Tyre industry note on proposed Legislative Measures to Reduce Noise Emissions
CARS 21 – WG 4

18 March 2011

1. Background

Tyre industry is primarily focused on the risk of inconsistency between the tyre noise provisions newly introduced by the EU Regulation EC 661/2009 going to be applied as of November 2012, and the new measures (test method (B) and limits) for vehicles that would anyhow introduce an indirect double legislative measure on tyres.

Road traffic ranks among the most important sources of environmental noise in urban situation.

The sources of traffic noise emission are:
- The vehicle propulsion noise
- The tyre/road noise.

The tyre industry in several occasions already raised its concerns with the new test method, that increased significantly the tyre contribution to the vehicle noise as far as the new test method is going to coexist with a different test method. Anyhow tyre industry it is not proposing at this stage an amendment of the test procedure in ISO 362.

2. Justification for the tyre industry approach and proposal

The increase of the tyre contribution in the new test method (B) for the vehicle noise, when compared to the current test method (A) for vehicles, is due to:

- Different speed
- Higher accelerations that shall increase tyre torque noise emissions imposing the use of new tyres in the type approval procedure with a minimum tread-depth 80%.
- Fixing the same limits for all the tyre section widths shall lead to a higher tyre contribution when simulating urban drive conditions.

If the target is to improve (reduce) the vehicle sound emissions it is necessary to concentrate on the propulsion noise since the tyres have their own legislation (GSR 661/2009) which shall be submitted to more stringent limits starting from 2012. This inconsistency has not been deepened completely by the assessment on the new test method and limits proposal so far.

For the available vehicle technology, the tyre relative contribution in the overall vehicle noise is important, and is evaluated and admitted by the vehicle industry to 50% in average (30 ⇔ 70) for the M1 category vehicles when applying the new test method (B).
The tyre industry is not requesting to amend the new test procedure “B”, wants to stimulate the consideration of the following aspects:

1. it is evident that both the proposed test and limits are not coherent with the new rolling sound prescriptions for GSR Regulation 661/2009 that will enter into force in 2012 for new tyre types. There is a need for a deep evaluation of coherency between the GSR Regulation 661/2009 (equivalent to UNECE-R117.02) and the new proposal for the vehicle noise emissions. In particular, the proposed limits for vehicles are also based on the expectation that the tyres may have an average noise emission potential reduction of 3.3 - 3.8 dB lower than the current value due to the application of GSR 661/2009, while a reduction in the tyre limits according 661/2009 will not have the same effect in the new test conditions. Two tyres with noise level at 80 km/h can perform at 50 km/h a noise difference of 4 dB. This speed dependence must be taken into consideration. Furthermore, for M1/N1 vehicles, if going to higher acceleration than 2m/s² at least 1 dB torque influence has to be considered for the tyre and in many cases this will not be sufficient;

2. the normal vehicle in use conditions shall be taken into account; in the real world the tyres are not at full tread depth;

3. the impact of stringent limits on the overall vehicle noise cannot disregard the role of all stakeholders in the environmental noise reduction (e.g. road surfaces have a contribution as well);

4. imposing very additional stringent requirements for Rolling Noise to vehicle manufacturers will impact the compromise for the rest of the tyre performances such as rolling resistance, wet grip set by GSR Regulation 661/2009 as well as those indirectly deriving from Regulation 1222/2009.

5. the proposed timeframe for the two step approach appears not coherent with the development of a new more performing tyre (GSR 661/2009 and also 1222/2009) to accompany the vehicle requirements, which should be a minimum of 5 to 6 years.
3. **Proposal**

The Tyre Industry consider that, in order to be in line with EC 661/2009 and UNECE R117 rolling sound emissions for the tyre, the following steps have to be taken into account for the categories M1 vehicle and C1 tyre:

- the current tyre/road sound emission limits is referred to 80kph (according to GSR Regulation 661/2009), while the new method is at 50 kph and in different conditions: this must be considered by “transposing” the limits in the different conditions through a calculation that was already indicated at UNECE (GRB-53-01 (53rd GRB, 15-17 February 2011)
- to take into consideration the sound increase due to the tyre torque effect to the limits deriving from the new method proposed;
- to take into account the tyre section width as already specified in the GSR Regulation 661/2009 on tyre/road sound emission while not introduced within the new method (only referred to vehicle class).

For all the above, in order to avoid tyre double legislation (by EU GSR 661/2009 or UNECE Reg.117.02, and UNECE Reg.51.03), the Tyre Industry is submitting the following proposal to be included in the section regarding “test method description”:

2.2.2 Tyre rolling sound emissions are specified by General Safety Regulation 661/2009/EC. Therefore, the tyres to be used for the test shall be representative for the vehicle and shall be selected by the vehicle manufacturer and recorded in “Vehicle and Test Data”. They shall correspond to one of the tyre sizes designated for the vehicle as original equipment. The tyre is or will be commercially available on the market at the same time as the vehicle. The tyres shall be inflated to the pressure recommended by the vehicle manufacturer for the test mass of the vehicle. The tyres may be of used condition but shall satisfy legal requirements for in-traffic use.

2/ The tyre contribution for overall sound emission being important, this Regulation has taken into account the tyre/road sound emission regulations. Traction tyres, snow tyres and special use tyres according to UNECE Regulation No. 117 as amended by the 02 series of amendments (2010) shall be excluded during type-approval-and COP-measurements on request of the manufacturer.
4. **ETRMA preliminary contribution to the Discussion**

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<th>Question</th>
<th>Response</th>
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<td>• Are changes required to the new test method as discussed in the UN/ECE expert groups, in particular with regard to the choice of tyres?</td>
<td>Tyre noise is already further regulated by the new GSR 661/2009 (UNECE R117.02), the proposed limits would thus mean a double legislation. Thus, to focus the new regulatory framework on vehicle noise, the new test method should be modified to allow the choice of tyres as follows: - tyres “representative for the vehicle” (not of the axle) - tyres that can be of used condition, but that shall satisfy legal requirements for in-traffic use</td>
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<td>• Are the new limit values ambitious enough to achieve the envisaged environmental noise reduction and to decrease the negative impact of noise to citizens?</td>
<td>More than ambitious as far as relevant to tyres: these requirements are not achievable for the complete range of sizes and tire lines which cannot be designed to take into account all the direct provisions of the GSR 661/2009 and the new noise test method conditions and relevant limits for vehicles.</td>
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<td>• What risks could be identified that would prevent industry from achieving the noise targets?</td>
<td>The indirect limits that would be applied on tyres with the new proposed method/limits would mean that noise requirements are unrealistic. Tyre industry needs only one regulation and the certainness of the regulatory framework.</td>
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<td>• What would be a realistic timeframe for industry to comply with a 2 step noise reduction of 2 dB(A) for each step [for heavy duty vehicles 1 dB(A) in the first step] and would there be a need to differentiate further on the basis of certain vehicle categories?</td>
<td>As the new method would imply for the tyre industry (currently in the process of addressing tyre noise in the framework of the method referred by GSR 661/2009) a completely new basic research and development. Furthermore the proposed timeframe for the two step approach appears not coherent with the development of a new more performing tyre (GSR 661/2009 and also 1222/2009) to accompany the vehicle requirements, which should be a minimum of 5 to 6 years</td>
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<td>• Do you agree with the envisaged measures for low noise electric and electric-hybrid vehicles?</td>
<td>No comment</td>
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