Commission Regulation (EU) No 582/2011 of 25 May 2011 implementing and amending Regulation (EC) No 595/2009 of the European Parliament and of the Council with respect to emissions from heavy duty vehicles (Euro VI) and amending Annexes I and III to Directive 2007/46/EC of the European Parliament and of the Council (Text with EEA relevance)

COMMISSION REGULATION (EU) No 582/2011

of 25 May 2011

implementing and amending Regulation (EC) No 595/2009 of the European Parliament and of the Council with respect to emissions from heavy duty vehicles (Euro VI) and amending Annexes I and III to Directive 2007/46/EC of the European Parliament and of the Council

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 595/2009 of the European Parliament and of the Council of 18 June 2009 on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance information and amending Regulation (EC) No 715/2007 and Directive 2007/46/EC and repealing Directives 80/1269/EEC, 2005/55/EC and 2005/78/EC[(1)], and in particular Articles 4(3), 5(4) and 6(2) and Article 12 thereof,

Having regard to Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (Framework Directive)[(2)], and in particular Article 39(7) thereof,

Whereas:

(1) Regulation (EC) No 595/2009 is one of the separate regulatory acts under the type-approval procedure laid down by Directive 2007/46/EC.

(2) Regulation (EC) No 595/2009 requires new heavy duty vehicles and engines to comply with new emission limits and introduces additional requirements on access to information. The technical requirements will apply from 31 December 2012 for new types of vehicles and from 31 December 2013 for all new vehicles. The specific technical provisions necessary to implement Regulation (EC) No 595/2009 should be adopted. Therefore, the present Regulation aims at setting the requirements necessary for the type-approval of Euro VI specification vehicles and engines.

(3) Article 5(4) of Regulation (EC) No 595/2009 requires the Commission to adopt implementing legislation setting out specific technical requirements relating to the

control of emissions from vehicles. Therefore, it is appropriate to adopt those requirements.

(4) Following the adoption of the main requirements for type-approval of heavy duty motor vehicles and engines by Regulation (EC) No 595/2009, it is necessary to establish administrative provisions for that EC type-approval. Those administrative requirements should include provisions for conformity of production and in-service conformity to ensure continued good performance of production vehicles and engines.

(5) In accordance with Article 6 of Regulation (EC) No 595/2009, it is also necessary to establish requirements to ensure that vehicle on-board diagnostic (hereinafter 'OBD') and vehicle repair and maintenance information is readily accessible, so as to ensure that independent operators have access to such information.

(6) In accordance with Regulation (EC) No 595/2009, the measures provided for in this Regulation regarding access to vehicle repair and maintenance information, information for diagnostic tools and the compatibility of replacement parts with vehicle OBD systems, should not be restricted to emission-related components and systems but cover all aspects of a vehicle subject to type-approval within the scope of this Regulation.

(7) In accordance with Article 5 of Regulation (EC) No 595/2009, the Commission should adopt measures for implementing the use of portable measurement systems for verifying the actual in-use emissions and verifying and limiting the off-cycle emissions. It is therefore necessary to set out, within an appropriate timeframe, provisions on off-cycle emissions both at type-approval and for verifying and limiting the off-cycle emissions in actual use of the vehicles. For the purpose of in-service conformity a procedure using portable emissions measurement systems (hereinafter 'PEMS') should be introduced. The PEMS procedures introduced through this Regulation should be subject to an assessment on the basis of which the Commission should be empowered to amend the in-use provisions.

(8) In accordance with Article 5(4)(d) of Regulation (EC) No 595/2009, it is necessary to establish requirements for type-approval of replacement pollution control devices so as to ensure that they function correctly.

(9) In accordance with Article 5(4)(d) of Regulation (EC) No 595/2009, it is necessary to establish requirements for determining deterioration factors to be used for verifying the durability of engine systems. In addition and subject to the results of research and development on methods for bench ageing of engine systems the Commission should be empowered to amend the provisions for determining deterioration factors.

(10) As provided for by Article 12(1) of Regulation (EC) No 595/2009, new limit values and a measurement procedure for the number of particles emitted should be introduced. The measurement procedure should be based on the work of the Particulate Measurement Programme (PMP) of the United Nations Economic Commission for Europe (hereinafter 'UN/ECE').

(11) In accordance with Article 12(2) of Regulation (EC) No 595/2009, limit values for the World Harmonized Transient Driving Cycle (hereinafter 'WHTC') and the Worldwide Harmonised Steady state Cycle (hereinafter 'WHSC') as specified in Annex 4B to

Regulation No 49 of the Economic Commission for Europe of the United Nations (UN/ECE) — Uniform provisions concerning the measures to be taken against the emission of gaseous and particulate pollutants from compression-ignition engines for use in vehicles, and the emission of gaseous pollutants from positive-ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles[(3)] should be introduced.

(12) The Commission should assess the need for specific measures regarding multi-setting engines, and should be empowered to amend the provisions in accordance with the results of that assessment.

(13) Regulation (EC) No 595/2009 and Directive 2007/46/EC should therefore be amended accordingly.

(14) The measures provided for in this Regulation are in accordance with the opinion of the Technical Committee – Motor Vehicles,

HAS ADOPTED THIS REGULATION:

Article 1

Subject matter

This Regulation lays down measures for the implementation of Articles 4, 5, 6 and 12 of Regulation (EC) No 595/2009.

It also amends Regulation (EC) No 595/2009 and Directive 2007/46/EC.

