

Commission Regulation (EC) No 692/2008 of 18 July 2008 implementing and amending Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information (Text with EEA relevance)

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*Changes to legislation: There are currently no known outstanding effects for the Commission Regulation (EC) No 692/2008, ANNEX III. (See end of Document for details)*

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## ANNEX III

### VERIFYING AVERAGE EXHAUST EMISSIONS AT AMBIENT CONDITIONS (TYPE 1 TEST)

#### 1. INTRODUCTION

This Annex describes the procedure for the type 1 test verifying the average exhaust emissions at ambient conditions.

#### 2. GENERAL REQUIREMENTS

- 2.1. The general requirements shall be those set out in paragraph 5.3.1 of UN/ECE Regulation 83, with the exceptions described in sections 2.2 to 2.5.
- 2.2. The vehicles that are subject to the test set out in paragraph 5.3.1.1 shall be understood as being all vehicles covered by the scope of this Regulation.
- 2.3. The pollutants specified in paragraph 5.3.1.2.4 shall be understood as being all those covered by Tables 1 and 2 of Annex 1 of Regulation (EC) No 715/2007.
- 2.4. The reference to the deterioration factors from paragraph 5.3.6 in paragraph 5.3.1.4 shall be understood as being a reference to the deterioration factors specified in Annex VII to this Regulation.
- 2.5. The emission limits referred to in paragraph 5.3.1.4 shall be understood as being a reference to the emission limits set out in Table 1 of Annex 1 to Regulation (EC) No 715/2007 for Euro 5 vehicles, and in Table 2 of Annex 1 of Regulation (EC) No 715/2007 for Euro 6 vehicles.
- 2.6. Requirements for vehicles fuelled by LPG, natural gas or biomethane
  - 2.6.1. The general requirements for testing vehicles fuelled by LPG, natural gas or biomethane shall be those set out in section 1 of Annex 12 to UN/ECE Regulation 83.

#### 3. TECHNICAL REQUIREMENTS

- [<sup>F1</sup>3.1. The technical requirements shall be those set out in Annex 4 to UN/ECE Regulation No 83 with the exceptions set out in points 3.2 to 3.12. As from the dates set out in the second sentence of Article 10(6) of Regulation (EC) No 715/2007 the mass of particulate matter (PM) and the number of particles (P) shall be determined according to the emission test procedure set out in Section 6 of Annex 4a to UN/ECE Regulation No 83, series of amendments 05, supplement 07, using the test equipment described in points 4.4 and 4.5 thereof, respectively.]

#### Textual Amendments

- F1** Substituted by [Commission Regulation \(EU\) No 566/2011 of 8 June 2011 amending Regulation \(EC\) No 715/2007 of the European Parliament and of the Council and Commission Regulation \(EC\) No 692/2008 as regards access to vehicle repair and maintenance information \(Text with EEA relevance\).](#)

- 3.2. The reference fuels specified in paragraph 3.2 shall be understood as being a reference to the appropriate reference fuel specifications in Annex IX to this Regulation.

- [<sup>F2</sup>3.3. The exhaust gases mentioned in paragraph 4.3.1.1 shall be understood as including methane, water and hydrogen:

... (HFID). It shall be calibrated with propane gas expressed as equivalent to carbon atoms ( $C_1$ ).

Methane ( $CH_4$ ) analysis:

The analyser shall be either a gas chromatograph combined with a flame ionisation (FID) type or a flame ionisation (FID) with a non-methane cutter type, calibrated with methane gas expressed as equivalent to carbon atoms ( $C_1$ ).

Water ( $H_2O$ ) analysis:

The analyser shall be of the non-dispersive infrared analyzer (NDIR) absorption type. The NDIR shall be calibrated either with water vapour or with propylene ( $C_3H_6$ ). If the NDIR is calibrated with water vapour, it shall be ensured that no water condensation can occur in tubes and connections during the calibration process. If the NDIR is calibrated with propylene, the manufacturer of the analyzer shall provide the information for converting the concentration of propylene to its corresponding concentration of water vapour. The values for conversion shall be periodically checked by the manufacturer of the analyzer, and at least once per year.

Hydrogen ( $H_2$ ) analysis:

The analyser shall be of the sector field mass spectrometry type, calibrated with hydrogen.

Nitrogen oxide ( $NO_x$ ) ....]

#### Textual Amendments

**F2** Substituted by Commission Regulation (EU) No 630/2012 of 12 July 2012 amending Regulation (EC) No 692/2008, as regards type-approval requirements for motor vehicles fuelled by hydrogen and mixtures of hydrogen and natural gas with respect to emissions, and the inclusion of specific information regarding vehicles fitted with an electric power train in the information document for the purpose of EC type-approval (Text with EEA relevance).

[<sup>F3</sup>3.3.a. The pure gases mentioned in paragraph 4.5.1. shall be understood as including propylene:

... propane: (minimum purity 99,5 per cent).

propylene: (minimum purity 99,5 per cent).]

