
TEST FUEL SPECIFICATIONS for TMC Monitored Tests

ASTM Test Monitoring Center
Fuels Task Force-Approved Fuel Specifications
for Fuel Used in TMC Monitored Tests



A Program of ASTM International

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Introduction

The fuel specifications shown on the following pages were developed and approved by the Technical Guidance Committee's Fuels Task Force. This task force includes representatives from industry fuel suppliers, testing laboratories, producers and additive suppliers, and the Test Monitoring Center. These specifications are intended for use by the suppliers of fuel used in the various ASTM tests monitored by the Test Monitoring Center.

Sequence V Fuel Specification

Measurement	Units	ASTM Test Method	Spec	Quarterly Measurements
Distillation	°C	D86	22.2 - 35.0 Report	✓
Initial Boiling Point				
5 % Volume				✓
10 % Volume				
20 % Volume			98.9 – 115.2	✓
30 % Volume				
40 % Volume				
50 % Volume				
60 % Volume				
70 % Volume				
80 % Volume	volume %		162.8 – 176.7	✓
90 % Volume				
95 % Volume				
End Point				✓
Recovery	volume %		Report	
Residue	volume %		2.0 Max	
Loss	volume %		Report	
API Gravity	°API	D4052	56.5 – 61.2	✓
Specific Gravity	unitless	D4052	Report	
Reid Vapor Pressure	kPa	D5191	60.7 – 63.4	✓
Carbon	mass fraction	D5291	0.8580 – 0.8690	
Hydrogen	mass fraction	D5291	Report	
Carbon	mass fraction	D3343	Report	
Oxygen	mass %	D4815	0.05 maximum	

Measurement	Units	ASTM Test Method	Spec	Quarterly Measurements
Sulfur	mg/kg	D5453	100 maximum	
Lead	mg/L	D3237	2.6 maximum	✓
Phosphorous	mg/L	D3231	1.3 maximum	
Composition, aromatics	volume %	D1319	35.0 maximum	
Composition, aromatics	volume %	D5769	report	
Composition, olefins	volume %	D1319	10 maximum	
Composition, olefins	volume %	D6550	report	
Composition, saturates	volume %	D1319	Report	
Oxidation Stability	minutes	D525	1440 minimum	✓
Copper Corrosion	unitless	D130	1 maximum	
Solvent Washed Gum Content	mg/100 mL	D381	3 maximum	✓
Research Octane Number	unitless	D2699	96.0 – 98.0	
Motor Octane Number	unitless	2700	Report	
Anti-Knock Index (R+M)/2	unitless	2700	Report	
Sensitivity	unitless	D2700	7.5 minimum	
Appearance	unitless	N/A	clear and bright	✓
Net Heat of Combustion	Btu/lb	D240	Report	
Additive, Ethyl antioxidant	ptb	calculated	Report	

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PC-9HS Fuel Specification

Measurement	Units	ASTM Test Method	Spec
<i>Distillation</i>		D86	
<i>Initial Boiling Point</i>	°C		report
<i>5% volume</i>	°C		report
<i>10% Volume</i>	°C		report
<i>20% volume</i>	°C		report
<i>30% volume</i>	°C		report
<i>40% volume</i>	°C		report
<i>50% Volume</i>	°C		report
<i>60% volume</i>	°C		report
<i>70% volume</i>	°C		report
<i>80% volume</i>	°C		report
<i>90% Volume</i>	°C		282-338
<i>95% volume</i>	°C		report
<i>End Point</i>	°C		report
<i>loss</i>	ml		
<i>residue</i>	ml		
<i>API Gravity</i>	°API	D4052	34.5-36.5
<i>Specific Gravity</i>		D4052	0.8423-0.8520
<i>Cetane Index</i>	unitless	D4737 or D976	report
<i>Cetane Number</i>	unitless	D613	42-48
<i>Ramsbottom Carbon Residue on 10% Distillation</i>	%	D524	max 0.35
<i>Composition, aromatics</i>	volume %	D1319	28.0-33.0
<i>Composition, aromatics</i>	mass %	D5186	report
<i>Composition, olefins</i>	volume %	D1319	report
<i>Composition, saturates</i>	volume %	D1319	report

