

This product\* meets the specification requirements for Jet A-1 set by AFQRJOS Issue 34, January 2024.

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

- British Ministry of Defence Standard DEF STAN 91-091/Issue 16, Turbine Fuel, Aviation Kerosene Type, Jet A-1, NATO Code: F-35; JSD: AVTUR, 14 December 2023.
- ASTM D1655-23a Standard Specification for Aviation Turbine Fuels (Latest Issue).

PROPERTY	TEST UNIT	GUARANTEE	LIMIT	TEST METHOD	
				ASTM	IP
Appearance (NOTE 1)		Clear, bright and visually free from solid matter and undissolved water at normal ambient temperature.		visual	
Colour		Report		D 156 D 6045	
Particulate Contamination	mg/l	1.0	Max	D 5452	423
Or Particulate, cumulative channel particle counts		Channel Counts	ISO Code	D 7619	565 577
≥4µm(c)		Report	Max 19		
≥6µm(c)		Report	Max 17		
≥14µm(c)		Report	Max 14		
≥21µm(c)		Report	Report		
≥25µm(c)		Report	Report		
≥30µm(c)		Report	Max 13		
Total Acidity	mg KOH/g	0.015	Max	D 3242	354
Aromatics	% vol	25	Max	D 1319 D 8267	156
Aromatics	% vol	26.5	Max	D6379	436
Sulphur, Total	% mass	0.30	Max	D 1266 D 2622 or D 4294 or D 5453	336
Sulphur, Mercaptan	% mass	0.0030	Max	D 3227	342
or Doctor Test		Negative		D 4952	30

PROPERTY	TEST UNIT	GUARANTEE	LIMIT	TEST METHOD	
				ASTM	IP
Fatty Acid Methyl Ester	mg/kg	50	Max	D 7797	585,583 590,599
Distillation	°C			D 86 or D 7345	123
Initial Boiling Point	°C	Report			
Fuel Recovered					
10 % vol	°C	205	Max		
50 % vol	°C	Report			
90 % vol	°C	Report			
End Point	°C	300	Max		
Residue	% vol	1.5	Max		
Loss	% vol	1.5	Max		
Flash Point	°C	38.0	Min	D 3828 D 56 or D 93	170 523 or 534
Density at 15°C	kg/m <sup>3</sup>	775.0-840.0		D 1298 D 4052 D 7236	160 365
Freezing Point**	°C	-47.0	Max	D 2386 D 5972 D 7153 D 7154	16 435 or 528 or 529
Viscosity at -20°C	cSt (mm <sup>2</sup> /s)	8.0	Max	D 445 D 7945 or D 7042	71
Specific Energy, net	MJ/kg	42.80	Min	D 3338 D 4809	12
Smoke Point	Mm	25	Min	D 1322	598
or Smoke Point	Mm	18	Min	D 1322	598
and Naphthalenes	% vol	3.0	Max	D 1840	

PROPERTY	TEST UNIT	GUARANTEE	LIMIT	TEST METHOD	
				ASTM	IP
Corrosion, Copper Strip, Classification (2 h at 100°C)		1	Max	D 130	154
Thermal Stability (JFTOT)					
Control Temp.	°C	260	Min	D 3241	323
Filter Pressure Differential	mm Hg	25	Max		
VTR or	Visual	Less than 3, no "Peacock" or "Abnormal" colour deposits.			
ITR or ETR					
Average over area of 2.5 mm <sup>2</sup>	Nm	85	Max		
Existent Gum	mg/100 ml	7	Max	D 381	540
Microseparometer (MSEP) ratings					
Fuel With Static Dissipator Additive		70	Min	D 3948	
Fuel Without Static Dissipator Additive		85	Min	D 3948	
Or					
With/Without Static Dissipator Additive		88	Min	D 8073	
Electrical Conductivity	pS/m	50-600		D 2624	274
Lubricity (NOTE 2)				D 5001	
BOCLE wear scar diameter	mm	0.85	Max		
Non Hydroprocessed components	% vol.	Report			
Severely hydroprocessed components (NOTE 3)	% vol.	Report			
Synthetic Components	% vol.	Report			
Co-processed Components	% vol.	10	Max		
<b>ADDITIVES***</b>					
Antioxidant					
In final batch	mg/l	24.0	Max		
Metal Deactivator (Optional)	mg/l				
First Doping		2.0	Max		
Cumulative concentration after field re-doping		5.7	Max		

PROPERTY	TEST UNIT	GUARANTEE	LIMIT	TEST METHOD ASTM	IP
Static Dissipator	mg/l				
First Doping STADIS-450		3.0	Max		
Cumulative concentration after field re-doping		5.0	Max		

(\* ) This product is produced in İzmit, İzmir and Kırıkkale Refineries.

(\*\* ) If the freezing point of the fuel is very low and cannot be determined within the ASTM D2386/IP 16 lowest achievable temperature of -65°C, if no crystals appear during cooling of the fuel and when the thermometer indicates a temperature of -65°C, the freezing point shall be recorded as below -65°C. This limit does not apply if the freezing point is measured by D5972/IP435, D7153/IP529, D7154/IP528.

(\*\*\*) Names and approval codes from DEF STAN 91-091/14 Annex A are given on the quality certificate. The types and concentrations of all additives used are to be shown on Certificate of Quality and other quality documents.

NOTE 1: The method for visual appearance in DEF STAN 90-091 is Visual (assessment). Alternative methods are D4176 Procedure 1 and D6986 Procedure A, Section 8.1.1.1.

NOTE 2: The requirement to determine lubricity applies only to fuels containing less than 5% non-hydroprocessed components and at least 20% severely hydroprocessed components and for all fuels containing synthetic components. Lubricity improver additives (also known as LIA) may be used to improve lubricity; only those additives listed in Table 2 of ASTM D1655/Annex A of DEF STAN 91-091/14 are permitted

NOTE 3: Severely hydroprocessed components are defined as those petroleum derived hydrocarbons that have been subjected to a hydrogen partial pressure of greater than 7000 kPa (70 bar or 1015 psi) during manufacture.