Article 2

Definitions

For the purposes of this Regulation, the following definitions shall apply:

(1) ‘engine system’ means the engine, the emission control system and the communication interface (hardware and messages) between the engine system electronic control unit or units (hereinafter ‘ECU’) and any other powertrain or vehicle control unit;

(2) ‘service accumulation schedule’ means the ageing cycle and the service accumulation period for determining the deterioration factors for the engine-aftertreatment system family;

(3) ‘engine family’ means a manufacturers grouping of engines which, through their design as defined in Section 6 of Annex I, have similar exhaust emission characteristics; all members of the family shall comply with the applicable emission limit values;

(4) ‘engine type’ means a category of engines which do not differ in essential engine characteristics as set out in Appendix 4 to Annex I;

(5) ‘vehicle type with regard to emissions and vehicle repair and maintenance information’ means a group of vehicles which do not differ in essential engine and vehicle characteristics as set out in Appendix 4 to Annex I;

Changes to legislation: *There are currently no known outstanding effects for the Commission Regulation (EU) No 582/2011. (See end of Document for details)*

(6) ‘deNO$_x$ system’ means a selective catalytic reduction (hereinafter ‘SCR’) system, NO$_x$ adsorber, passive or active lean NO$_x$ catalyst or any other exhaust after-treatment system designed to reduce emissions of oxides of nitrogen (NO$_x$);

(7) ‘exhaust after-treatment system’ means a catalyst (oxidation, 3-way or any other), particulate filter, deNO$_x$ system, combined deNO$_x$ particulate filter, or any other emission reducing device, that is installed downstream of the engine;

(8) ‘on-board diagnostic (OBD) system’ means a system on-board a vehicle or engine which has the capability:

(a) of detecting malfunctions, affecting the emission performance of the engine system; and

(b) of indicating their occurrence by means of an alert system; and

(c) of identifying the likely area of the malfunction by means of information stored in computer memory and communicating that information off-board;

(9) **[**[F1]‘qualified deteriorated component or system’ (hereinafter ‘QDC’) means a component or system that has been intentionally deteriorated such as by accelerated ageing or by having been manipulated in a controlled manner and which has been accepted by the approval authority in accordance with the provisions set out in Annex 9B to UN/ECE Regulation No 49 for use when demonstrating the OBD performance of the engine system;**]**

(10) ‘ECU’ means the engine system electronic control unit;

(11) ‘diagnostic trouble code’ (hereinafter ‘DTC’) means a numeric or alphanumeric identifier which identifies or labels a malfunction;

(12) ‘portable emissions measurement system’ (hereinafter ‘PEMS’) means a portable emissions measurement system meeting the requirements specified in Appendix 2 to Annex II;

(13) ‘malfunction indicator’ (hereinafter ‘MI’) means an indicator which is part of the alert system and which clearly informs the driver of the vehicle in the event of a malfunction;

(14) ‘ageing cycle’ means the vehicle or engine operation (speed, load, power) to be executed during the service accumulation period;

(15) ‘critical emission-related components’ means the following components which are designed primarily for emission control: any exhaust after-treatment system, the ECU and its associated sensors and actuators, and the exhaust gas recirculation (hereinafter ‘EGR’) system including all related filters, coolers, control valves and tubing;

(16) ‘critical emission-related maintenance’ means the maintenance to be performed on critical emission-related components;

(17) ‘emission related maintenance’ means the maintenance which substantially affects emissions or which is likely to affect emissions deterioration of the vehicle or the engine during normal in-use operation;

(18) ‘engine aftertreatment system family’ means a manufacturer’s grouping of engines that comply with the definition of engine family, but which are further grouped into engines utilising a similar exhaust after-treatment system;

***Changes to legislation:** There are currently no known outstanding effects for the Commission Regulation (EU) No 582/2011. (See end of Document for details)*

(19) '**[**[F1]Wobbe index (lower W_l or upper W_u)' means the ratio of the corresponding calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions:

$$W = \frac{H_{gas}}{\sqrt{\frac{\rho_{gas}}{\rho_{air}}}}$$

Which can also be expressed as

$$W = H_{gas} \times \sqrt{\rho_{air} / \rho_{gas}}$$

(20) 'λ-shift factor' (hereinafter 'Sλ') means an expression, specified in Section A.5.5.1 of Appendix 5 of Annex 4 to UNECE Regulation No 49, that describes the required flexibility of the engine management system regarding a change of excess-air-ratio λ if the engine is fuelled with a gas composition different from pure methane;**]**

(21) 'non-emission-related maintenance' means the maintenance which does not substantially affect emissions and which does not have a lasting effect on the emissions deterioration of the vehicle or the engine during normal in-use operation once the maintenance is performed;

(22) 'OBD engine family' means a manufacturer's grouping of engine systems having common methods of monitoring and diagnosing emission-related malfunctions;

(23) 'scan-tool' means an external test equipment used for standardised off-board communication with the OBD system in accordance with the requirements of this Regulation;

(24) 'Auxiliary Emission Strategy' (hereinafter 'AES') means an emission strategy that becomes active and replaces or modifies a base emission strategy for a specific purpose and in response to a specific set of ambient and/or operating conditions and only remains operational as long as those conditions exist;

(25) 'Base Emission Strategy' (hereinafter 'BES') means an emission strategy that is active throughout the speed and load operating range of the engine unless an AES is activated;

(26) 'in-use performance ratio' means the ratio of the number of times that the conditions have existed under which a monitor, or group of monitors, should have detected a malfunction to the number of driving cycles of relevance to that monitor or group of monitors;

(27) 'engine start' consists of the ignition-On, cranking and start of combustion, and is completed when the engine speed reaches 150 min^{-1} below the normal, warmed-up idle speed;

(28) 'operating sequence' means a sequence consisting of an engine start, an operating period (of the engine), an engine shut-off, and the time until the next start, where a specific OBD monitor runs to completion and a malfunction would be detected if present;

(29) 'emission threshold monitoring' means monitoring of a malfunction that leads to an excess of the OBD threshold limits (OTLs) and which consists of either or both of the following: