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Item 5. of the provisional agenda

Regulation No. 59
(Replacement silencing systems)

Proposal for draft amendments to Regulation No. 59

Transmitted by the expert from the European Association of Automotive Suppliers (CLEPA)

The text reproduced below was prepared by the expert from CLEPA in order to align the requirements on silencers or components filled with absorbing materials of this Regulation to similar requirements proposed for Regulation No. 51. (ECE/TRANS/WP.29/2007/6) The modifications to the current text of the Regulation are marked in ~~double-strikethrough~~ or **bold** characters.

A. PROPOSAL

Paragraph 6.4., amend to read:

Additional specifications regarding ~~silencing systems~~ **silencers** or components filled with **absorbing fibrous materials**

When ~~A~~ ~~absorbing fibrous materials maybe~~ ~~are~~ used in ~~silencing systems~~ the construction of **silencers or components ~~only when it is established by appropriate means of suitable measures shall be undertaken at the design and manufacturing or production stages to ensure~~ that the **system efficiency required of the system in traffic conditions on the road** is sufficient to comply with the existing regulations.**

Such a ~~silencing system~~ **silencer or component** shall be considered ~~is deemed to be effective in traffic conditions~~ to be efficient **on the road**

- (a) if the exhaust gases ~~is~~ **are** not in contact with the ~~fibrous~~ **absorbing** materials, or
- (b) if the ~~silencing system~~ **silencer or component** being emptied of its absorbing materials and tested on vehicle ~~in conformity in accordance with the procedures described in Regulation No. 51, annex 3, paragraph 3.1. and 3.2., of Paragraphs 3.1 and 3.2~~ **requirements of Regulation No. 51, Annex 3, paragraphs 3.1. and 3.2.,** the acoustic pressure levels complying with the provisions laid down in paragraph 6.2 above, or
- (c) **if it is approved that the absorbing material as used in the silencer(s) or component(s) of the vehicle presented for type approval is not subject to deterioration in terms of its sound absorbing function.**

This can be achieved by using one of the three tests described in Annex 5, paragraphs 2., 3. and 4. of this Regulation or by removing the fibrous materials from the silencer.

In the case of option (c), a comparison test in accordance with the requirements of Regulation No. 51, Annex 3, paragraphs 3.1. and 3.2., before and after the conditioning according to paragraphs 2., 3. or 4. of Annex 5 to this Regulation, shall be carried out. The result of the comparison shall be valid for generic interpretation. In the case where the result shows that the absorbing material is not subject to deterioration in terms of its sound absorbing function, the result may be used for other silencers being equipped with absorbing material of the same specification.

Absorbing materials are considered to be of the same specifications , if complying with the following characteristics:

- (a) **Type of the material (e.g. basalt wool, biosil wool, glass wool, E-type wool, etc);**
- (b) **Binder material specifications (if applicable);**
- (c) **Average fiber dimensions (thickness, length);**
- (d) **Average bulk material packing density (kg/m³).**

If that condition is not fulfilled, the complete silencing shall be submitted to a conventional conditioning using the installation and procedure described below or one of the two tests described in Regulation No. 51, annex 3, paragraphs 3.1. and 3.2. When the procedure

described in paragraph 6.2.1.2. above is employed, the applicant for approval may ask for the emptying or the conditioning of the original ~~silencing system~~ **silencer or component.**

B. JUSTIFICATION

Exhaust silencers may contain sound absorbing materials, also called fibrous materials. Due to the specification of the material employed, the absorption effectiveness can deteriorate during normal driving use. In order to ensure that silencers with absorbing material used for type approval tests represent a status that is typical for normal use, these silencers should comply with certain conditions, mainly by mandatory preconditioning.

Currently applied material specifications are different from the ones applied in the past. Modern absorbing materials do not typically show deterioration in terms of sound absorption anymore. While the preconditioning of muffler systems with absorbing material requires manpower and the use of test facilities, these tests do not provide additional information.

It would therefore be appropriate to include, in the requirements for the conditioning of silencers with absorbing material, the possibility to refrain from conditioning each individual silencer. Instead, a generic test, proving that a specific material is not subject to deterioration, should be applicable. This finding can subsequently be transposed to other mufflers containing absorbing material of the same specification.

Taking into account the considerations mentioned above, paragraph 6.4. of Regulation No. 59 should be amended as proposed.
