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engines fuelled with natural gas or liquefied petroleum gas for use in vehicles (Text with EEA relevance) (repealed)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

1. SCOPE

2. DEFINITIONS AND ABBREVIATIONS
   - 2.1. ‘test cycle’ means a sequence of test points each with...
   - 2.2. ‘approval of an engine (engine family)’ means the approval of...
   - 2.3. ‘diesel engine’ means an engine which works on the compression-ignition...
   - 2.4. ‘gas engine’ means an engine which is fuelled with natural...
   - 2.5. ‘engine type’ means a category of engines which do not...
   - 2.6. ‘engine family’ means a manufacturers grouping of engines which, through...
   - 2.7. ‘parent engine’ means an engine selected from an engine family...
   - 2.8. ‘gaseous pollutants’ means carbon monoxide, hydrocarbons (assuming a ratio of...
   - 2.9. ‘particulate pollutants’ means any material collected on a specified filter...
   - 2.10. ‘smoke’ means particles suspended in the exhaust stream of a...
   - 2.11. ‘net power’ means the power in EC kW obtained on...
   - 2.12. ‘declared maximum power (Pmax)’ means the maximum power in EC...
   - 2.13. ‘per cent load’ means the fraction of the maximum available...
   - 2.14. ‘ESC test’ means a test cycle consisting of 13 steady...
   - 2.15. ‘ELR test’ means a test cycle consisting of a sequence...
   - 2.16. ‘ETC test’ means a test cycle consisting of 1 800...
   - 2.17. ‘engine operating speed range’ means the engine speed range, most...

Appendix 1

PROCEDURE FOR PRODUCTION CONFORMITY TESTING WHEN STANDARD DEVIATION IS SATISFACTORY

This Appendix describes the procedure to be used to verify...

Appendix 2

PROCEDURE FOR PRODUCTION CONFORMITY TESTING WHEN STANDARD DEVIATION IS UNSATISFACTORY OR UNAVAILABLE

This Appendix describes the procedure to be used to verify...

Appendix 3

PROCEDURE FOR PRODUCTION CONFORMITY TESTING AT MANUFACTURER'S REQUEST

This Appendix describes the procedure to be used to verify,...

ANNEX II

Appendix 1

Appendix 2

ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

Appendix 3

Appendix 4

CHARACTERISTICS OF THE ENGINE-RELATED VEHICLE PARTS

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

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

ANNEX IV

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

1.1. DIESEL FUEL If it is required to calculate the thermal...

1.2. Ethanol for diesel engines Cetane improver, as specified by the...

2. NATURAL GAS (NG)

3. LIQUEFIED PETROLEUM GAS (LPG)

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)

DT Dilution tunnel (Figures 11 to 19)
HE Heat exchanger (Figures 16, 17)

2.3. Full flow dilution system

2.3.1. Components of Figure 20

EP Exhaust pipe
PDP Positive displacement pump
CFV Critical Flow Venturi
HE Heat exchanger (optional, if EFC is used)
EFC Electronic flow compensation (optional, if HE is used)
DT Dilution tunnel
DAF Dilution air filter
PSP Particulate sampling probe

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)

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

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

ANNEX VII

EXAMPLE OF CALCULATION PROCEDURE

Calculation of the background corrected concentrations (Annex III, Appendix 2,...
Calculation of the emissions mass flow (Annex III, Appendix 2,...
Calculation of the specific emissions (Annex III, Appendix 2, Section...

3.2. Particulate emissions (diesel engine)
Calculation of the mass emission (Annex III, Appendix 2, Section...
Calculation of the background corrected mass emission (Annex III, Appendix...
Calculation of the specific emission (Annex III, Appendix 2, Section...

3.3. Gaseous emissions (CNG engine)
Calculation of the NOx, correction factor (Annex III, Appendix 2,...
Calculation of the NMHC concentration (Annex III, Appendix 2, Section...
Calculation of the background corrected concentrations (Annex III, Appendix 2,...
For NMHC, the background concentration is the difference between HCconcd...
Calculation of the emissions mass flow (Annex III, Appendix 2,...
Calculation of the specific emissions (Annex III, Appendix 2, Section...

4. λ-SHIFT FACTOR (Sλ)
4.1. Calculation of the λ-shift factor (Sλ)
4.2. Examples for the calculation of the λ-shift factor Sλ
Example G25: CH4 = 86 %, N2 = 14 % (by volume)
Example G2R: CH4 = 87 %, C2H6 = 13 % (by vol)
Example USA: CH4 = 89 %, C2H6 = 4,5 %, C3H8 = 2,3 %,...

ANNEX VIII

SPECIFIC TECHNICAL REQUIREMENTS RELATING TO ETHANOL-FUELLED DIESEL ENGINES

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

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.