

PROPOSAL FOR AMENDMENTS TO ECE REGULATION No. 49 - REV. 4

(Prepared by the expert from the European Commission).

The proposal concerns the amendment of Annex 4B to ECE Regulation No. 49/Rev.4 (WHDC, global technical regulation (gtr) n° 4) in line with the amendments to gtr n° 4, as proposed in informal document No. GRPE-57-07.

The expert from the European Commission will present the amendments to Annex 4B as an official document at the 58th GRPE meeting.

The proposed amendments refer **mainly** to the following topics:

1- Measurement of engine power

- The basis of specific emissions measurement is uncorrected **net** power.
- The engine shall be submitted for testing with the auxiliaries needed for operating the engine (e.g. fan, water pump, etc.). Auxiliaries, which are only necessary for the operation of the vehicle and which may be mounted on the engine, shall be removed for the emissions test. The auxiliaries will be listed in a new **Appendix 7**.

2- Filter size

- Only the filter size of 47 mm will be used for the collection of particulate matter.

3- Specification of the reference fuel

- The characteristics of the harmonised diesel reference fuel to be used for testing will be described in **Appendix 2**. The characteristics of the fuel used for the test shall be recorded with the results of the test.

4- Additional technical provisions will be included in line with those in the adopted amendment to gtr No. 4

Appendix 2

DIESEL REFERENCE FUEL

Parameter	Unit	Limits <u>1/</u>		Test method <u>5/</u>
		Minimum	Maximum	
Cetene number		45	55	ISO 5165
Density at 15 °C	kg/m ³	835	845	ISO 3675
Distillation:				
- 50 per cent vol.	°C	243	295	ISO 3405
- 95 per cent vol	°C	345	350	
- final boiling point	°C	321	366	
Flash point	°C	50		ISO 2719
Cold filter plugging point	°C		-5	EN 116
Kinematic viscosity at 40 °C	mm ² /s	2.0	4.0	ISO 3104
Polycyclic aromatic hydrocarbons	per cent m/m	2.0	6.0	EN 12916
Conradson carbon residue (10 per cent DR)	per cent m/m		0.2	ISO 10370
Ash content	per cent m/m		0.01	EN ISO 6245
Water content	per cent m/m		0.02	EN-ISO 12937
Sulphur content	mg/kg		15	EN-ISO 14596
Total aromatics	per cent m/m	10	25	EN 12916
Copper corrosion at 50 °C			1	EN ISO 2160
Lubricity (HFRR wear scan diameter at 60 °C)	µm		400	EN ISO 12156
Neutralisation number	mg KOH/g		0.02	
Oxidation stability @ 110°C <u>2/3/</u>	h	20		EN 14112
FAME <u>4/</u>	per cent v/v	4.5	5.5	EN 14078

1/ The values quoted in the specification are "true values". In establishment of their limit values the terms of ISO 4259 "Petroleum products - Determination and application of precision data in relation to methods of test." have been applied and in fixing a minimum value, a minimum difference of 2R above zero has been taken into account; in fixing a maximum and minimum value, the minimum difference is 4R (R = reproducibility).

Notwithstanding this measure, which is necessary for statistical reasons, the manufacturer of fuels should nevertheless aim at a zero value where the stipulated maximum value is 2R and at the mean value in the case of quotations of maximum and minimum limits. Should it be necessary to clarify the question as to whether a fuel meets the requirements of the specifications, the terms of ISO 4259 should be applied.

2/ Even though oxidation stability is controlled, it is likely that shelf life will be limited. Advice shall be sought from the supplier as to storage conditions and life

3/ Oxidation stability can be demonstrated by EN-ISO 12205 or by EN 14112. This requirement shall be revised based on CEN/TC19 evaluations of oxidative stability performance and test limits.

4/ FAME quality according EN 14214 (ASTM D 6751)

5/ The latest version of the respective test method applies

Appendix 7

INSTALLATION OF AUXILIARIES FOR EMISSIONS TEST

<i>Number</i>	<i>Auxiliaries</i>	<i>Fitted for emission test</i>
1	<i>Inlet system</i> <i>Inlet manifold</i> <i>Crankcase emission control system</i> <i>Control devices for dual induction inlet manifold system</i> <i>Air flow meter</i> <i>Air inlet duct work</i> <i>Air filter</i> <i>Inlet silencer</i> <i>Speed-limiting device</i>	 <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i>
2	<i>Induction-heating device of inlet manifold</i>	<i>Yes, if possible to be set in the most favourable condition</i>
3	<i>Exhaust system</i> <i>Exhaust manifold</i> <i>Connecting pipes</i> <i>Silencer</i> <i>Tail pipe</i> <i>Exhaust brake</i> <i>Pressure charging device</i>	 <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>No, or fully open</i> <i>Yes</i>
4	<i>Fuel supply pump</i>	<i>Yes</i>
5	<i>Equipment for gas engines</i> <i>Electronic control system, air flow meter, etc.</i> <i>Pressure reducer</i> <i>Evaporator</i> <i>Mixer</i>	 <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i>
6	<i>Fuel injection equipment</i> <i>Prefilter</i> <i>Filter</i> <i>Pump</i> <i>High-pressure pipe</i> <i>Injector</i> <i>Air inlet valve</i> <i>Electronic control system, sensors, etc.</i> <i>Governor/control system</i> <i>Automatic full-load stop for the control rack depending on atmospheric conditions</i>	 <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i> <i>Yes</i>

<i>Number</i>	<i>Auxiliaries</i>	<i>Fitted for emission test</i>
7	<i>Liquid-cooling equipment</i> <i>Radiator</i> <i>Fan</i> <i>Fan cowl</i> <i>Water pump</i> <i>Thermostat</i>	<i>No</i> <i>No</i> <i>No</i> <i>Yes</i> <i>Yes, may be fixed fully open</i>
8	<i>Air cooling</i> <i>Cowl</i> <i>Fan or Blower</i> <i>Temperature-regulating device</i>	<i>No</i> <i>No</i> <i>No</i>
9	<i>Electrical equipment</i> <i>Generator</i> <i>Coil or coils</i> <i>Wiring</i> <i>Electronic control system</i>	<i>No</i> <i>Yes</i> <i>Yes</i> <i>Yes</i>
10	<i>Pressure charging equipment</i> <i>Compressor driven either directly by the engine and/or by the exhaust gases</i> <i>Charge air cooler</i> <i>Coolant pump or fan (engine-driven)</i> <i>Coolant flow control device</i>	<i>Yes</i> <i>Yes, or test cell system</i> <i>No</i> <i>Yes</i>
11	<i>Anti-pollution device (exhaust after-treatment system)</i>	<i>Yes</i>
12	<i>Starting equipment</i>	<i>Yes, or test cell system</i>
13	<i>Lubricating oil pump</i>	<i>Yes</i>

JUSTIFICATION

It is the intention of the European Commission to apply the provisions of gtr No. 4 in the Euro VI stage for heavy duty vehicles by making reference to ECE Regulation No. 49. In that context, it is necessary to adapt the Regulation with the new harmonised provisions included in the gtr.
