Statistics of tyre noise label values in OEM tyres

Erik de Graaff

Client: Netherlands Ministry of Infrastructure and Environment
Various papers in GRB60 and GRB61 on tyre performance

- High performance tyres ("AAA"-tyres) bring significant financial benefits, both to society and to vehicle owners
- Significant shift in sound emission between 2007 and 2013 due to 2012 limits and label

Question during discussion: What is the difference between OEM (Original Equipment Manufacturer) tyres and replacement tyres?

NL Ministry Infrastructure and Environment asked M+P to Investigate
Questions of the study

1. What kind of tyres are used as OEM tyres

2. Is the noise emission of these OEM tyres different from Replacement tyres?

3. Is there a base for separate noise limits for OEM and Replacement tyres?
EU (EC/661/2009) has time differentiated requirements for OEM tyres and replacement tyres, but ECE (R117) does not.

- ECE may need an administrative change to enable requirements to OEM tyres
  - System of “whole vehicle type approval” could be suited and is currently under discussion in ECE
Work plan

- Starting points:
  - Pilot project
  - C1 only

- What tyres are used as OEM tyres?
  - Show room: ask sales people
  - Own investigation on 500 vehicles (visual inspection)
    - “new” and “young” vehicles (<2 years old)

- Is the noise emission of OEM tyres different from replacement tyres
  - Tyre labels of 500 vehicles above
  - Tyre labels of ‘Top6” tyres versus “other tyres
    - “Top6” brands = the 6 most popular brands
      - Bridgestone, Continental, Dunlop, Goodyear, Michelin, Pirelli
Tyres mounted on new vehicles - interviews with sales persons

- Tyres are a low interest product

- Premium tyre brands
  - Specific tyre brand: very dependent on vehicle brand

- Standard: Summer tyres with a standard tyre size
  - Option: Bigger rims + wider tyres; Winter tyres

- Tyre label info
  - Not available for standard tyres
  - Available for optional tyres
Tyres mounted on new / young vehicles - field research

- New vehicles in the showroom use wider tyres than young vehicles in the street (display vehicles have typically one size wider tyres)
  - Eg: 225/45R17 vs 205/55R16

- High penetration of “Top6” brand tyres
  - 74% in new vehicles in the show room
  - 91% in summer tyres in young vehicles in the street

- Mainly summer tyres;
  - Exceptions:
    - New vehicles: some 4x4 vehicles use M+S tyres
    - Young vehicles: 10% use winter or 4Season tyres (all year)
Tyres mounted on new / young vehicles - field research

- Tyre label information was searched for these new/young vehicles

- This information seems questionable
  - Representativity en Reliability is debatable
  - Tyres of new vehicles are not well in line with tyres of young vehicles (different sizes; different brands)
  - Around 15% of tyre labels could not be traced
  - Some tyres have multiple labels
  - Some tyres on young vehicle are already replacement
  - Some tyres on young vehicles are produced more than 2 years ago and may have updated tyre labels
  - dBase with replacement tyres is not available

- Question: How to proceed?
Tyres mounted on new / young vehicles
how to proceed?

- Top 6 tyres represent 91% of summer tyres in young vehicles
- Refrased question:
  - OEM => “Top6” tyres
  - Replacement tyre => “other” tyres
- Next task: desk study
  - Difference between “Top6” tyres and “other” tyres

![Share of "Top6" brands](chart.png)

- # brands in market: "Top6" brands 96%, "Other" brands 4%
- # summer tyres in young vehicles on the street (NL): "Top6" brands 91%, "Other" brands 9%
Difference between “Top6” tyres and “other” tyres

- Set up of Desk study:
- Tyre data from tyre retail internet site
- Start with 865 C1 tyres in the size 205/55R16
Difference between “Top6” tyres and “other” tyres

- Sound emission “Top6” tyres lower than “other” tyres:
- More low noise tyres: 27% has 1 sound wave (vs 15%)
- Less high noise tyres: 4% has 3 sound waves (vs 15%)
- Average noise emission 0,9 dB(A) lower
The Rolling Resistance and Wet Grip performance of “Top6” tyres is better than that of “other” tyres: (Much more A and B labels)
Discussion and conclusions

- This is a pilot study: (C1 tyres only, zoom in to one size 205/55R16)

1. What kind of tyres are used as OEM tyres
   - Mainly summer tyres of high quality or “premium” brands
   - 91% of summer tyres in young vehicles are from “Top6” brands

2. Is the noise emission of these OEM tyres different from Replacement tyres?
   - The average noise emission of the investigated “Top6” tyres is 0,9 dB(A) lower compared to the “other” tyres

3. Is there a base for separate noise limits for OEM and Replacement tyres?
   - This research corroborates the separation used in EC/661/2009
   - ECE may need system of “whole vehicle type approval” first
Discussion and conclusions

Thank you for your attention!