Version: 1/4/2006

FMPNo: 1014
per MIL-DTL-83133E

ConocoPhillips

Marketing Specification

Distillate, JP-8, High Sulfur (3,000 ppm), Nato
Code F-34

Marketing specification
All Terminals

Property	TestName	Units	Min	Max	Specific	Note#
Acid Number	D 3242 Acidity in Turb Fuel	mg KOH/g		0.015		
Additives - AO	Antioxidants					966
Additives - Corr Inhibitor	Corrosion Inhibitor					964
Additives - FSII	D 5006 Fuel System Icing Inhibitors	Vol%	0.10	0.15		960
Additives - General Note	General Note					971
Additives - MD	Metal Deactivators					961
Additives - Premixing	Premixing of Additives					957
Additives - SDA	Static Dissipater Additive					962
Additives - Therm Stab	Thermal Stability Imp Addit					965
Appearance	D 4176 Wtr & Part Cont, Proc 1		Pass			953
Aromatics	D 1319 Hydrocarbon Typ by FIA	Vol%		25.0		
Cetane Index by 2-var	D 976 Cetane Index by 2-var		Report			
Color, Saybolt	D 6045 Color by Auto TriStim		Report			
Copper Strip Corrosion	D 130 Cu Str 2 Hr @ 212 F	Rating		1b		
Density 15C or API 60F	D 4052 Density & Rel Dens	g/ml	0.775	0.840		
Dist 10 Vol% Rec, corr	D 86 Dist at Atm Press	Deg F		401		967
Dist 20 Vol% Rec, corr	D 86 Dist at Atm Press	Deg F	Report			
Dist 50 Vol% Rec, corr	D 86 Dist at Atm Press	Deg F	Report			
Dist 90 Vol% Rec, corr	D 86 Dist at Atm Press	Deg F	Report			
Dist End Pt, corr	D 86 Dist at Atm Press	Deg F		572		
Dist IBP, corr	D 86 Dist at Atm Press	Deg F	Report			
Dist Loss, corr	D 86 Dist at Atm Press	Vol%		1.5		
Dist Residue	D 86 Dist at Atm Press	Vol%		1.5		
Electrical Conductivity	D 2624 Elec Conductivity	pS/m	150	450		958
Existent Gum	D 381 Gum Content by Jet Evap	mg/100ml		7.0		
Flash Pt	D 93 PMCC Flash Pt	Deg F	100			
Freeze Pt	D 5972 Freeze Pt by Ph Tech	Deg C		-47		
Hydrogen content	D 3343 Hydrogen Cont of Jet	Wt%	13.4			
JFTOT Press Drop	D 3241 JFTOT@ 260 C	mm Hg		25		
JFTOT Tube Rating	D 3241 JFTOT@ 260 C	Rating		<3		
Mercaptan Sulfur	D 3227 Thiol Merc S by Titra	Wt%		0.002		
MSEP	D 3948 Water Sep by MSEP	Rating				963
Naphthalenes	D 1840 Naphthalenes by UV	Vol%		3.0		
Net Heat of Combustion	D 3338 Net Heat of Comb	BTU/lb	18,400			

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Property	TestName	Units	Min	Max	Specific	Note#
Particulates	D 5452 Partic in Av Fuels	mg/L		1.0		959
PartM - Filtration Time	D 5452 Partic in Av Fuels	minutes		15		
Smoke Pt	D 1322 Smoke Pt	mm	19.0			
Sulfur	D 2622 S by X-ray Fluo Spec	Wt%		0.30		
Viscosity @ -4 F (-20 C)	D 445 Kinematic Viscosity	cSt		8.0		
Water Rxn Interface	D 1094 Water Rxn by manual	Rating		1b		
Other - See Note	Additives					952
Other - See Note	Referee Methods					950

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NoteNo	Note
950	Referee Methods for MIL-DTL-83133E (JP-8) are as follows: Density, D-4052; Distillation, D-86; Flash Point, D-93; Freezing Point, D-2386; Net Heat of Combustion, D-4809; Hydrogen Content, D-3701; Particulate Matter, D-5452; Saybolt Color, ASTM D 156; Sulfur, D-4294.
952	Additives: Shipper must provide the type and amount of each additive used upon request.
953	The fuel shall be clear and bright and free from visual undissolved water, sediment, and suspended matter.
957	Premixing of Additives: Additives shall not be premixed with other additives before injection into the fuel so as to prevent possible reactions among the concentrated forms of different additives. (MIL-DTE-83133E, Section 3.3.7)
958	The conductivity must be between 150 and 450 pS/m for F-34 (JP-8) at ambient temperature or 85° F, whichever is lower, unless otherwise directed by the procuring activity. In the case of JP-8+100, JP-8 with the thermal stability improver additive, the conductivity limit must be between 150 to 700 pS/m at ambient temperature or 85° F, whichever is lower, unless otherwise directed by the procuring activity. (MIL-DTE-83133E, Table 1, Note 11)
959	A minimum sample size of 3.79 liters (one gallon) shall be filtered. Filtration time must be determined per Appendix A, Mil-T-83133E (or most current version); this procedure may be used to determine the particulate matter as an alternate to ASTM D 5452 or ASTM D 2276. (MIL-DTE-83133E, Table 1, Note 8)
960	Fuel System Icing Inhibitor (FSII): The use of a fuel system icing inhibitor shall be mandatory for NATO F-34 (JP-8) and shall conform to MIL-DTL-85470. The point of injection of the additive shall be determined by agreement between the Purchasing Authority and the supplier. (MIL-DTE-83133E, Section 3.3.5) FSII testing shall be performed using the DiEGME scale of the refractometer. (MIL-DTE-83133E, Table 1, Note 10)
961	Metal Deactivator: A metal deactivator, N,N'-disalycylidene-1 ,2-propanediamine, may be blended into the fuel. The concentration of active material used on initial batching of the fuel at the refinery shall not exceed 2.0 mg/L. Cumulative addition of metal deactivator when redoping the fuel, shall not exceed 5.7 mg/L. Metal deactivator additive shall not be used in JP-8 unless the supplier has obtained written consent from the Procuring Activity and user.
962	Static Dissipater Additive: An additive shall be blended into the fuels in sufficient concentration to increase the conductivity of the fuel to within the range specified in (the specifications) at the point of injection. The point of injection of the additive shall be determined by agreement between the purchasing authority and the supplier. The following electrical conductivity additive is approved: Stadis 450 marketed by Octel America. Inc., Newark, DE 19702. (MIL-DTE-83133E, Section 3.3.3)

