

APPENDIX D – Fuel Specifications (Road)

Characteristics	Unit	Test Method	Avgas
Density	kg/L	D1298 or D4052	Typical 0.69 – 0.71 2 stroke typical 0.69 – 0.713
Research Octane No		D2699	Min 103 Max 112
Motor Octane No		D2700	Min 100 Max 108
Lead Content Unleaded	gmPb/L	D5185 mod B	
Lead Content Leaded	gmPb/L	D5185 mod B	Max 0.85
Distillation		D86	
% evap @ 70 deg C	% volume		
% evap @ 100 deg C	% volume		
% evap @ 180 deg C	% volume		
End Point	deg C		
Residue	% volume		
10% Evaporated	deg C		Max 75
40% Evaporated	deg C		Min 75
50% Evaporated	deg C		Max 105
90% Evaporated	deg C		Max 135
End Point	deg C		Max 170
Sum of 10% and 50% Evaporated	deg C		Max 135
Residue	% volume		Max 2
Reid Vapour Pressure At 37.8 deg C	kPa	D323	Min 38.0 Max 49.0
Flexible Volatility Index		D323/D86	
Existent Gum	mg/100ml	D381	Max 3
Induction Period	Mins	IP40	
Sulphur	% mass	D1266 or D2622	Max 0.05
Colour			Green
Oxygenates	% mass	D4815	Max 0.1
Characteristics	Unit	Test Method	Avgas
Aromatic Content	% volume	D5580 or D5443	
Benzene	% mass	D3606 or D5580	

Property	Test Method	Unleaded Pump Gas	Leaded Pump Gas
Density	ASTM D1298 or ASTM D4052	Not a specification	
Research Octane Number (RON)	ASTM D2699	108 Maximum	
Motor Octane Number (MON)	ASTM D2700	100 Maximum	
Cetane Index			
Percentage Volume Evaporated at 70°C (E70)	ASTM D86	22% Minimum 50% Maximum	
Percentage Volume evaporated at 100°C	ASTM D86	45% Minimum 71% Maximum	
Percentage Volume evaporated at 150°C (E150)	ASTM D86	75% Minimum	
End Point (°C)	ASTM D86	210°C Maximum	
Lead (mass of lead per litre of gasoline)	D5185 mod B	5mgPb/L Maximum	0.85gmPb/L Maximum
Benzene (% volume)	D5580	1% Maximum	
Ethanol (% volume)	D4815	10% maximum	0.01% Maximum
Other Oxygenates (% volume)	D4815	1% Maximum	
Olefins (% volume)	D1319	18% Maximum	
Manganese (mg/L)	D5185 mod B	2mg/L Maximum	
Phosphorus (mg/L)	D3231	1mg/L Maximum	

METHANOL			
Characteristics	Unit	Test Method	Methanol
Density	kg/L	D 1298 or D 4052	0.796 – 0.797 0.796 – 0.800 for 2 strokes
Distillation		D 86	
Initial Boiling point	deg C		55.6 – 64.5
40% Evaporated	deg C		Max 64.5
50% Evaporated	deg C		Max 64.5
90% Evaporated	deg C		Max 64.5
Residue	% volume		Max 1.5 3.0 for 2 strokes
Colour			Water white
UNLEADED FIM PETROL			
Density at 15 deg C	Kg/L	ASTM D 4052	Typical 0.72-0.78 2 stroke typical 0.72-0.81
Research Octane No		D2699	Min 95.0 Max 102.0
Motor Octane No		D2700	Min 85.0 Max 90.0
Lead Content	gmPb/L	D5185 mod B	Max 0.005
Distillation		D86	
% evap @ 70 deg C	% volume	ISO 3405	Min 15 Max 50
% evap @ 100 deg C	% volume	ISO 3405	Min 46 Max 71

UNLEADED FIM PETROL (Continued)			
% evap @ 150 deg C	% volume	ISO 3405	Min 75
Final Boiling Point	Deg C	ISO 3405	Max 215
Residue	% volume	ISO 3405	Max 2
Reid Vapour Pressure	kPa	EN 12	Max 90
Existent Gum	Mg/100ml	EN ISO 6246	Max 5.0
Sulphur	Mg/kg	ASTM D 5453	Max 150
Colour		Visual Inspection	Clear
Oxygenates	% mass	D4815	Max 2.7
Aromatic Content	% volume	D5580	Max 42
Benzene	% volume	D5580	Max 1.0