[F1ANNEX IX

Textual Amendments

F1 Substituted by Commission Directive 2002/80/EC of 3 October 2002 adapting to technical progress Council Directive 70/220/EEC relating to measures to be taken against air pollution by emissions from motor vehicles (Text with EEA relevance).

A.Specifications of reference fuels for testing vehicles to the emission limits given in row A of the table in section 5.3.1.4 of Annex I — Type I test

1. TECHNICAL DATA ON THE REFERENCE FUEL TO BE USED FOR TESTING VEHICLES EQUIPPED WITH POSITIVE-IGNITION ENGINES

TYPE: UNLEADED PETROL

Parameter	**Unit**	**[a]Limits**		**Test method**
		Minimum	**Maximum**	
Research octane number, RON		95,0	—	EN 25164
Motor octane number, MON		85,0	—	EN 25163
Density at 15 °C	kg/m^3	748	762	ISO 3675
Reid vapour pressure	kPa	56,0	60,0	EN 12
Distillation:				
— initial boiling point	°C	24	40	EN-ISO 3405
— evaporated at 100 °C	% v/v	49,0	57,0	EN-ISO 3405
— evaporated at 150 °C	% v/v	81,0	87,0	EN-ISO 3405
— final boiling point	°C	190	215	EN-ISO 3405
Residue	% v/v	—	2	EN-ISO 3405
Hydrocarbon analysis:				
— olefins	% v/v	—	10	ASTM D 1319
— aromatics	% v/v	28,0	40,0	ASTM D 1319
— benzene	% v/v	—	1,0	Pr. EN 12177
— saturates	% v/v	—	balance	ASTM D 1319
Carbon/ hydrogen ratio		report	report	

Induction period[b]	minutes	480	—	EN-ISO 7536
Oxygen content	% m/m	—	2,3	EN 1601
Existent gum	mg/ml	—	0,04	EN-ISO 6246
Sulphur content[c]	mg/kg	—	100	Pr. EN ISO/DIS 14596
Class I copper corrosion		—	1	EN-ISO 2160
Lead content	mg/l	—	5	EN 237
Phosphorus content	mg/l	—	1,3	ASTM D 3231

a The values quoted in the specifications 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 technical 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 questions as to whether a fuel meets the requirements of the specifications, the terms of ISO 4259 should be applied.

b The fuel may contain oxidation inhibitors and metal deactivators normally used to stabilise refinery gasoline streams, but detergent/dispersive additives and solvent oils must not be added.

c The actual sulphur content of the fuel used for the Type I test shall be reported.

2. TECHNICAL DATA ON THE REFERENCE FUEL TO BE USED FOR TESTING VEHICLES EQUIPPED WITH DIESEL ENGINE

TYPE: DIESEL FUEL

Parameter	**Unit**	**[a]Limits**		**Test method**
		Minimum	**Maximum**	
Cetane number[b]		52,0	54,0	EN-ISO 5165
Density at 15 °C	kg/m^3	833	837	EN-ISO 3675
Distillation:				
— 50 % point	°C	245	—	EN-ISO 3405
— 95 % point	°C	345	350	EN-ISO 3405
— final boiling point	°C	—	370	EN-ISO 3405
Flash point	°C	55	—	EN 22719
CFPP	°C	—	–5	EN 116
Viscosity at 40 °C	mm^2/s	2,5	3,5	EN-ISO 3104
Polycyclic aromatic hydrocarbons	% m/m	3	6,0	IP 391

Sulphur content[c]	mg/kg	—	300	Pr. EN-ISO/DIS 14596
Copper corrosion		—	1	EN-ISO 2160
Conradson carbon residue (10 % DR)	% m/m	—	0,2	EN-ISO 10370
Ash content	% m/m	—	0,01	EN-ISO 6245
Water content	% m/m	—	0,02	EN-ISO 12937
Neutralisation (strong acid) number	mg KOH/g	—	0,02	ASTM D 974-95
Oxidation stability[d]	mg/ml	—	0,025	EN-ISO 12205
New and better method for polycyclic aromatics under development	% m/m	—	—	EN 12916

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b The range for cetane number is not in accordance with the requirements of a minimum range of 4R. However, in the case of a dispute between fuel supplier and fuel user, the terms of ISO 4259 may be used to resolve such disputes provided replicate measurements, of sufficient number to archive the necessary precision, are made in preference to single determinations.

c The actual sulphur content of the fuel used for the Type I test shall be reported.

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

B. Specifications of reference fuels for testing vehicles to the emission limits given in row B of the table in section 5.3.1.4 of Annex I — Type I test

1. TECHNICAL DATA ON THE REFERENCE FUEL TO BE USED FOR TESTING VEHICLES EQUIPPED WITH POSITIVE-IGNITION ENGINES

TYPE: UNLEADED PETROL

Parameter	**Unit**	**[a]Limits**		**Test method**
		Minimum	**Maximum**	
Research octane number, RON		95,0	—	EN 25164
Motor octane number, MON		85,0	—	EN 25163

