

### Q Grade Commercial Jet Fuel Specifications

Product Property	Test Method	Origin Test Results		Deliveries <sup>1/</sup>
		Minimum	Maximum	
Gravity, ° API	D287	37.5	50.5	37.0 - 51.0
Total Acidity , mg KOH/g	D3242		0.10	
Freezing Point, °F	D2386		-40	
Existent Gum, mg/100 ml	D381		5	7
Sulfur, ppm	D2622		3000	
Mercaptan Sulfur, wt % <sup>2/</sup>	D3227		0.003	
Color, Saybolt	D156	+16		+14
Copper Corrosion	D130		1	
Water Separation Index	D3948	85		75
Aromatics, vol %	D1319		25	
Net Heat of Combustion, BTU/lb <sup>3/</sup>	D4809	18,400		
Flash Point, °F	D56,D93		108	100
Viscosity at -4 °F, cSt	D445		8.0	
Electrical Conductivity, pSm	D2624		Report	
Thermal Stability:	D3241 <sup>4/</sup>			<sup>5/</sup>
Filter pressure drop, mm Hg			25	
Heater tube deposit rating			< 3	
Distillation	D86			
10% Recovered, °F			396	400
50% Recovered, °F			Report	
90% Recovered, °F			Report	
Final Boiling Point, °F			562	572
Residue, vol %			1.5	
Loss, vol %			1.5	
OR				
Simulated Distillation	D2887			
10% Recovered, °F				
50% Recovered, °F			Report	
90% Recovered, °F			Report	
Final Boiling Point, °F				
Combustion				
(1) Smoke Point, mm	D1322		25	
OR (2) Smoke Point, mm	D1322		18	
AND Naphthalenes, vol %	D1840		3.0	
Particulate Matter, mg/L	D5452		Report	

### Q Grade Commercial Jet Fuel Specifications (continued)

- 1/ Delivered products meets all applicable requirements at time and place of delivery.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Equation 2 in D3338 may be used as an alternate method.
- 4/ ASTM D3241 Thermal Stability test must be conducted at 275 °C for 2.5 hours at origin. Peacock or abnormal color deposits result in a failure and are not accepted.
- 5/ ASTM D3241 Thermal Stability test results for deliveries will be generated at a minimum test temperature of 260 °C

#### Additives:

Antioxidants: Shipments may, but are not required to, contain a maximum of 8.4 pounds per 1,000 barrels (not including weight of solvent) of the following anti-oxidants:

- (1) N, N-diisopropylparaphenylene diamine.
- (2) 75% (min) of 2, 6-ditertiary-butyl phenol plus 25% (max) of tertiary and tritertiary butyl phenols.
- (3) 72% (min) 2, 4-dimethyl-6-tertiary-butyl phenol plus 28% (max) of monomethyl and dimethyl tertiary-butyl phenols.
- (4) 55% (min) 2, 4-dimethyl-6-tertiary-butyl phenol plus 45% (max) of mixed tertiary and ditertiary butyl phenols.

Metal Deactivators: Shipments may, but are not required to, contain the following metal deactivators at a maximum of 2.0 lbs per 1,000 barrels (not including weight of solvent):

- (1) n, N-disalicylidene-1, 2-propane diamine.

No other additives are permitted.

The carrier shall not be responsible for the concentration of additives in jet fuel deliveries at terminals.