small numbers of tyres selected
THANK YOU FOR YOUR ATTENTION