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**COMMISSION DIRECTIVE 1999/100/EC
of 15 December 1999**

adapting to technical progress Council Directive 80/1268/EEC relating to the carbon dioxide emissions and the fuel consumption of motor vehicles

(Text with EEA relevance)

(OJ L 334, 28.12.1999, p. 36)

Corrected by:

► **C1** Corrigendum, OJ L 163, 4.7.2000, p. 38 (1999/100/EC)



COMMISSION DIRECTIVE 1999/100/EC
of 15 December 1999

adapting to technical progress Council Directive 80/1268/EEC relating to the carbon dioxide emissions and the fuel consumption of motor vehicles

(Text with EEA relevance)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers ⁽¹⁾, as last amended by Directive 98/91/EC of the European Parliament and of the Council ⁽²⁾, and in particular Article 13(2) thereof,

Having regard to Council Directive 80/1268/EEC of 16 December 1980 relating to the carbon dioxide emissions and the fuel consumption of motor vehicles ⁽³⁾, as last amended by Commission Directive 93/116/EC ⁽⁴⁾, and in particular Article 3 thereof,

Whereas:

- (1) Directive 80/1268/EEC is one of the separate Directives of the EC type-approval procedure which was established by Directive 70/156/EEC. Consequently, the provisions laid down in Directive 70/156/EEC relating to vehicle systems, components and separate technical units apply to this Directive.
- (2) In Directive 98/69/EC of the European Parliament and Council of 13 October 1998 relating to measures to be taken against air pollution from motor vehicles and amending Council Directive 70/220/EEC ⁽⁵⁾, the type I test cycle for emission measurement was amended by abolishing the initial 40 seconds of engine idle time. It is necessary to align the test cycle for the measurement of CO₂ emissions and fuel consumption in Directive 80/1268/EEC accordingly.
- (3) With a view to the monitoring of CO₂ emissions in the framework of the Community strategy to reduce CO₂ emissions of passenger cars, it is appropriate to introduce into Directive 80/1268/EEC new technical requirements regarding the measurement of CO₂ emissions and fuel consumption for the EC type-approval of gas-fuelled vehicles (LPG and NG). In this respect, it is appropriate to follow the technical requirements adopted by the United Nations Economic Commission for Europe in its Regulation No 101 ⁽⁶⁾.
- (4) The measures provided for in this Directive are in accordance with the opinion of the Committee for Adaptation to Technical Progress established by Directive 70/156/EEC,

HAS ADOPTED THIS DIRECTIVE:

Article 1

Annexes I and II to Directive 80/1268/EEC are hereby amended in accordance with the Annex to this Directive.

Article 2

1. With effect from 1 January 2000, Member States may not, on grounds relating to the emission of carbon dioxide or to fuel consumption:

- refuse, in respect of any given type of motor vehicle, to grant EC type-approval pursuant to Article 4(1) of Directive 70/156/EEC, or

⁽¹⁾ OJ L 42, 23.2.1970, p. 1.

⁽²⁾ OJ L 11, 16.1.1999, p. 25.

⁽³⁾ OJ L 375, 31.12.1980, p. 36.

⁽⁴⁾ OJ L 329, 30.12.1993, p. 39.

⁽⁵⁾ OJ L 350, 28.12.1998, p. 1.

⁽⁶⁾ UN/ECE Regulation No 101 (E/ECE324-E/ECE/TRANS/505/Rev.2 Add. 100), as amended.

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- refuse to grant national type-approval, or
- prohibit the registration, sale or entry into service of vehicles pursuant to Article 7 of Directive 70/156/EEC

if the emission and consumption figures have been determined in accordance with the requirements of Directive 80/1268/EEC, as amended by this Directive.

2. With effect from 1 January 2000, for vehicles in category M₁ as defined in Annex II, Section A, to Directive 70/156/EEC, except vehicles of which the maximum mass exceeds 2 500 kg, and with effect from 1 January 2001 for vehicles in category M₁ the maximum mass of which exceeds 2 500 kg, Member States:

- shall no longer grant EC type-approval pursuant to Article 4(1) of Directive 70/156/EEC, and
- shall refuse to grant national type-approval, except where the provisions of Article 8(2) of Directive 70/156/EEC are invoked,

for a type of vehicle if the emission and consumption figures have not been determined in accordance with the requirements of Directive 80/1268/EEC, as amended by this Directive.