Measurement	Units	ASTM Test Method	Spec
<i>Net Heating Value</i>	MJ/kg	D4809	report
<i>Ash</i>	mass %	D482	max 0.005
<i>Flash Point</i>	°C	D93	min 54
<i>Pour Point</i>	°C	D97	max -18
<i>Cloud Point</i>	°C	D2500	report
<i>Strong Acid Number</i>	mg KOH/g	D664	max 0.00
<i>Total Acid Number</i>	mg KOH/g	D664	max 0.050
<i>Accelerated Stability</i>	mg/100 mL	D2274	report
<i>Copper Corrosion</i>	classification	D130	max 1
<i>Kinematic Viscosity</i>	mm ² /s	D445	2.4-3.0
<i>Water and Sediment</i>	volume %	D2709	max 0.050
<i>Total Sulfur</i>	ppm	D7039	400 - 500
<i>Lubricity (HFRR)</i>	µm	D6079	report
<i>Bio fuel content</i>	%	D7371	max 0.5%
<i>Particulate matter</i>	mg/L	D6217	report
<i>hydrogen</i>	wt %	D3343	report
<i>carbon</i>	wt %	D3343	report

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PC-10 Fuel Specification

Measurement	Units	ASTM Test Method	Spec
<i>Distillation</i>		D86	
<i>Initial Boiling Point</i>	°C		report
<i>5% volume</i>	°C		report
<i>10% Volume</i>	°C		report
<i>20% volume</i>	°C		report
<i>30% volume</i>	°C		report
<i>40% volume</i>	°C		report
<i>50% Volume</i>	°C		report
<i>60% volume</i>	°C		report
<i>70% volume</i>	°C		report
<i>80% volume</i>	°C		report
<i>90% volume</i>	°C		293-332
<i>95% volume</i>	°C		report
<i>end boiling point</i>	°C		report
<i>loss</i>	ml		report
<i>residue</i>	ml		report
<i>API Gravity</i>	°API	D4052	34.0-37.0
<i>Cetane Index</i>	unitless	D4737	report
<i>Cetane Number</i>	unitless	D613	43-47
<i>Specific Gravity</i>		D4052	0.8400-0.8550
<i>Ramsbottom Carbon Residue on 10% Distillation</i>	%	D524	max 0.350
<i>Net Heating Value</i>	MJ/kg	D4809	report
<i>Composition, aromatics</i>	volume %	D1319	28.0 - 33.5
<i>Composition, aromatics</i>	mass %	D5186	report
<i>Composition, olefins</i>	volume %	D1319	report
<i>Composition, saturates</i>	volume %	D1319	report
<i>Ash</i>	mass %	D482	max 0.005
<i>Flash Point</i>	°C	D93	min 54
<i>Pour Point</i>	°C	D97	max -18
<i>Cloud Point</i>	°C	D2500	report

Measurement	Units	ASTM Test Method	Spec
<i>Strong Acid Number</i>	mg KOH/g	D974	max 0.00
<i>Total Acid Number</i>	mg KOH/g	D974	max 0.05
<i>Accelerated Stability</i>	mg/100 mL	D2274	max 1.5
<i>Copper Corrosion</i>	classification	D130	max 1
<i>Kinematic Viscosity</i>	cSt	D445	2.0-2.6
<i>Water and Sediment</i>	volume %	D2709	max 0.05
<i>Total Sulfur</i>	mg/kg	D7039	7-15
Particulate matter	mg/L	D6217	report
hydrogen	wt %	D3343	report
carbon	wt %	D3343	report
Lubricity (HFRR)	µm	D6079	max 460
<i>Bio fuel content</i>	%	D7371	max 0.5%

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