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PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 101
(CO₂ and fuel consumption)

Submitted by the expert from the European Commission (EC)

Note: The text reproduced below was prepared by the expert from the European Commission in order to insert vehicles of category N₁ into the scope of Regulation No. 101 regarding the measurement of CO₂ emissions and fuel consumption. The modifications to the current text of the Regulations are marked in **bold** characters.

Note: This document is distributed to the Experts on Pollution and Energy only.

A. PROPOSAL

Paragraph 1., amend to read (footnote 1/ not amended):

"1. SCOPE

This Regulation applies to vehicles of categories M₁ and N₁ 1/ with regard to:

- (a) the measurement of the emission of carbon dioxide (CO₂) and fuel consumption and/or to the measurement of electric energy consumption and electric range of vehicles powered by an internal combustion engine only or by a hybrid electric power train,**
- (b) and to the measurement of electric energy consumption and electric range of vehicles powered by an electric power train only.**

It does not apply to a category N₁ vehicle if both:

- (a) the engine type fitted to that type of vehicle has received type-approval pursuant to Regulation No. 49, and**
- (b) the total annual worldwide production of N₁ vehicles of the manufacturer is less than 2,000 units."**

Insert new paragraphs 2.7. and 2.8., to read:

"2.7. "Lorry" means a motor vehicle of category N₁ which is designed and constructed exclusively or principally for conveying goods.

2.8. "Van" means a lorry with the cab integrated into the body."

Paragraphs 2.7. to 2.16. (former), renumber as paragraphs 2.9. to 2.18.

Paragraph 3.3., amend to read:

"3.3. A vehicle, representative of the vehicle type to be approved, shall be submitted to the technical services responsible for conducting approval tests. **For M₁ and N₁ vehicles, type-approved with respect to their emissions according to Regulation No. 83, the technical service will check during the test that this vehicle**, if powered by an internal combustion engine only or by a hybrid electric power train, conforms to the limit values applicable to that type, as described in Regulation No. 83."

Paragraph 5.2.1., amend to read:

"5.2.1. The emissions of CO₂ and fuel consumption shall be measured according to the test procedure described in annex 6. **Vehicles which do not attain the acceleration and maximum speed values required in the test cycle must be operated with the accelerator control fully depressed until they once again reach the required operating curve. Deviations from the test cycle must be recorded in the test report.**"

Paragraphs 7.1. to 7.1.3., amend to read (inserting a reference to new footnote 4/):

"7.1. Vehicles powered by an internal combustion engine only, except vehicles equipped with a periodically regenerating emission control system

The type approval can be extended to vehicles from the same type or from a different type differing with regard to the following characteristics of annex 4 if the CO₂ emissions measured by the technical service do not exceed **the type approved value** by more than 4 per cent **for vehicles of category M₁ and 6 per cent for vehicles of category N₁**:

7.1.1. **Reference mass.**

7.1.2. Maximum authorized mass.

7.1.3. Type of bodywork:

(a) **for M₁: saloon, hatchback, station wagon, coupé, convertible, multipurpose vehicle 4/**

(b) **for N₁: lorry, van."**

Insert new footnote 4/, to read:

"4/ **As defined in Annex 7 to the Consolidated Resolution on the Construction of Vehicles (R.E.3) (TRANS/WP.29/78/Rev.1/Amend.2).**"

Paragraph 7.2., amend to read:

"7.2. Vehicles powered by an internal combustion engine only and equipped with a periodically regenerating emission control system

The type approval can be extended to vehicles from the same type or from a different type, differing with regard to the characteristics of annex 4, given in paragraphs 7.1.1. to 7.1.5. above, but not exceeding the family characteristics of annex 10, if the CO₂ emissions measured by the technical service do not exceed **the type approved value** by more than 4 per cent **for vehicles of category M₁ and 6 per cent for vehicles of category N₁**, and where the same K_i factor is applicable.

