Directive 2005/55/EC of the European Parliament and of the Council of 28 September 2005 on the approximation of the laws of the Member States relating to 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engines fuelled with natural gas or liquefied petroleum gas for use in vehicles (Text with EEA relevance) (repealed)

ANNEX I

SCOPE, DEFINITIONS AND ABBREVIATIONS, APPLICATION FOR EC TYPE-APPROVAL, SPECIFICATIONS AND TESTS AND CONFORMITY OF PRODUCTION

3.2.2.1. A description of the vehicle type, of the engine-related vehicle...
3.2.3. The manufacturer shall provide a description of the malfunction indicator...
3.3. Application for EC type-approval for a vehicle type with an...
3.3.1. The application for approval of a vehicle with regard to...
3.3.2. It shall be accompanied by the undermentioned documents in triplicate...
3.3.2.1. a description of the vehicle type and of engine-related vehicle...
3.3.3. The manufacturer shall provide a description of the malfunction indicator...
3.4. On-board diagnostic systems
3.4.1. The application for approval of an engine equipped with an...
3.4.1.1. Detailed written information fully describing the functional operation characteristics of...
3.4.1.2. Where applicable, a declaration by the manufacturer of the parameters...
3.4.1.2.1. The manufacturer shall provide the technical service with a description...
3.4.1.3. Where applicable, a description of the communication interface (hardware and messages)...
3.4.1.4. Where appropriate, copies of other type-approvals with the relevant data...
3.4.1.5. If applicable, the particulars of the engine family as referred...
3.4.1.6. The manufacturer must describe provisions taken to prevent tampering with...

4. EC TYPE-APPROVAL
4.1. Granting of a universal fuel EC type-approval
4.1.1. In the case of diesel fuel the parent engine meets...
4.1.2. In the case of natural gas the parent engine should...
4.1.2.1. On the manufacturer's request the engine may be tested on...
4.1.3. In the case of an engine fuelled with natural gas...
4.1.3.1. At the manufacturer's request the engine may be tested on...
4.1.4. In the case of natural gas engines, the ratio of...
4.1.5. In the case of LPG the parent engine should demonstrate...
4.1.5.1. The ratio of emission results ‘r’ shall be determined for...
4.2. Granting of a fuel range restricted EC type-approval
4.2.1. Exhaust emissions approval of an engine running on natural gas...
4.2.1.1. At the manufacturer's request the engine may be tested on...
4.2.1.2. The ratio of emission results ‘r’ shall be determined for...
4.2.1.3. On delivery to the customer the engine shall bear a...
4.2.2. Exhaust emissions approval of an engine running on natural gas...
4.2.2.1. The parent engine shall meet the emission requirements on the...
4.2.2.2. At the manufacturer's request the engine may be tested on...
4.2.2.3. On delivery to the customer the engine shall bear a...
4.3. Exhaust emissions approval of a member of a family
4.3.1. With the exception of the case mentioned in paragraph 4.3.2,...
4.3.2. Secondary test engine
4.4. Type-approval certificate
4.5. At the request of the manufacturer, the type approval of...

5. ENGINE MARKINGS
- 5.1. The engine approved as a technical unit must bear:
  - 5.1.1. the trademark or trade name of the manufacturer of the...
  - 5.1.2. the manufacturer's commercial description;
  - 5.1.3. the EC type-approval number preceded by the distinctive letter(s) or...
  - 5.1.4. in case of an NG engine one of the following...
  - 5.1.5. Labels
    - 5.1.5.1. Content
      Note:
    - 5.1.5.2. Properties
    - 5.1.5.3. Placing
- 5.2. In case of an application for EC type-approval for a...
- 5.3. In case of an application for EC type-approval for a...

6. SPECIFICATIONS AND TESTS
- 6.1. General
  - 6.1.1. Emission control equipment
    - 6.1.1.1. The components liable to affect, where appropriate, the emission of...
  - 6.1.2. The use of a defeat strategy is forbidden.
    - 6.1.2.1. The use of a multi-setting engine is forbidden until appropriate...
  - 6.1.3. Emission control strategy
    - 6.1.3.1. Any element of design and emission control strategy (ECS) liable...
  - 6.1.4. Requirements for base emission control strategy
    - 6.1.4.1. The base emission control strategy (BECS) shall be so designed...
  - 6.1.5. Requirements for auxiliary emission control strategy
    - 6.1.5.1. An auxiliary emission control strategy (AECS) may be installed to...
    - 6.1.5.2. An auxiliary emission control strategy (AECS) that operates within the...
    - 6.1.5.3. An auxiliary emission control strategy (AECS) that operates outside the...
    - 6.1.5.4. As provided for in section 6.1.5.1, the following conditions of use...
    - 6.1.5.5. An auxiliary emission control strategy (AECS) may be installed to...
    - 6.1.5.6. The AECS is activated:
  - 6.1.6. Requirements for torque limiters
    - 6.1.6.1. A torque limiter will be permitted if it complies with...
    - 6.1.6.2. A torque limiter may be installed to an engine, or...
  - 6.1.7. Special requirements for electronic emission control systems
    - 6.1.7.1. Documentation requirements
  - 6.1.8. Specifically for the type-approval of engines according to row A...
    - 6.1.8.1. To verify whether any strategy or measure should be considered...
    - 6.1.8.2. In verifying whether any strategy or measure should be considered...
  - 6.1.9. The transitional provisions for extension of type-approval are given in...
  - 6.1.10. Provisions for electronic system security

Conduct at least 7 tests with the candidate and reference...

ANNEX II

Appendix 1

Appendix 2

ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

Appendix 3

Appendix 4

CHARACTERISTICS OF THE ENGINE-RELATED VEHICLE PARTS

Appendix 5

OBD-RELATED INFORMATION

1. In accordance with the provisions of section 5 of Annex IV to...
   - 1.1. A description of the type and number of the pre-conditioning...
   - 1.2. A description of the type of the OBD demonstration cycle...
   - 1.3. A comprehensive document describing all sensed components with the strategy...

1.3.1. The information required by this section may, for example, be...
1.3.2. The information required by this Appendix may be limited to...
1.3.3. The information required by this section shall be repeated in...

Appendix 6

Information required for roadworthiness testing
A. Measurement of carbon monoxide emissions
3.2.1.6. Normal engine idling speed (including tolerance) … min -1
3.2.1.6.1. High engine idling speed (including tolerance) … min -1
3.2.1.7. Carbon monoxide content by volume in the exhaust gas with...
B. Measurement of smoke opacity
3.2.13. Location of the absorption coefficient symbol (compression ignition engines only):...
4. TRANSMISSION (v)
4.3. Moment of inertia of engine flywheel: …
4.3.1. Additional moment of inertia with no gear engaged: …

ANNEX III

TEST PROCEDURE

1. INTRODUCTION
1.1. This Annex describes the methods of determining emissions of gaseous...
1.2. The test shall be carried out with the engine mounted...
1.3. Measurement principle
1.3.1. ESC Test
1.3.2. ELR test
1.3.3. ETC Test

2. TEST CONDITIONS
2.1. Engine Test Conditions
2.1.1. The absolute temperature (T a) of the engine...
2.1.2. Test Validity
2.2. Engines with charge air cooling
2.3. Engine air intake system
2.4. Engine exhaust system
2.5. Cooling system
2.6. Lubricating oil
2.7. Fuel
2.8 If the engine is equipped with an exhaust aftertreatment system,...
2.8.1. For an exhaust aftertreatment system based on a continuous regeneration...
2.8.2. For an exhaust aftertreatment based on a periodic regeneration process,...

Appendix 1

ESC AND ELR TEST CYCLES

Appendix 2

ETC TEST CYCLE

Appendix 3

A graphical display of the ETC dynamometer schedule is shown...

Appendix 4

MEASUREMENT AND SAMPLING PROCEDURES

Appendix 5

CALIBRATION PROCEDURE

Appendix 6

CARBON FLOW CHECK

ANNEX IV

TECHNICAL CHARACTERISTICS OF REFERENCE FUEL PRESCRIBED FOR APPROVAL TESTS AND TO VERIFY CONFORMITY OF PRODUCTION

ANNEX V

ANALYTICAL AND SAMPLING SYSTEMS

1. DETERMINATION OF THE GASEOUS EMISSIONS
   - 1.1. Introduction
   - 1.2. Description of the analytical system
     - 1.2.1. Components of Figures 7 and 8

EP Exhaust pipe
Exhaust gas sampling probe (Figure 7 only)
SP2 Diluted exhaust gas HC sampling probe (Figure 8 only)...
SP3 Diluted exhaust gas CO, CO2, NOx sampling probe (Figure...
HSL1 Heated sampling line
HSL2 Heated NOx sampling line
SL Sampling line for CO and CO2
BK Background bag (optional; Figure 8 only)
BG Sample bag (optional; Figure 8 CO and CO2 only)...
F1 Heated pre-filter (optional)
F2 Heated filter
P Heated sampling pump
HC
CO, CO2
NO
C Converter
B Cooling bath (optional)
T1, T2, T3 Temperature sensor
T4 Temperature sensor
T5 Temperature sensor
G1, G2, G3 Pressure gauge
R1, R2 Pressure regulator
R3, R4, R5 Pressure regulator
FL1, FL2, FL3 Flowmeter
FL4 to FL6 Flowmeter (optional)
V1 to V5 Selector valve
V6, V7 Solenoid valve
V8 Needle valve
V9, V10 Needle valve
V11, V12 Toggle valve (optional)

   - 1.3. NMHC analysis (NG fuelled gas engines only)
     - 1.3.1. Gas chromatographic method (GC, Figure 9)

Components of Figure 9

PC Porapak column
MSC Molecular sieve column
OV Oven
SLP Sample loop
P Pump
D Dryer
HC
V1 Sample injection valve
V3 Selector valve
V2, V4, V5, V6, V7, V8 Needle valve
R1, R2, R3 Pressure regulator

2.4. Particulate sampling system
2.4.1. Components of Figures 21 and 22
PTT Particulate transfer tube (Figures 21, 22)
SDT Secondary dilution tunnel (Figure 22)
FH Filter holder(s) (Figures 21, 22)
P Sampling pump (Figures 21, 22)
DP Dilution air pump (Figure 22)
FC3 Flow controller (Figures 21, 22)
FM3 Flow measurement device (Figures 21, 22)
FM4 Flow measurement device (Figure 22)
BV Ball valve (optional)
Note:

3. DETERMINATION OF SMOKE
3.1. Introduction
3.2. Full flow opacimeter
3.2.1. Components of Figure 23
EP Exhaust Pipe
OPL Optical Path Length
LS Light source
LD Light detector
CL Collimating lens
T1 Temperature sensor (optional)
3.3. Partial flow opacimeter
3.3.1. Components of Figure 24
EP Exhaust pipe
SP Sampling probe
TT Transfer tube
FM Flow measurement device
MC Measuring chamber
OPL Optical path length
LS Light source
LD Light detector
CL Collimating lens
T1 Temperature sensor
P Sampling pump (optional)

ANNEX VI

Appendix 1

to EC type-approval certificate No … concerning the type approval of a vehicle/separate technical unit/component