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963	The minimum microseparometer rating shall be as follows: Antioxidant (AO)*, Metal Deactivator (MDA)*; MSEP minimum Rating is 90. Antioxidant (AO)*, (MDA)*, and Fuel System Icing Inhibitor (FSII); MSEP minimum Rating is 85 Antioxidant (AO)*, (MDA)*, and Corrosion Inhibitor/Lubricity Improver (CI/LI); MSEP minimum Rating is 80 Antioxidant (AO)*, (MDA)*, FSII, and CI/LI; MSEP minimum Rating is 70 *Even though the presence or absence does not change these limits, samples submitted for specification conformance testing shall contain the same additives present in the refinery batch. Regardless of which minimum the refiner elects to meet, the refiner shall report the MSEP rating on a laboratory hand blend of the fuel with all additives required by the specification. (MIL-DTE-83133E, Table 1, Note 9)
964	Corrosion Inhibitor: A corrosion inhibitor conforming to MIL-PRF-25017 shall be blended into the F-34 (JP-8) grade fuel by the contractor. The corrosion inhibitor additive is optional for F-35. The amount added shall be equal to or greater that the minimum effective concentration and shall not exceed the maximum allowable concentration listed in the latest revision of QPL-25017. The contractor or transporting agency, or both, shall maintain and upon request shall make available to the Government evidence that the corrosion inhibitors used are equal in every respect to the qualification products listed in QPL-25017. The point of injection of the corrosion inhibitor shall be determined by agreement between the purchasing authority and the supplier. (MIL-DTE-83133E, Section 3.3.4)

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965	Thermal stability improver additive: Due to logistical concern, personnel at the operating location shall request written approval from the cognizant activity to add a thermal stability improver additive to the fuel. If approval is given, the concentration of the additive and location of injection shall be specified by the cognizant service activity found in MIL-DTL-8133E section 3.3.6. JP-8 fuel with an approved thermal stability improver additive at the required concentration shall be designated as JP-8+100. Thermal stability improver additive shall not be used in JP-8 without approval, in writing, from: Cognizant Activity for the Navy and Marine Corps: Naval Air Systems Command, AIR-4.4.5, Bldg 2360 PSEF, 22229 Elmer Road, Patuxent River, MD 20670-1534. Cognizant Activity for the Air Force and all other DoD agencies: AFRL/PRSF, Bldg 490, 1790 Loop Road N, WPAFB, OH 45433-7103. Cognizant Activity for the Army: US Army Tank-automotive and Armaments Command, AMSTA-TR/210, Warren, MI 48397-5000. (MIL-DTE-83133E, Section 3.3.6) Qualified thermal stability improver additives: SPEC AID 8Q462, AFRL/PRSF Ltr, 9 Dec 97, BetzDearborn, 9669 Grogan Mill Road, PO Box 4300, The Woodlands,TX 77387 AeroShell Performance Additive 101, AFRL/PRSF Ltr, 13 Jan 98, Shell Aviation Ltd., Shell-Mex House Strand, London WC2R 0ZA (MIL-DTE-83133E, Section 3.3.6.1)

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NoteNo	Note
966	Antioxidants: Immediately after processing, and before the fuel is exposed to the atmosphere (i.e. during rundown into feed/batch tankage), add an approved antioxidant from the following list in order to prevent the formation of gums and peroxides after manufacture. The concentration of antioxidant to be added shall be: a. Not less than 17.2 mg nor more than 24.0 mg of active ingredient per liter of fuel (6.0 to 8.4 lb/1000 barrels) to all JP-8 fuel that contains blending stocks that have been hydrogen treated. b. At the option of the supplier, not more than 24.0 mg of active ingredient per liter of fuel (8.4 lb/1000 barrels) may be added to JP-8 fuels that do not contain hydrogen treated blending stocks. (MIL-DTE-83133E, Section 3.3.1) Approved Antioxidants: a. 2, 6-di-tert-butyl-4-methylphenol b. 6-tert-butyl-2,4-dimethylphenol c. 2, 6-di-tert-butylphenol d. 75% minimum: 2,6-di-tert-butylphenol 25% maximum: tert-butyl phenols and tri-tert-butylphenols e. 72% minimum: 6-tert-butyl-2,4-dimethylphenol 28% maximum: tert-buty-methylphenols and tert-butyl-dimethylphenols f. 55% minimum: 2,4-dimethyl-6-tert-butylphenol and 15% minimum: 2,6-di-tert-butyl-4-methylphenol and 30% maximum mixed methyl and dimethyl tert-butylphenols (MIL-DTE-83133E, Section 3.3.1.1)
967	A condenser temperature of 32 to 40 F must be used for D-86 distillations. (MIL-DTE-83133E, Table 1, Note 3)
971	Only those additives specified and within the concentrations noted in Section 3 of MIL-DTL-83133E are permitted. The use of any other additive is prohibited.