#### Textual Amendments

**F3** Inserted by Commission Regulation (EU) No 630/2012 of 12 July 2012 amending Regulation (EC) No 692/2008, as regards type-approval requirements for motor vehicles fuelled by hydrogen and mixtures of hydrogen and natural gas with respect to emissions, and the inclusion of specific information regarding vehicles fitted with an electric power train in the information document for the purpose of EC type-approval (Text with EEA relevance).

[<sup>F4</sup>3.4. The hydrocarbons ratios in paragraph 8.2 shall be understood as follows:

For petrol (E5) ( $C_1H_{1,89}O_{0,016}$ )	$d = 0,631 \text{ g/l}$
For petrol (E10) ( $C_1H_{1,93}O_{0,033}$ )	$d = 0,645 \text{ g/l}$

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For diesel (B5) (C <sub>1</sub> H <sub>1,86</sub> O <sub>0,005</sub> )	d = 0,622 g/l
For diesel (B7) (C <sub>1</sub> H <sub>1,86</sub> O <sub>0,007</sub> )	d = 0,623 g/l
For LPG (C <sub>1</sub> H <sub>2,525</sub> )	d = 0,649 g/l
For NG/biomethane (CH <sub>4</sub> )	d = 0,714 g/l
For ethanol (E85) (C <sub>1</sub> H <sub>2,74</sub> O <sub>0,385</sub> )	d = 0,932 g/l
For ethanol (E75) (C <sub>1</sub> H <sub>2,61</sub> O <sub>0,329</sub> )	d = 0,886 g/l
For H <sub>2</sub> NG	$d = \frac{9,104 \times A + 136}{1524,152 - 0,583A}$ g/l

A being the quantity of NG/biomethane within the H<sub>2</sub>NG mixture, expressed in per cent volume.]

#### Textual Amendments

- F4** Substituted by [Commission Regulation \(EU\) No 136/2014 of 11 February 2014 amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation \(EC\) No 692/2008 as regards emissions from light passenger and commercial vehicles \(Euro 5 and Euro 6\) and Commission Regulation \(EU\) No 582/2011 as regards emissions from heavy duty vehicles \(Euro VI\) \(Text with EEA relevance\).](#)

- 3.5. From the relevant dates set out in Article 10(4) and 10(5) of Regulation (EC) No 715/2007, paragraph 4.1.2. of Appendix 3 to Annex 4 shall be understood as follows:

Tyres

The choice of tyres shall be based on the rolling resistance. The tyres with the highest rolling resistance shall be chosen, measured according to ISO 28580.

If there are more than three tyre rolling resistances, the tyre with the second highest rolling resistance shall be chosen.

The rolling resistance characteristics of the tyres fitted to production vehicles shall reflect those of the tyres used for type-approval

- 3.6. Paragraph 2.2.2 of Appendix 5 to Annex 4 shall be understood as covering:

... concentrations of CO<sub>2</sub>, CO, THC, CH<sub>4</sub> and NO<sub>x</sub> ...

- 3.7. Paragraph 1 of Appendix 8 to Annex 4 shall be amended to read:

... There is no humidity correction for THC, CH<sub>4</sub> and CO, ...

- [<sup>F23</sup>3.8. The second subparagraph of paragraph 1.3 of Appendix 8 to Annex 4 shall be understood as:

... The dilution factor is calculated as follows:

For each reference fuel, except hydrogen

$$DF = \frac{x}{C_{CO_2} + (C_{HC} + C_{CO}) \times 10^{-4}}$$

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For a fuel of composition  $C_xH_yO_z$ , the general formula is:

$$X = 100 \frac{z}{z + \frac{y}{2} + 3,76 \times \left( x + \frac{y}{4} - \frac{z}{2} \right)}$$

In particular for H<sub>2</sub>NG, the formula is:

$$X = \frac{66,4 \times A}{4,922A + 196,84}$$

For hydrogen, the dilution factor is calculated as follows:

$$DF = \frac{X}{C_{H_2O} - C_{H_2O-DA} + C_{H_2} \times 10^{-4}}$$

For the reference fuels contained in Annex IX, the values of “X” are as follows:

[ <sup>F4</sup> Fuel	X
Petrol (E5)	13,4
Petrol (E10)	13,4
Diesel (B5)	13,5
Diesel (B7)	13,5
LPG	11,9
NG/biomethane	9,5
Ethanol (E85)	12,5
Ethanol (E75)	12,7]

In these equations:

- $C_{CO_2}$  = concentration of CO<sub>2</sub> in the diluted exhaust gas contained in the sampling bag, expressed in per cent volume,
- $C_{HC}$  = concentration of HC in the diluted exhaust gas contained in the sampling bag, expressed in ppm carbon equivalent,
- $C_{CO}$  = concentration of CO in the diluted exhaust gas contained in the sampling bag, expressed in ppm,
- $C_{H_2O}$  = concentration of H<sub>2</sub>O in the diluted exhaust gas contained in the sampling bag, expressed in per cent volume,
- $C_{H_2O-DA}$  = concentration of H<sub>2</sub>O in the air used for dilution, expressed in per cent volume,
- $C_{H_2}$  = concentration of hydrogen in the diluted exhaust gas contained in the sampling bag, expressed in ppm,
- A = quantity of NG/biomethane within the H<sub>2</sub>NG mixture, expressed in per cent volume.]

