

Prevention of in use degradation of noise properties of vehicles due to the fitting of replacement tyres

1. Introduction

With the introduction of the GRB informal group's proposal for amendment of Regulation No. 51, the role of the tyres as noise source changes in comparison to the current Regulation No. 51. The current Regulation No. 51 measures at an operation condition which pronounces propulsion noise (WOT and relatively high RPM) and suppresses tyre/road noise (low noise tyres and test track). The new proposal for Regulation No. 51 annex 3 changes over to a more moderate operation condition and realistic tyres. Therefore the test results of annex 3 of the new proposal for Regulation No. 51 contain a substantial part of tyre/road noise. The OICA database shows an average tyre/road noise contribution of 44%.

With strict limits this means that there is an incentive to mount more silent tyres. This means that OEM tyres may be significantly more silent than the standard requirements for all tyres in the tyre noise regulation (TRANS/WP.29/2002/07). This environmental benefit should not evaporate in the aftermarket. Unfortunately there is currently no demand to maintain the noise properties when the original tyres are replaced by after market tyres.

If the above sketched issue is not solved, the expected merits of annex 3 are limited to less than 20% of the life time of the vehicle. The Netherlands believes that this cannot be the intention of a regulation.

2. Potential solution

In the national working group the Netherlands has discussed a potential solution. Several intermediate steps have been identified in a bottom up approach:

1. The final goal is to ensure that replacement tyres have the same or lower noise emission as the original tyres.
2. The maximum allowable tyre noise emission should be enforced by random roadside inspections and yearly workshop inspections.
3. In order to be able to identify the noise emission of the tyre in the workshop or in roadside inspection, the sidewall of the tyre should be marked with a tyre noise index; similar to the current speed index. This tyre noise index should be identified and reported during the type approval of the tyre.
4. The maximum allowable tyre noise index should be recorded in the vehicle identification plate, or the vehicle registration papers. This is the noise emission of the tyre which was used for type approval of the vehicle.
5. During type approval of the vehicle, the noise index of the tyres should be noted in the communication form.
6. During type approval of the vehicle the noise index of the tyres should be determined by measurements rather than by reading it from the tyre sidewall. This ensures the use of lowest achievable noise indices by tyre manufacturers and compensates eventual differences in test tracks.

In regulatory sense, this issue could be solved by introducing a link between the vehicle noise regulation (Regulation No. 51) and the tyre rolling sound Regulation (Regulation No. 117).

The table below shows a principal sketch of four issues to be dealt with. Part of these issues belongs to Regulation No. 51. Other issues could be solved in Regulation No. 117.

| Issue | UNECE Regulation | EU directive |
|---|---|---------------------|
| 1. Tyre noise index on the side wall of the tyre | Regulation No. 117 (TRANS/WP.29/2002/07) | 92/23 |
| 2. Measurement of tyre noise during the vehicle type test | Regulation No. 51 | 70/157 |
| 3. Communication of the value ad 2. in form of a minimally required tyre noise index | Regulation No. 51 | 70/157 |
| 4. Prescription to mount tyres with a noise index equal or better than indicated on the vehicle | Regulation No. 117 New Annex: "Requirements for vehicles with regard to the fitting of their tyres" Or 1997 Agreement? | 92/23 (annex IV) |

4. Proposal

The Netherlands would welcome a principal discussion in GRB on the following questions:

1. should GRB take on board this new in use compliance issue
2. how could this potentially be solved

If necessary the Netherlands is willing to contribute with concrete proposals for amendment.
