

Proposal for draft amendments to global technical regulation No. 2

A. PROPOSAL

Part A (Statement of technical rationale and justification)

Paragraph 4(e), amend to read:

“(e) Reference Fuel

The principal performance requirements introduced in paragraph 5.2. of this global technical regulation are originally based on the use of Japanese fuel. It is observed that the Japanese fuel shows similar emission characteristics as the reference fuels specified in Annex 2 (A.2.1.), therefore, the use of this standardized reference fuel for determining compliance with the emission limits set out in paragraph 5.2. is considered as an ideal condition for ensuring the reproducibility of regulatory emission testing, and Contracting Parties are encouraged to use such fuel in their compliance testing.”

Part B (TEXT OF THE REGULATION)

Under Annex 2 (A.2.1), add a footnote:

The Japanese fuel can be used as an alternative fuel for paragraph 6.4. for compliance with the principal emission limits in reference to Part A paragraph 4(e).

B. JUSTIFICATION

A comparison study was performed using three motorcycles in order to check the emission tendency of CO, THC, and NOx. The test results showed no significant difference in emission characteristics between the cases where the Japanese fuel and the fuels in Annex 2 (A.2.1.) were used. The details of the test results are shown in Figures 1-3 and Table 1 below.

Figure 1: Effects of Fuel Quality on Motor Cycle Emissions

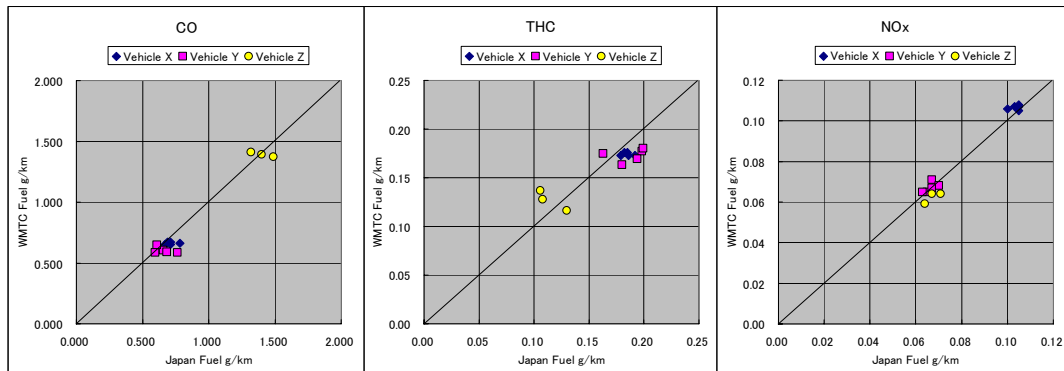


Figure 2: Vehicle Specifications

Item		Specifications	Specifications	Specifications
Vehicle		X	Y	Z
WMTC category		1	1	3-2
Vehicle weight	kg	126	98	204
Equivalent inertia mass	kg	210	170	280
Engine type		Water cooled, 4stroke, Single cylinder	Air cooled, 4 stroke, Single cylinder	Water cooled, 4 stroke, Single cylinder
Emission control		TWC, O2S, FI	TWC, O2S, FI	AI(Exh-AI), O2S, FI
Displacement	cc	125.0	124.0	649
Max. Power	kw/rpm	8.5/8500	7.3/7500	53/8500
Max. Torque	N-m/rpm	12.0/6000	10/6000	66/8500
Idling speed	rpm	1700	1600	1300
Fuel supply		FI	FI	FI
Gear		CVT	CVT	6

Figure 3: Fuel Specifications

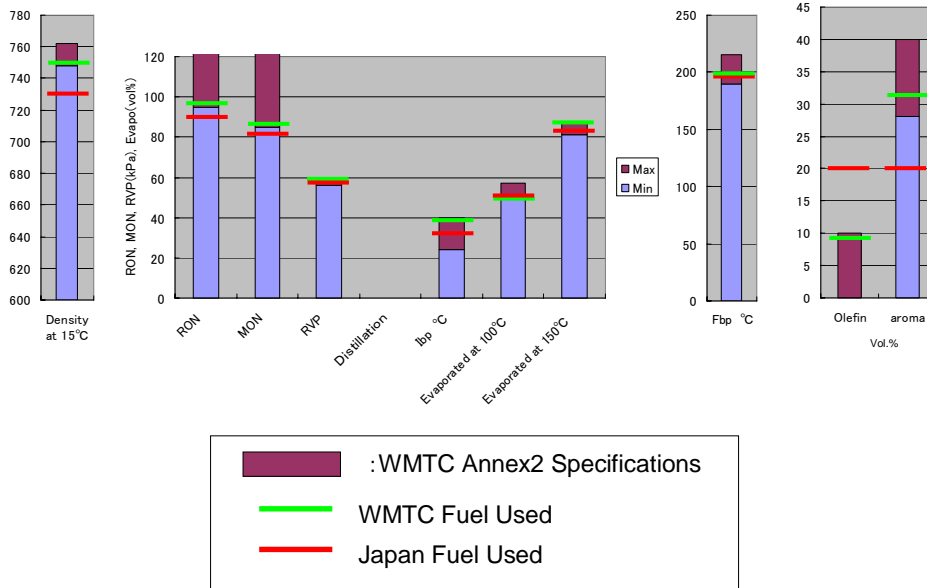


Table 1: Table of Fuel Specifications

Parameter	Unit	WMTc Annex 2 Limits		WMTc Fuel used	Japan Fuel used
		Minimum	Maximum		
Research octane number, RON		95.0		96.9	90.9
Motor octane number, MON		85.0		86.2	81.1
Density at 15 degrees C	kg/m3	748	762	749	732
Reid vapour pressure	kPa	56.0	60.0	59.5	57.5
Distillation:					
- initial boiling point	degrees C	24	40	38	33
- evaporated at 100 degrees C	per cent v/v	49.0	57.0	50	53 (Estimated)
- evaporated at 150 degrees C	per cent v/v	81.0	87.0	88	82 (Estimated)
- final boiling point	degrees C	190	215	198	186
Residue	per cent		2	1	1
Hydrocarbon analysis:					
- olefins	per cent v/v		10	9	20
- aromatics	per cent v/v	28.0	40.0	31.4	20.2
- benzene	per cent v/v		1.0	ND	ND
Carbon/hydrogen ratio		report	report	84.87/13.21	
Oxidation stability	min.	480		480+	
Oxygen content	per cent m/m		2.3	1.9	ND
Existent gum	mg/ml		0.04	0	0
Sulphur content	mg/kg		100	4	7
Copper corrosion at 50 degrees C			1	1	
Lead content	g/l		0.005	ND	ND
Phosphorus content	g/l		0.0013	ND	
