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Item 7. of the provisional agenda

REGULATION No. 90 (Replacement brake linings)

Proposal for draft amendments to Regulation No. 90

Submitted by the expert from the Federation of European Manufacturers of
Friction Materials (FEMFM)

The text reproduced below was prepared by the expert from FEMFM to insert into Regulation No. 90 new performances requirements for brake linings. It is mainly based on a document without a symbol (informal document No. GRRF-61-22), distributed during the sixty-first GRRF session (see report ECE/TRANS/WP.29/GRRF/61, para. 18).

The modifications to the current text of the Regulation are marked in **bold** characters.

A. PROPOSAL

Paragraphs 5.2.1. and 5.2.2., amend to read (including the insertion of a new footnote */):

"5.2.1. Replacement brake lining assemblies for vehicles of categories M₁, M₂ and N₁

At least one set of replacement brake lining assemblies, representing the type of lining to be approved, shall be installed and tested in at least one vehicle which is representative of the vehicle type for which approval is sought, according to the prescriptions of Annex 3 and shall satisfy the requirements stated in this annex. The representative vehicle(s) shall be selected from among the application range using a worst case analysis */. For speed sensitivity and cold performance equivalence, one of the two methods described in Annex 3 shall be used.

5.2.2. Replacement brake lining assemblies and replacement drum brake linings for vehicles of categories M₃, N₂ and N₃

At least one set of replacement brake lining assemblies or replacement drum brake linings, representing the type of lining to be approved, shall be installed and tested in at least one vehicle respectively brake which is representative of the vehicle type for which approval is sought, according to the prescriptions of Annex 4, using one of the two methods described in paragraph 1. (vehicle test) or in paragraph 2. (inertia dynamometer test) and shall satisfy the requirements stated in this annex. The representative vehicle(s) or brake(s) shall be selected from among the application range using a worst case analysis */."

Paragraph 5.2.5., amend to read (with a reference to the same footnote */):

"5.2.5. Replacement brake lining assemblies for vehicles of category L

At least one set of replacement brake lining assemblies, representing the type of lining to be approved, shall be installed and tested in at least one vehicle which is representative of the vehicle type for which approval is sought, according to the prescriptions of Annex 7 and shall satisfy the requirements stated in this annex.

*/ **Worst case analysis must include the following technical characteristics (as a minimum) of each vehicle type in the application range:**

- (a) **Rotor diameter**
- (b) **Rotor thickness**
- (c) **Ventilated or solid rotor**
- (d) **Piston diameter**
- (e) **Tyre dynamic radius**
- (f) **Vehicle mass**
- (g) **Axle mass and percentage of braking effort of the axle**
- (h) **Maximum speed of the vehicle**

The testing conditions shall be specified in the test report.

The representative vehicle(s) shall be selected from among the application range using a worst case analysis */."

B. JUSTIFICATION

The goal of UNECE Regulation No. 90 is to guarantee the brake performance, and thus the safety of the vehicles throughout their entire life.

The current text of the Regulation is subject to a variety of interpretations about the amount of testing required for the approval of a wide range of replacement brake pads.

Therefore, this proposal for amendment aims at:

1. clarifying the necessity of using worst case analysis to define the "representative vehicle" (Traditional Technical Services have understood "representative" as worst case, but clarification seems to be necessary).
2. clarifying the necessity of a real test (vehicle test or bench test) for each type approval process, thus avoiding the so called "grandfathering approach" that tries to reduce the amount of testing driven by purely economical interests.

The proposal has been widely discussed in the ad-hoc working group and is supported by this group.
