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ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

Working Party on the Construction of Vehicles

DRAFT SUPPLEMENT 2 TO REGULATION No. 85

(Measurement of the net power)

Note: The text reproduced below was adopted by the Administrative Committee (AC.1) of the amended 1958 Agreement at its sixth session, following the recommendation by the Working Party at its one-hundred-and-twelfth session. It is based on document TRANS/WP.29/R.810 as amended (TRANS/WP.29/566, paras. 69 and 131). In addition, editorial corrections have been incorporated.

Paragraph 3.4., should be deleted.

Paragraph 5.2.3., amend to read:

"5.2.3. The fuel used shall be the following:"

Insert new paragraphs 5.2.3.1. to 5.2.3.4., to read:

"5.2.3.1. For positive ignition engines fuelled with petrol:

The fuel used shall be the one available on the market. In any case of dispute, the fuel shall be one of the reference fuels defined by CEC 2/ for petrol fuelled engines, in CEC documents RF-01-A-84 and RF-01-A-85.

5.2.3.2. For positive ignition engines fuelled with LPG:

5.2.3.2.1. In the case of an engine with self-adaptive fuelling:

The fuel used shall be the one available on the market. In any case of dispute the fuel shall be one of the reference fuels specified in annex 8;

5.2.3.2.2. In the case of an engine without self-adaptive fuelling:

The fuel used shall be the reference fuel specified in annex 8 with the lowest C3-content, or

5.2.3.2.3. In the case of an engine labelled for one specific fuel composition:

The fuel used shall be the fuel for which the engine is labelled.

5.2.3.2.4. The fuel used shall be specified in the test report.

5.2.3.3. For positive ignition engines fuelled with natural gas

5.2.3.3.1. In the case of an engine with self-adaptive fuelling:

The fuel used shall be the one available on the market. In any case of dispute the fuel shall be one of the reference fuels specified in annex 8;

5.2.3.3.2. In the case of an engine without self-adaptive fuelling:

The fuel used shall be the one available on the market with a Wobbe index at least  $52.6 \text{ MJm}^{-3}$  (20°C, 101.3 kPa). In case of dispute the fuel used shall be the reference fuel G20 specified in annex 8, i.e. the fuel with the highest Wobbe Index, or

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5.2.3.3.3. In the case of an engine labelled for a specific range of fuels:

The fuel used shall be the one available on the market with a Wobbe index at least  $52.6 \text{ MJm}^{-3}$  (20°C, 101.3 kPa) if the engine is labelled for the H-range of gases, or at least  $47.2 \text{ MJm}^{-3}$  (20°C, 101.3 kPa) if the engine is labelled for the L-range of gases. In case of dispute the fuel used shall be the reference fuel G20 specified in annex 8 if the engine is labelled for the H-range of gases, or the reference fuel G23 if the engine is labelled for the L-range of gases, i.e. the fuel with the highest Wobbe Index for the relevant range, or

5.2.3.3.4. In the case of an engine labelled for one specific fuel composition:

The fuel used shall be the fuel for which the engine is labelled.

5.2.3.3.5. The fuel used shall be specified in the test report.

5.2.3.4. For compression ignition engines

The fuel used shall be the one available on the market. In any case of dispute, the fuel shall be the reference fuel defined by CEC for compression ignition engines, in CEC document RF-03-A-84."

Paragraphs 6. to 6.2., amend to read:

6. CONFORMITY OF PRODUCTION

The conformity of production procedures shall comply with those set out in the Agreement, Appendix 2 (E/ECE/324 - E/ECE/TRANS/505/Rev.2), with the following requirements:

6.1. Engines approved under this Regulation shall be so manufactured as to conform to the type approved.

6.2. The minimum requirements for conformity of production control procedures set forth in annex 7 to this Regulation shall be complied with.

Paragraphs 6.3. to 6.4.2., should be deleted.

Annex 1,

Insert a new item 1.1., to read:

"1.11. Fuel: leaded petrol / unleaded petrol / diesel oil / LPG / NG 3/"

Items 1.11. to 1.13. (former), renumber as items 1.12. to 1.14.