3. With effect from 1 January 2001, for vehicles in category M₁ as defined in Annex II, Section A, to Directive 70/156/EEC, except vehicles of which the maximum mass exceeds 2 500 kg, and with effect from 1 January 2002 for vehicles in category M₁ the maximum mass of which exceeds 2 500 kg, Member States:

- shall consider certificates of conformity which accompany new vehicles in accordance with the provisions of Directive 70/156/EEC to be no longer valid for the purposes of Article 7(1) of that Directive, and
- shall refuse the registration, sale and entry into service of new vehicles which are not accompanied by a certificate of conformity in accordance with Directive 70/156/EEC, except where the provisions of Article 8(2) of Directive 70/156/EEC are invoked,

if the emission and consumption figures have not been determined in accordance with the requirements of Directive 80/1268/EEC, as amended by this Directive.

Article 3

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 31 December 1999. They shall forthwith inform the Commission thereof.

When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the texts of the main provisions of national law which they adopt in the field covered by this Directive.

Article 4

This Directive shall enter into force on the third day following its publication in the *Official Journal of the European Communities*.

Article 5

This Directive is addressed to the Member States.



ANNEX

AMENDMENTS TO ANNEXES I AND II TO DIRECTIVE 80/1268/EEC

Annex I is amended as follows:

1. Item 4.1 is replaced by the following:
 - '4.1. The CO₂ emissions are measured during the test cycle simulating the urban and extra-urban driving patterns as described in Appendix 1 of Annex III to Directive 70/220/EEC, as last amended.'
2. Item 4.4 is replaced by the following:
 - '4.4. **Test fuel**
 - 4.4.1. Petrol and diesel vehicles

The appropriate reference fuels as defined in Annex IX to Directive 70/220/EEC, as last amended, must be used for testing.
 - 4.4.2. LPG and NG-fuelled vehicles

For LPG and NG, that fuel must be used which is chosen by the manufacturer for the measurement of the net power in accordance with Annex I to Directive 80/1269/EEC. The chosen fuel shall be specified in the communication document as defined in Annex II.
 - 4.4.3. For the purpose of calculation mentioned in 4.3, the following fuel characteristics will be used:
 - (a) density: measured on the test fuel according to ISO 3675 or an equivalent method; for petrol and diesel the measured density at 15 °C will be used; for LPG and NG, a reference density will be used, as follows:
 - 0,538 kg/l for LPG
 - 0,654 kg/m³ for NG (*)
 - (b) hydrogen-carbon ratio: fixed values will be used, which are:
 - 1,85 for petrol
 - 1,86 for diesel
 - 2,525 for LPG
 - 4,00 for NG
 - 2,93 for NG (NMHC)

(*) This is the mean value of the G20 and G23 reference fuels at 15 °C.'
3. Item 5.1.4, second paragraph, is replaced by the following:

'At the manufacturer's request, positive ignition engines may be preconditioned according to the procedure prescribed in item 5.2.1 of Annex VI to Directive 70/220/EEC, as last amended. Compression ignition engines may be preconditioned according to the procedure described in item 5.3 of Annex III to the same Directive.'
4. Item 6.1 is replaced by the following:
 - '6.1. **Test cycle**
 - The test cycle is described in Appendix 1 of Annex III to Directive 70/220/EEC, as last amended, including both Part I (urban driving) and Part II (extra-urban driving). All driving prescriptions contained in this Appendix will be applied for the CO₂ measurement.'
5. Item 6.3.1 is replaced by the following:
 - '6.3.1. The load and inertia adjustments of the dynamometer are determined as defined in Annex III to Directive 70/220/EEC, as last amended.'
6. Items 6.3.2 and 6.3.3 are deleted.

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7. Item 6.4.1.3 is amended to read:

‘...’

The dilution factor is calculated as follows:

$$\text{For petrol and diesel: } DF = \frac{13,4}{C_{CO_2} + (C_{HC} + C_{CO})10^{-4}}$$

$$\text{For LPG: } DF = \frac{11,9}{C_{CO_2} + (C_{HC} + C_{CO})10^{-4}}$$

$$\text{For NG: } DF = \frac{9,5}{C_{CO_2} + (C_{HC} + C_{CO})10^{-4}}$$

where: ...’

