Tyres in Europe
Tightening of tyre limits and further suggestions for improvement

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Tyre Limits

• 2014: On the agenda GRB: GRB-59-11
• 2016: Proposal for all three tyre limits (stage 3): GRB-62-11-REV.1 (at GRB-64)
• 2017: Revised proposal for all three tyre limits (stage 3 and 4): GRB-66-03
Statistics of C1 label values and (suggested) stages of limit values

C1 tyres
Fuel efficiency class

C1 tyres
Wet grip class

C1 tyres
Noise class
Statistics of C2 label values and (suggested) stages of limit values
Statistics of C3 label values and (suggested) stages of limit values

### C3 Tyres

- **Fuel Efficiency Class**
  - Class 4: 30% of A, 40% of B, 50% of C, 60% of D, 70% of E, 80% of F, 90% of G

- **Wet Grip Class**
  - Class 4: 30% of A, 40% of B, 50% of C, 60% of D, 70% of E, 80% of F, 90% of G

- **Noise Class**
  - Class 4: 30% of A, 40% of B, 50% of C, 60% of D, 70% of E, 80% of F, 90% of G
Developments

• Rapid improvements tyres (noise) 2007-2013
• Premium tyres are dominant in the market (>90% in OEM) (>50% in replacement)
• Premium OEM tyres perform (much) better than aftersales tyres
• Updated Stage 3 limits at 50 Percentile of 2016 data
• New stage 4 limits at 20 Percentile of 2016 data
# Rolling Resistance coefficient (N/kN)

<table>
<thead>
<tr>
<th>Tyre type</th>
<th>Current limit</th>
<th>GRB-62-11-Rev.1</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>10.5</td>
<td>9.0</td>
<td>9.0</td>
<td>8.0</td>
</tr>
<tr>
<td>C2</td>
<td>9.0</td>
<td>8.0</td>
<td>8.0</td>
<td>7.0</td>
</tr>
<tr>
<td>C3</td>
<td>6.5</td>
<td>6.0</td>
<td>6.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>
# Wet Grip index (G)

<table>
<thead>
<tr>
<th>Tyre type</th>
<th>Current limit</th>
<th>GRB-62-11-Rev.1</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>1.1</td>
<td>1.4</td>
<td>1.45</td>
<td>1.6</td>
</tr>
<tr>
<td>C2</td>
<td>0.95</td>
<td>1.25</td>
<td>1.25</td>
<td>1.35</td>
</tr>
<tr>
<td>C3</td>
<td>0.80</td>
<td>1.1</td>
<td>1.1</td>
<td>1.2</td>
</tr>
</tbody>
</table>
## Noise (rolling sound emissions dB(A))

<table>
<thead>
<tr>
<th>Tyre type</th>
<th>Current limit</th>
<th>GRB-62-11-Rev.1</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>70-74</td>
<td>67-71</td>
<td>69-73</td>
<td>67-71</td>
</tr>
<tr>
<td>C2</td>
<td>72</td>
<td>70</td>
<td>71</td>
<td>70</td>
</tr>
<tr>
<td>C3</td>
<td>73</td>
<td>69</td>
<td>71</td>
<td>69</td>
</tr>
</tbody>
</table>
## Potential benefits Stage 3, 4 and Proper tyre pressure in the EU

<table>
<thead>
<tr>
<th></th>
<th>Stage 4 limits</th>
<th>Stage 3 limits</th>
<th>Proper pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel savings [billion l/yr]</td>
<td>17</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>CO2 reduction [Mt/yr]</td>
<td>42</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>Reduced # of fatalities</td>
<td>2567</td>
<td>1300</td>
<td>140</td>
</tr>
<tr>
<td>Reduced # of slight/serious injuries</td>
<td>19631/12353</td>
<td>10000/6000</td>
<td>1100/7000</td>
</tr>
<tr>
<td>Reduced # of annoyed people [millions]</td>
<td>13</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Reduced # of sleep disturbed people [mill.]</td>
<td>6</td>
<td>3</td>
<td>0.6</td>
</tr>
<tr>
<td>Cost savings [billion €/y]</td>
<td>34</td>
<td>17</td>
<td>6</td>
</tr>
</tbody>
</table>
Potential benefits A label tyres for fuel efficiency equivalent Stage 4 (incl. proper tyre pressure)

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Km/year</th>
<th>Fuel savings/year [l]</th>
<th>Cost savings/year [€]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger car (Petrol)</td>
<td>17.000</td>
<td>84 (19)</td>
<td>121 (27)</td>
</tr>
<tr>
<td>Passenger car (Diesel)</td>
<td>35.000</td>
<td>138 (31)</td>
<td>151 (34)</td>
</tr>
<tr>
<td>Delivery van (D)</td>
<td>35.000</td>
<td>183 (41)</td>
<td>201 (45)</td>
</tr>
<tr>
<td>Delivery truck (D)</td>
<td>60.000</td>
<td>388 (70)</td>
<td>427 (78)</td>
</tr>
<tr>
<td>Heavy duty truck (D)</td>
<td>130.000</td>
<td>2150 (414)</td>
<td>2365 (456)</td>
</tr>
<tr>
<td>Bus (D)</td>
<td>50.000</td>
<td>789 (155)</td>
<td>868 (171)</td>
</tr>
</tbody>
</table>
# Clean Vehicle Directive: Potential benefits for car fleets