Insert new items 3.2.3. to 3.2.4.6.3., to read:

- "3.2.3. By LPG fuelling system : yes/no 3/
- 3.2.3. Approval number according to Regulation No. 67 and documentation:
- 3.2.3.2. Electronic Engine Management Control Unit for LPG-fuelling:
- 3.2.3.3. Make(s): . . . . .
- 3.2.3.4. Type: . . . . .
- 3.2.3.5. Emission related adjustment possibilities: . . . . .
- 3.2.3.6. Further documentation:
- 3.2.3.6.1. Description of the safeguarding of the catalyst at switch-over from petrol to LPG or back: . . . . .
- 3.2.3.6.2. System lay-out (electrical connections, vacuum connections compensation hoses, etc): . . . . .
- 3.2.3.6.3. Drawing of the symbol: . . . . .
  
- 3.2.4. By NG fuelling system: yes/no 3/
- 3.2.4.1. Approval number according to Regulation No. 67: . . . . .
- 3.2.4.2. Electronic Engine Management Control Unit for NG-fuelling:
- 3.2.4.3. Make(s): . . . . .
- 3.2.4.4. Type: . . . . .
- 3.2.4.5. Emission related adjustment possibilities: . . . . .
- 3.2.4.6. Further documentation:
- 3.2.4.6.1. Description of the safeguarding of the catalyst at switch-over from petrol to NG or back: . . . . .
- 3.2.4.6.2. System lay-out (electrical connections, vacuum connections compensation hoses, etc.): . . . . .
- 3.2.4.6.3. Drawing of the symbol: . . . . . "

Annex 3, insert a new item 11.3., to read:

- "11.3. Engine fuel requirements: leaded petrol / unleaded petrol / diesel fuel / NG / LPG: 2/: . . . . . "

Insert a new annex 8, to read:

"Annex 8

1. TECHNICAL DATA OF THE LPG REFERENCE FUELS

|                     |             | Fuel A         | Fuel B         | Test method     |
|---------------------|-------------|----------------|----------------|-----------------|
| Composition:        | % vol       | 30 ± 2         | 85 ± 2         | ISO 7941        |
| C3                  | % vol       | balance        | balance        |                 |
| C4                  | % vol       | max 2%         | max 2%         |                 |
| <C3, >C4            | % vol       | 9 ± 3          | 12 ± 3         |                 |
| Olefines            |             |                |                |                 |
| Evaporative residue | ppm         | max 50         | max 50         | NFM 41-015      |
| Water content       |             | none           | none           | visual inspect. |
| Sulphur content     | ppm.mass */ | max 50         | max 50         | EN 24260        |
| Hydrogen sulphide   |             | none           | none           |                 |
| Copper corrosion    | rating      | class 1        | class 1        | ISO 625 1 **/   |
| odour               |             | characteristic | characteristic |                 |
| MON                 |             | min 89         | min 89         | EN 589 Annex B  |

\*/ Value to be determined at standard conditions (293.2 K (20°C) and 101.3 kPa).

\*\*/ This method may not accurately determine the presence of corrosive materials if the sample contains corrosion inhibitors or other chemicals which diminish the corrosivity of the sample to the copper strip. Therefore, the addition of such compounds for the sole purpose of biasing the test method is prohibited.

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2. TECHNICAL DATA OF NG REFERENCE FUELS

|                |                   | G20       | G23       | G25       |
|----------------|-------------------|-----------|-----------|-----------|
| Composition:   |                   |           |           |           |
| CH4            | % vol             | 100       | 92.5      | 86        |
| N2             | % vol             | 0         | 7.5       | 14        |
| Wobbe Index */ | MJ/m <sup>3</sup> | 53.6 ± 2% | 48.2 ± 2% | 43.9 ± 2% |

\*/ Based on the gross calorific value and calculated for 0°C.

The constituting gases of the mixtures shall have at least the following purities:

N<sub>2</sub> : 99%  
CH<sub>4</sub> : 95%      with a total content of hydrogen, carbon monoxide and oxygen below 1 % and a total content of nitrogen and carbon dioxide below 2%

The Wobbe Index is the ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions:

$$W \quad I \quad H_g \frac{\sqrt{\rho_a}}{\sqrt{\rho_g}}$$

with  $H_{gas}$  = calorific value of the fuel in MJ/m<sup>3</sup> at 0°C

•  $\rho_{air}$  = density of air at 0°C

•  $\rho_{gas}$  = density of fuel at 0°C

The Wobbe Index is said to be gross or net according to whether the calorific value uses is the gross or net calorific value."

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