

Proposal for a new Supplement to 05 and 06 series of amendments to UN Regulation No. 83 (Emissions of M1 and N1 vehicles)

The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

I. Proposal

In the 05 series of amendments, Annex 7, paragraph 3.2.1.; amend to read:

“3.2.1. The appropriate reference fuel shall be used, as defined in Annex 10 to this Regulation.

As an alternative at the choice of the manufacturer, the appropriate reference fuel as defined in Annex 10 to the 06 or 07 series of amendments to this Regulation may be used.”

In the 06 series of amendments, Annex 7, paragraph 3.2.1.; amend to read:

“3.2.1. The appropriate reference fuel shall be used, as defined in Annex 10 to this Regulation.

As an alternative at the choice of the manufacturer, in the case that E5 fuel has been used for the Type I test, E10 fuel may be used for the Type IV test.”

II. Justification

1. The reference fuels used for EU5 or EU6 testing are a higher volatility and higher ethanol content than those described in the 05 series of amendments. This results in them demonstrating a worst case situation for evaporative emissions in comparison.

2. The 06 series of amendments permits free choice between E5 and E10 fuels. It is worth clarifying that if E5 is selected for the type I test, E10 may still be used as worst case for the Type IV test.

3. A comparison of the evolution of reference fuel specifications is attached for information.

Parameter	Unit	Minimum			Maximum			Comments
		UNR 83.05 (EU 3/4)	UNR 83.06/07 (EU5/6 E5)	UNR 83.06/07 (EU5/6 E10)	UNR 83.05 (EU 3/4)	UNR 83.06/07 (EU5/6 E5)	UNR 83.06/07 (EU5/6 E10)	
Research octane number, RON		95	95	95	-	-	98	E10 fuel in spec. by definition
Motor octane number, MON		85	85	85	-	-	89	E10 fuel in spec. by definition
Density at 15°C	kg/m ³	748	743	743	762	756	756	No change in calculation between 83.05 and 83.07
Reid vapour pressure	kPa	56	56	56	60	60	60	Specifications identical
Water content	% m/m					0.015	0.05	No effect on evap. emissions
Appearance @ -7°C				clear & bright			clear & bright	No effect on evap. emissions
Distillation:								
- initial boiling point	°C	24			40			E10 fuel worst case for evap.
- evaporated at 70°C			24	34		44	46	E10 fuel worst case for evap.
- evaporated at 100°C	per cent v/v	49	48	54	57	60	62	E10 fuel worst case for evap.
- evaporated at 150°C	per cent v/v	81	82	86	87	90	94	E10 fuel worst case for evap.
- final boiling point	°C	190	190	170	215	210	195	E10 fuel worst case for evap.
Residue	per cent v/v	-	-	-	2	2	2	Specifications identical
Hydrocarbon analysis:								
- olefins	per cent v/v	-	3	6	10	13	13	No effect on evap. emissions
- aromatics	per cent v/v	28	29	25	40	35	32	No effect on evap. emissions
- benzene	per cent v/v	-	-	-	1	1	1	Specifications identical
- saturates	per cent v/v	-	Report	Report	Balance	Report	Report	No effective difference
Carbon/hydrogen ratio		Report	Report	Report	Report	Report	Report	Specifications identical
Carbon/oxygen ratio			Report	Report		Report	Report	No effective difference
Induction period (2)	min.	480	480	480	-	-	-	Specifications identical
Oxygen content	per cent m/m	-	Report	3.3	2.3	Report	3.7	E10 fuel worst case for evap.
Existent gum	mg/100ml	-	-	-	4	4	4	Specifications identical
Sulphur content (3)	mg/kg	-	-	-	100	10	10	No effect on evap. emissions
copper corrosion		-	-	-	1	Class 1	Class 1	Specifications identical
Lead content	mg/l	-	-	-	5	5	5	Specifications identical
Phosphorus content	mg/l	-	-	-	1.3	1.3	1.3	Specifications identical
Ethanol	%v/v		4.7	9		5.3	10	E10 fuel worst case for evap.