<table>
<thead>
<tr>
<th>Potential benefits</th>
<th>Dutch National Road Authority (RWS)</th>
<th>Amsterdam</th>
<th>Rotterdam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of vehicles</td>
<td>1575</td>
<td>781</td>
<td>1097</td>
</tr>
<tr>
<td>Vehicle average [ km/yr ]</td>
<td>26.000</td>
<td>17.200</td>
<td>17.300</td>
</tr>
<tr>
<td>Fuel savings (correct pressure) [thousands ltr/yr]</td>
<td>153.000 (26.500)</td>
<td>147.000 (33.000)</td>
<td>200.000 (45.000)</td>
</tr>
<tr>
<td>CO2 reduction [ton/yr]</td>
<td>388 (66)</td>
<td>379 (86)</td>
<td>514 (116)</td>
</tr>
<tr>
<td>Cost savings [€/yr]</td>
<td>237.500 (42.000)</td>
<td>224.000 (51.000)</td>
<td>303.000 (69.000)</td>
</tr>
<tr>
<td>Cost savings per vehicle [€/yr]</td>
<td>150 (36)</td>
<td>287 (65)</td>
<td>277 (63)</td>
</tr>
</tbody>
</table>
Tyre pressure

• 60% of cars have underinflated tyres
• Tyres deflate 3-5% a month
• User manuals prescribe: ‘inflate when cold’
  • Frequency?
  • Warm tyres? What then?
Check je bandenspanning elke 2 maanden.
KiesdeBesteBand.nl
CHECK JE BANDENSPANNING ELKE 2 MAANDEN!

Heb je 15 minuten / 5 km gereden? Tel 0,3 bar op bij de adviesspanning!

En rij veiliger, zuiniger en stiller
KiesdeBesteBand.nl
Tyre pressure monitoring systems (TPMS)
Tyre wear

• In NLs 1 kg per capita, in EU 0.5 Mton/yr
• 40% of total microplastics emissions
• 30% under inflation increases wear by 50%
• No standards/limits for tyre wear
• Wear/Durability/Abrasion rate on tyre label?
• Wheel alignment in periodic road worthiness tests?
## Tyre quality NL 2015 (8 million cars)

<table>
<thead>
<tr>
<th>Passenger cars with at least one tyre</th>
<th>Percentage</th>
<th>Total NLs (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irregular wear or damage</td>
<td>41</td>
<td>3.35</td>
</tr>
<tr>
<td>Damage</td>
<td>25</td>
<td>2.04</td>
</tr>
<tr>
<td>Irregular wear (Ageing) little cracks or tear</td>
<td>10</td>
<td>0.82</td>
</tr>
<tr>
<td>(Ageing) little cracks or tear</td>
<td>26</td>
<td>2.12</td>
</tr>
<tr>
<td>Danger to traffic safety</td>
<td>9</td>
<td>0.74</td>
</tr>
<tr>
<td>Underinflation</td>
<td>&gt;60</td>
<td>5</td>
</tr>
</tbody>
</table>
Tyre label

• Label lacks information
• Not fit for all season and winter tyres
• Market surveillance
• Stakeholder consultation EU on Tyre label Regulation, September
Performances medium car:

- Extra fuel / yr
  - 17000 km/yr
  - € 1,50 / l
- ABS braking
  - 80→0 km/h Wet asphalt
  - 50 → 0 km/h Compacted snow
- Rolling 80 km/h
  - Stand. Asphalt
  - +3dB = 2x as loud
Interaction tyres with roads

Road surface label

ZOAB (PA16): DEEE

Noise reduction in dB(A)
- A: 11 dB(A) or more
- B: 11 to 8 dB(A)
- C: 8 to 5 dB(A)
- D: 5 to 2 dB(A)
- E: 2 to -1 dB(A)
- F: -1 to -4 dB(A)
- G: -4 dB(A) or less

Wet skid resistance in Side Way Force
- A: 1.13 or more
- B: 1.13 to 0.90
- C: 0.90 to 0.77
- D: 0.77 to 0.63
- E: 0.63 to 0.51
- F: 0.51 to 0.37
- G: 0.37 or less

Rolling resistance coefficient in kg/t
- A: 7.5 kg/t or less
- B: 7.5 to 8.0 kg/t
- C: 8.0 to 8.5 kg/t
- D: 8.5 to 9.0 kg/t
- E: 9.0 to 9.5 kg/t
- F: 9.5 to 10.5 kg/t
- G: 10.5 kg/t or more

Lifespan in years
- A: 18 years or more
- B: 15 to 18 years
- C: 12 to 15 years
- D: 10 to 12 years
- E: 8 to 10 years
- F: 4 to 8 years
- G: 0 to 4 years

Version: 10-02-2017
Thank you for your attention!

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