Density at 15 °C	kg/m^3	740	754	ISO 3675
Reid vapour pressure	kPa	56,0	60,0	PrEN ISO 13016-1 (DVPE)
Distillation:				
— evaporated at 70 °C	% v/v	24,0	40,0	EN-ISO 3405
— evaporated at 100 °C	% v/v	50,0	58,0	EN-ISO 3405
— evaporated at 150 °C	% v/v	83,0	89,0	EN-ISO 3405
— final boiling point	°C	190	210	EN-ISO 3405
Residue	% v/v	—	2,0	EN-ISO 3405
Hydrocarbon analysis:				
— olefins	% v/v	—	10,0	ASTM D 1319
— aromatics	% v/v	29,0	35,0	ASTM D 1319
— benzene	% v/v	—	1,0	ASTM D 1319
— saturates	% v/v	report		Pr. EN 12177
Carbon/ hydrogen ratio		report		
Induction period[b]	minutes	480	—	EN-ISO 7536
Oxygen content	% m/m	—	1,0	EN 1601
Existent gum	mg/ml	—	0,04	EN-ISO 6246
Sulphur content[c]	mg/kg	—	10	ASTM D 5453
Copper corrosion		—	class 1	EN-ISO 2160
Lead content	mg/l	—	5	EN 237
Phosphorus content	mg/l	—	1,3	ASTM D 3231

a The values quoted in the specifications 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 technical 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 questions as to whether a fuel meets the requirements of the specifications, the terms of ISO 4259 should be applied.

b The fuel may contain oxidation inhibitors and metal deactivators normally used to stabilise refinery gasoline streams, but detergent/dispersive additives and solvent oils must not be added.

c The actual sulphur content of the fuel used for the Type I test shall be reported.

2. TECHNICAL DATA ON THE REFERENCE FUEL TO BE USED FOR TESTING VEHICLES EQUIPPED WITH DIESEL ENGINE

TYPE: DIESEL FUEL

Parameter	**Unit**	**[a]Limits**		**Test method**
		Minimum	**Maximum**	
Cetane number[b]		52,0	54,0	EN-ISO 5165
Density at 15 °C	kg/m^3	833	837	EN-ISO 3675
Distillation:				
— 50 % point	°C	245	—	EN-ISO 3405
— 95 % point	°C	345	350	EN-ISO 3405
— final boiling point	°C	—	370	EN-ISO 3405
Flash point	°C	55	—	EN 22719
CFPP	°C	—	–5	EN 116
Viscosity at 40 °C	mm^2/s	2,3	3,3	EN-ISO 3104
Polycyclic aromatic hydrocarbons	% m/m	3,0	6,0	IP 391
Sulphur content[c]	mg/kg	—	10	ASTM D 5453
Copper corrosion		—	Class 1	EN-ISO 2160
Conradson carbon residue (10 % DR)	% m/m	—	0,2	EN-ISO 10370
Ash content	% m/m	—	0,01	EN-ISO 6245
Water content	% m/m	—	0,02	EN-ISO 12937
Neutralisation (strong acid) number	mg KOH/g	—	0,02	ASTM D 974
Oxidation stability[d]	mg/ml	—	0,025	EN-ISO 12205
Lubricity (HFRR wear scan diameter at 60 °C)	µm	—	400	CEC F-06-A-96
FAME	Prohibited			

a The values quoted in the specifications 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 technical 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 questions as to whether a fuel meets the requirements of the specifications, the terms of ISO 4259 should be applied.
b	The range for cetane number is not in accordance with the requirements of a minimum range of 4R. However, in the case of a dispute between fuel supplier and fuel user, the terms of ISO 4259 may be used to resolve such disputes provided replicate measurements, of sufficient number to archive the necessary precision, are made in preference to single determinations.
c	The actual sulphur content of the fuel used for the Type I test shall be reported.
d	Even though oxidation stability is controlled, it is likely that shelf life will be limited. Advice should be sought from the supplier as to storage conditions and life.

C. Specifications of reference fuel to be used for testing vehicles equipped with positive-ignition engines at low ambient temperature — Type VI test

TYPE: UNLEADED PETROL

Parameter	**Unit**	**[a]Limits**		**Test method**
		Minimum	**Maximum**	
Research octane number, RON		95,0	—	EN 25164
Motor octane number, MON		85,0	—	EN 25163
Density at 15 °C	kg/m^3	740	754	ISO 3675
Reid vapour pressure	kPa	56,0	95,0	Pr. EN ISO 13016-1 (DVPE)
Distillation:				
— evaporated at 70 °C	% v/v	24,0	40,0	EN-ISO 3405
— evaporated at 100 °C	% v/v	50,0	58,0	EN-ISO 3405
— evaporated at 150 °C	% v/v	83,0	89,0	EN-ISO 3405
— final boiling point	°C	190	210	EN-ISO 3405
Residue	% v/v	—	2,0	EN-ISO 3405
Hydrocarbon analysis:				
— olefins	% v/v	—	10,0	ASTM D 1319
— aromatics	% v/v	29,0	35,0	ASTM D 1319
— benzene	% v/v	—	1,0	ASTM D 1319
— saturates	% v/v	report		Pr. EN 12177
Carbon/ hydrogen ratio		report		

Induction period[b]	minutes	480	—	EN-ISO 7536
Oxygen content	% m/m	—	1,0	EN 1601
Existent gum	mg/ml	—	0,04	EN-ISO 6246
Sulphur content[c]	mg/kg	—	10	ASTM D 5453
Copper corrosion		—	Class 1	EN-ISO 2160
Lead content	mg/l	—	5	EN 237
Phosphorus content	mg/l	—	1,3	ASTM D 3231

a The values quoted in the specifications 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 technical 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 questions as to whether a fuel meets the requirements of the specifications, the terms of ISO 4259 should be applied.

b The fuel may contain oxidation inhibitors and metal deactivators normally used to stabilise refinery gasoline streams, but detergent/dispersive additives and solvent oils must not be added.

c The actual sulphur content of the fuel used for the Type VI test shall be reported.**]**