The type approval can be extended also to vehicles from the same type, but with a different K_i factor, if the corrected CO₂ value measured by the technical service does not exceed **the type approved value** by more than 4 per cent **for vehicles of category M₁ and 6 per cent for vehicles of category N₁.**"

Paragraphs 7.4. to 7.4.3., amend to read:

"7.4. Vehicles powered by a hybrid electric power train

The type approval can be extended to vehicles from the same type or from a different type differing with regard to the following characteristics of annex 4 if the CO₂ emissions and the electric energy consumption measured by the technical service do not exceed **the type approved value** by more than 4 per cent **for vehicles of category M₁ and 6 per cent for vehicles of category N₁:**

7.4.1. **Reference mass.**

7.4.2. Maximum authorized mass.

7.4.3. Type of bodywork:

(a) for M1: **saloon, hatchback, station wagon, coupé, convertible, multipurpose vehicle 4/**

(b) for N1: **lorry, van."**

Insert new paragraphs 7.5. to 7.6.3., to read:

"7.5. **Extension of approval of vehicles of category N₁ within a family, if powered by an internal combustion engine only or by a hybrid electric power train**

7.5.1. **For vehicles of category N₁ that are approved as members of a vehicle family using the procedure in paragraph 7.6.2., the type-approval can be extended to vehicles from within the same family only if the technical service estimates that the fuel consumption of the new vehicle does not exceed the fuel consumption of the vehicle on which the family's fuel consumption is based.**

Approvals may also be extended to vehicles which:

- (a) **are up to 110 kg heavier than the family member tested, provided that they are within 220 kg of the lightest member of the family,**
- (b) **have a lower overall transmission ratio than the family member tested due solely to a change in tyre sizes, and**
- (c) **conform with the family in all other respects.**

7.5.2. For vehicles of category N_1 that are approved as members of a vehicle family using the procedure in paragraph 7.6.3., the type-approval can be extended to vehicles from within the same family without additional testing only if the technical service estimates that the fuel consumption of the new vehicle falls within the limits made up of those two vehicles in the family that have the lowest and the highest fuel consumption, respectively.

7.6. Approval of vehicles of category N_1 within a family, if powered by an internal combustion engine only or by a hybrid electric power train

Vehicles of category N_1 can be approved within a family as defined in paragraph 7.6.1. using one of the two alternative methods described in paragraphs 7.6.2. and 7.6.3.

7.6.1. N_1 vehicles may be grouped together into a family for the purposes of this Regulation if the following parameters are identical or within the specified limits:

7.6.1.1. Identical parameters are:

- (a) manufacturer and type as defined in annex 4, item 2.,
- (b) engine capacity,
- (c) emission control system type,
- (d) fuel system type as defined in annex 4, item 6.7.2.

7.6.1.2. The following parameters have to be within the following limits:

- (a) transmission overall ratios (no more than 8 per cent higher than the lowest) as defined in annex 4, item 6.10.3.,
- (b) reference mass (no more than 220 kg lighter than the heaviest),
- (c) frontal area (no more than 15 per cent smaller than the largest),
- (d) engine power (no more than 10 per cent less than the highest value).

7.6.2. A vehicle family, as defined in paragraph 7.6.1., can be approved with CO₂ emission and fuel consumption data that are common to all members of the family. The technical service must select for testing the member of the family which the service considers to have the highest CO₂ emission. The measurements are performed as described in paragraph 5. and annex 6, and the results according to the method described in paragraph 5.5. are used as type-approval values that are common to all members of the family.

7.6.3. Vehicles that are grouped in a family as defined in paragraph 7.6.1. can be approved with individual CO₂ emission and fuel consumption data for each of the family members. The technical service selects for testing the two vehicles, which the service considers to have the highest and the lowest CO₂ emissions respectively. The measurements are performed as described in paragraph 5. and annex 6. If the manufacturer's data for these two vehicles falls within the tolerance limits described in paragraph 5.5., the CO₂ emissions declared by the manufacturer for all members of the vehicle family can be used as type-approval values. If the manufacturer's data do not fall within the tolerance limits, the results according to the method described in paragraph 5.5. are used as type-approval values and the technical service shall select an appropriate number of other family members for additional tests."

Annex 4,

The title, amend to read (inserting a new reference to footnote 6/):

"COMMUNICATION 6/"

Insert new footnote 6/, to read:

"6/ For vehicles that are approved within a family according to paragraph 7.6., this Communication must be supplied for each individual member of the vehicle family."

Item 6.3., amend to read (inserting a new reference to footnote 7/):

"6.3. Type of body:

6.3.1. For M₁: saloon, hatchback, station wagon, coupé, convertible, multipurpose vehicle 2/ 7/

6.3.2. For N₁: lorry, van. 2/"

Insert new footnote 7/, to read:

"7/ As defined in Annex 7 to the Consolidated Resolution on the Construction of Vehicles (R.E.3) (TRANS/WP.29/78/Rev.1/Amend.2)."

Item 7., amend to read:

"7. Type-approval values."

B. JUSTIFICATION

The purpose of the amendment proposed to Regulation No. 101 is to include the measurement of CO₂ emissions and fuel consumption of N₁ vehicles.