8. Item 7.2 is replaced by the following:

‘7.2. The fuel consumption, expressed in litres per 100 km (in the case of petrol, LPG or diesel) or in m³ per 100 km (in the case of NG), is calculated by means of the following formulae: (**)

- (a) for vehicles with a positive ignition engine fuelled with petrol:

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$$FC = (0,1154/D) \times [(0,866 \times \text{THC}) + (0,429 \times \text{CO}) + (0,273 \times \text{CO}_2)]$$

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- (b) for vehicles with a positive ignition engine fuelled with LPG:

$$FC_{\text{norm}} = (0,1212/0,538) \times [(0,825 \times \text{THC}) + (0,429 \times \text{CO}) + (0,273 \times \text{CO}_2)]$$

If the composition of the fuel used for the test differs from the composition that is assumed for the calculation of the normalised consumption, on the manufacturer's request a correction factor *cf* may be applied as follows:

$$FC_{\text{norm}} = (0,1212/0,538) \times cf \times [(0,825 \times \text{THC}) + (0,429 \times \text{CO}) + (0,273 \times \text{CO}_2)]$$

The correction factor *cf*, which may be applied, is determined as follows:

$$cf = 0,825 + 0,0693 \times n_{\text{actual}}$$

where:

n_{actual} = the actual H/C ratio of the fuel used

- (c) for vehicles with a positive ignition engine fuelled with NG:

$$FC_{\text{norm}} = (0,1336/0,654) \times [(0,749 \times \text{THC}) + (0,429 \times \text{CO}) + (0,273 \times \text{CO}_2)]$$

- (d) for vehicles with a compression ignition engine:

$$FC = (0,1155/D) \times [(0,866 \times \text{THC}) + (0,429 \times \text{CO}) + (0,273 \times \text{CO}_2)]$$

In these formulae:

FC = the fuel consumption in litre per 100 km (in the case of petrol, LPG or diesel) or in m³ per 100 km (in the case of NG)

THC = the measured emission of total hydrocarbons in g/km

CO = the measured emission of carbon monoxide in g/km

CO₂ = the measured emission of carbon dioxide in g/km

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D = the density of the test fuel at 15 °C.

(**) Repeat for petrol and gaseous fuel in the case of a vehicle that can run either on petrol or on a gaseous fuel. Vehicles that can be fuelled with both petrol and a gaseous fuel, but where the petrol system is fitted for emergency purposes or starting only and of which the petrol tank cannot contain more than 15 litres of petrol will be regarded for the test as vehicles which can only run a gaseous fuel.

9. Item 9.1.1.2.4 is replaced by the following:

‘9.1.1.2.4. The reference fuels described in Annex IX and Annex IXa to Directive 70/220/EEC, as last amended, shall be used for testing.’

Annex II is amended as follows:

1. Item 1.7 of the Addendum is replaced by the following:

‘ 1.7. Test results ⁽⁴⁾

1.7.1. CO₂ mass emissions

1.7.1.1. CO₂ mass emissions (urban conditions): g/km

1.7.1.2. CO₂ mass emissions (extra-urban conditions): g/km

1.7.1.3. CO₂ mass emissions (combined): g/km

1.7.2. Fuel consumptions

1.7.2.1. Fuel consumption (urban conditions): l/100 km ⁽⁵⁾

1.7.2.2. Fuel consumption (extra-urban conditions): l/100 km ⁽⁵⁾

1.7.2.3. Fuel consumption (combined): l/100 km ⁽⁵⁾ ’

2. The following footnotes are added at the end of the Addendum:

‘⁽⁴⁾ Repeat for petrol and gaseous fuel in the case of a vehicle that can run either on petrol or on a gaseous fuel. Vehicles that can be fuelled with both petrol and a gaseous fuel, but where the petrol system is fitted for emergency purposes or starting only and of which the petrol tank cannot contain more than 15 litres of petrol will be regarded for the test as vehicles which can only run a gaseous fuel.

‘⁽⁵⁾ For vehicles fuelled with NG, the unit “l/100 km” is replaced by “m³/100 km”.’