



JOINT FUELLING SYSTEM CHECK LIST FOR JET A-1

The Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS) for Jet A-1 embodies the requirements of the following two specifications:

- (a) British Ministry of Defence Standard DEF STAN 91-091/Issue 12 14th September 2020 for Turbine Fuel, Kerosene Type, Jet A-1, NATO Code F-35, Joint Service Designation: AVTUR.
 (b) ASTM Standard Specification D1655 for Aviation Turbine Fuels "Jet A-1" (Latest issue).

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Property	Limits	Test Method		Remarks
		IP	ASTM	
APPEARANCE				
Visual appearance	Clear, bright and visually free from solid matter and un-dissolved water at ambient fuel temperature			
Colour	Report		D 156 or D 6045	See Note 1
Particulate contamination mg/L Max	1.0	423	D 5452	See Note 2
Particulate, cumulative channel particle counts, ISO Code & Individual Channel Counts		565 or 577	D7619	See Note 2 See Note 3
≥ 4 µm(c)	Report / Max 19			
≥ 6 µm(c)	Report / Max 17			
≥ 14 µm(c)	Report / Max 14			
≥ 21 µm(c)	Report			
≥ 25 µm(c)	Report			
≥ 30 µm(c)	Report / Max 13			
COMPOSITION				
Total Acidity, mg KOH/g Max	0.015	354	D 3242	See Note 4,5
Aromatics, % v/v. Max	25.0	156	D 1319	
OR Total Aromatics, % v/v Max	26.5	436	D 6379	See Note 6
Sulphur, Total, % m/m Max	0.30	336	D 1266 or D 2622	or D 4294 or D 5453
Sulphur, Mercaptan, % m/m Max	0.0030	342	D 3227	
OR Doctor Test	Negative	30	D 4952	See Note 7
Refinery Components at point of manufacture:				
Non Hydroprocessed Components, %v/v	Report (incl. 'nil' or '100%')			See Note 8
Mildly Hydroprocessed Components, % v/v	Report (incl. 'nil' or '100%')			
Severely Hydroprocessed Components, % v/v	Report (incl. 'nil' or '100%')			
Synthetic Components, %v/v	Report (incl. 'nil' or '50%')			See Note 4
INCIDENTAL MATERIALS				
				See Notes 9
VOLATILITY				
Distillation		123	D86	or D7345., See Note 10
Initial Boiling Point, °C	Report			
Fuel Recovered				See Note
10% v/v at °C max	205.0			Or IP 406 or D 2887,
50% v/v at °C	Report			see Note 11
90% v/v at °C	Report			
End Point, °C max	300.0			
Residue, % v/v max	1.5			
Loss, % v/v max	1.5			
Flash Point, °C min	38.0	170 or 523	D 56 or D 3828	Or D93 (Procedure A) or IP534 / D7236
Density at 15°C, kg/m ³	775.0 min to 840.0 max	160 or 365	D 1298 or D 4052	
FLUIDITY				
Freezing Point, °C max	-47.0	16 or 435 or 528 or 529	D 2386 or D 5972 or D 7153 or D 7154	See Notes 12 and 13
Viscosity at -20°C, mm ² /s(cSt) max	8.000	71	D 445	D7945 or D7042, See Note 14
COMBUSTION				
Specific Energy, net, MJ/kg min	42.80	12 or 355	D 3338 or D 4809	See Note 15
Smoke Point, mm min	25.0	598	D 1322	See Note 16
OR				
Smoke Point, mm min	18.0	598	D 1322	
AND Naphthalenes, % vol. max	3.00		D 1840	
CORROSION				
Corrosion, Copper strip, classification max (2 hours +/- 5 min. at 100 °C +/- 1°C)	1	154	D 130	
STABILITY				
Thermal Stability (JFTOT)		323	D 3241	See Note 17
Control temperature, °C min	260			
Filter Pressure Differential, mm Hg max	25			
One of the following requirements shall be met: (1) Annex B VTR	Less than 3, no 'Peacock' or 'Abnormal' colour deposits			
(2) Annex C ITR or Annex D ETR, average over area of 2.5mm ² nm max	85			
CONTAMINANTS				
Existent Gum, mg/100ml max	7	540	D381	
Microseparator (MSEP), rating	70		D 3948	See Note 18
Fuel with Static Dissipator Additive min				
OR				
Fuel without Static Dissipator Additive min	85			
CONDUCTIVITY				
Electrical Conductivity, pS/m	50 min to 600 max	274	D 2624	See Note 19
LUBRICITY				
BOCLE wear scar diameter, mm max	0.85		D 5001	See Note 20

ADDITIVES (Names and approval code from DEF STAN 91-091/12 should be quoted on quality certificates).

Antioxidant , mg/l in final batch (Optional)	max	24.0
Metal Deactivator , mg/l (Optional) *	max	2.0
First Doping		5.7
Cumulative concentration after field re-doping		
Static Dissipator , mg/l *	max	3.0
First Doping		5.0
Cumulative concentration after field re-doping		

Antioxidants are still mandatory in synthetic fuels and shall be added prior to or during release from the designated manufacturing site of the ASTM D7566 Component

Fuel System Icing Inhibitor is not permitted unless agreed by all the participants in a joint system (see also Note 24).

Lubricity Improver additive (LIA) additive may be added to the fuel without prior consent of the joint system participants (see also Note 20)

See Note 21
See Note 22

See Note 23

The types and concentrations of all additives used shall be shown on the original Certificates of Quality and on all other quality documents when they are added downstream of the point of manufacture. When additives are diluted (with hydrocarbon solvent only) to improve handling properties prior to addition, it is the concentration of active ingredient that shall be reported. See Annex A of DEF STAN 91-091 for detailed advice

See Note 25 about requirements for management of change in refineries

* When the original dosage of additives is unknown, it has to be assumed that first doping was applied at maximum dose rate.

Main Table Notes: 1. The requirement to report Saybolt Colour shall apply at point of manufacture, Unusual or atypical colours should also be noted and investigated. For further information on the significance of colour see Annex F in DEF STAN 91-091/12.

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