3.9. An addition to the requirements of Paragraph 1.3. of Appendix 8 to Annex 4, the following requirements shall apply:

Non-methane hydrocarbon concentration is calculated as follows:

$$C_{NMHC} = C_{THC} - (Rf_{CH_4} \times C_{CH_4})$$

where:

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- $C_{\text{NMHC}}$  = corrected concentration of NMHC in the diluted exhaust gas, expressed in ppm carbon equivalent,
- $C_{\text{THC}}$  = concentration of THC in the diluted exhaust gas, expressed in ppm carbon equivalent and corrected by the amount of THC contained in the dilution air,
- $C_{\text{CH}_4}$  = concentration of  $\text{CH}_4$  in the diluted exhaust gas, expressed in ppm carbon equivalent and corrected by the amount of  $\text{CH}_4$  contained in the dilution air,
- $R_{\text{f CH}_4}$  = is the FID response factor to methane as defined in paragraph 2.3 of Annex 4-Appendix 6.

3.10. Paragraph 1.5.2.3 of Appendix 8 to Annex 4 shall be understood as including the following:

$Q_{\text{THC}} = 0,932$	in the case of ethanol (E85)
$[^{F5}Q_{\text{THC}} = 0,886$	in the case of ethanol (E75)]

#### Textual Amendments

- F5** Inserted by [Commission Regulation \(EU\) No 566/2011 of 8 June 2011 amending Regulation \(EC\) No 715/2007 of the European Parliament and of the Council and Commission Regulation \(EC\) No 692/2008 as regards access to vehicle repair and maintenance information \(Text with EEA relevance\)](#).

3.11. References to HC should be understood as references to THC in the following paragraphs:

- (a) Paragraph 4.3.1.1;
- (b) Paragraph 4.3.2;
- (c) Appendix 6 — Paragraph 2.2;
- (d) Appendix 8 — Paragraph 1.3;
- (e) Appendix 8 — Paragraph 1.5.1.3;
- (f) Appendix 8 — Paragraph 1.5.2.3;
- (g) Appendix 8 — Paragraph 2.1.

3.12. References to hydrocarbons should be understood as references to total hydrocarbons in the following paragraphs:

- (a) Paragraph 4.3.1.1;
- (b) Paragraph 4.3.2;
- (c) Paragraph 7.2.8.

3.13. Technical requirements for a vehicle equipped with a periodically regenerating system

3.13.1. The technical requirements shall be those set out in section 3 of Annex 13 to UN/ECE Regulation No 83, with the exceptions described in sections 3.13.2 to 3.13.4.

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- 3.13.2. The reference to Annex 1, items 4.2.11.2.1.10.1 to 4.2.11.2.1.10.4 or 4.2.11.2.5.4.1 to 4.2.11.2.5.4.4 in section 3.1.3 shall be understood as references to items 3.2.12.2.1.11.1 to 3.2.12.2.1.11.4 or 3.2.12.2.6.4.1 to 3.2.12.2.6.4.4 of Appendix 3 to Annex I of Regulation (EC) No 692/2008.
- 3.13.3. At the request of the manufacturer, the test procedure specific to periodically regenerating systems shall not apply to a regenerative device if the manufacturer provides data to the approval authority that, during cycles where regeneration occurs, emissions remain below the standards given in Table 1 or 2 of Annex I to Regulation (EC) No 715/2007 applied for the concerned vehicle category after agreement of the technical service.
- 3.13.4. For a periodically regenerating device, during cycles where regeneration occurs, emission standards can be exceeded. If a regeneration of a pollution control device occurs at least once per type 1 test and the device has already regenerated at least once during vehicle preparation cycle, it shall be considered as a continuously regenerating system which does not require a special test procedure.
- [<sup>F5</sup>3.14. As from the dates laid down in Article 2 of Commission Directive 2008/89/EC<sup>(1)</sup> the daytime running lamps of the vehicle as defined in Section 2 of UN/ECE Regulation No 48<sup>(2)</sup> shall be switched on during the test cycle. The vehicle tested shall be equipped with the daytime running lamp system that has the highest electrical energy consumption among the daytime running lamp systems, which are fitted by the manufacturer to vehicles in the group represented by the type-approved vehicle. The manufacturer shall supply appropriate technical documentation to the type-approval authorities in this respect.]

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- (1) [<sup>F5</sup>OJ L 257, 25.9.2008, p. 14.]
- (2) [<sup>F5</sup>OJ L 135, 23.5.2008, p. 1.]

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#### **Textual Amendments**

- F5** Inserted by Commission Regulation (EU) No 566/2011 of 8 June 2011 amending Regulation (EC) No 715/2007 of the European Parliament and of the Council and Commission Regulation (EC) No 692/2008 as regards access to vehicle repair and maintenance information (Text with EEA relevance).



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