1.4. Emission levels of the engine/parent engine :
1.4.1. ESC test:
1.4.2. ELR test:
1.4.3. ETC test:

1.5. Crankcase emissions test results: …

1.6. Carbon monoxide emissions test results

1.7. Smoke opacity test results
- 1.7.1. At steady speeds:
- 1.7.2. Free acceleration tests
  - 1.7.2.1. Engine test in accordance with Section 4.3 of Annex VI...
  - 1.7.2.2. Under free acceleration
    - 1.7.2.2.1. Measured value of the absorption coefficient: … m -1
    - 1.7.2.2.2. Corrected value of the absorption coefficient: … m -1
    - 1.7.2.2.3. Location of the absorption coefficient symbol on the vehicle: …...
  - 1.7.2.3. Vehicle test according to section 3 of Annex VI to...
    - 1.7.2.3.1. Corrected absorption value: … m -1
    - 1.7.2.3.2. Rpm at start: … rpm
- 1.7.3. Stated net maximum power … kW at … rpm
- 1.7.4. Make and type of opacimeter: …
- 1.7.5. Principal characteristics of engine type
  - 1.7.5.1. Engine working principle: four-stroke/two-stroke
  - 1.7.5.2. Number and layout of cylinders: …
  - 1.7.5.3. Cylinder capacity: … cm 3
  - 1.7.5.4. Fuel feed: direct injection/indirect injection
  - 1.7.5.5. Supercharging equipment YES/NO

Appendix 2

OBD RELATED INFORMATION

As noted in Appendix 5 of Annex II to this Directive, the...
Upon request, this appendix will be made available to any...
In compliance with the provisions of section 1.3.3 of Appendix 5 to...
A description of the type and number of the pre-conditioning...

ANNEX VII

EXAMPLE OF CALCULATION PROCEDURE

1. ESC TEST
   - 1.1. Gaseous emissions
     - Calculation of the dry to wet correction factor KW,r (Annex...
     - Calculation of the wet concentrations:
     - Calculation of the NOx humidity correction factor KH,D (Annex III,...
     - Calculation of the emission mass flow rates (Annex III, Appendix...
     - Calculation of the specific emissions (Annex III, Appendix 1, Section...
     - Calculation of the specific NOx emission of the random point...
     - Determination of the emission value from the test cycle (Annex...
     - Comparison of the NOx emission values (Annex III, Appendix 1,...
   - 1.2. Particulate emissions
     - Calculation of GEDF (Annex III, Appendix 1, Sections 5.2.3 and...
     - Calculation of the mass flow rate (Annex III, Appendix 1,...

ANNEX VIII

SPECIFIC TECHNICAL REQUIREMENTS RELATING TO ETHANOL-FUELLED DIESEL ENGINES

In the case of ethanol-fuelled diesel engines, the following specific...

IN ANNEX III, APPENDIX 1:
4.2. Dry/wet correction
4.3. NOx correction for humidity and temperature
4.4. Calculation of the emission mass flow rates

IN ANNEX III, APPENDIX 2:
4.2. The conditions for the test should be arranged so that...
4.3. Calculation of the emission mass flow
4.3.1 Systems with constant mass flow
4.3.1.1. Determination of the background corrected concentrations
4.3.2. Systems with flow compensation
4.4. Calculation of the specific emissions

ANNEX IX

TIME-LIMITS FOR THE TRANSPOSITION OF THE REPEALED DIRECTIVES INTO NATIONAL LAWS

Part A Repealed Directives Directives Official Journal Directive 88/77/EEC L...

ANNEX X

CORRELATION TABLE

(**1**) OJ C 108, 30.4.2004, p. 32.

(**2**) Opinion of the European Parliament of 9 March 2004 (OJ C 102 E, 28.4.2004, p. 272) and Council Decision of 19 September 2005.

(**3**) OJ L 36, 9.2.1988, p. 33. Directive as last amended by the 2003 Act of Accession.

(**4**) OJ L 42, 23.2.1970, p. 1. Directive as last amended by Commission Directive 2005/49/EC (OJ L 194, 26.7.2005, p. 12).

(**5**) OJ L 295, 25.10.1991, p. 1.

(**6**) OJ L 44, 16.2.2000, p. 1.

(**7**) OJ L 107, 18.4.2001, p. 10.

(**8**) OJ L 76, 6.4.1970, p. 1. Directive as last amended by Commission Directive 2003/76/EC (OJ L 206, 15.8.2003, p. 29).

(**9**) OJ L 184, 17.7.1999, p. 23.