

Jet Fuel Quality Standards

Jet A-1 | DEF STAN 91-091 | ASTM D1655

Afri-Fuel-Consult (Pty) Ltd | April 2026 | For Buyer & Technical Reference

1. Product Overview

Jet A-1 is the internationally standard aviation turbine fuel used in commercial, cargo, and military jet aircraft globally. It is defined under DEF STAN 91-091 (United Kingdom Ministry of Defence standard) and ASTM D1655 (American Society for Testing and Materials), with both specifications substantially harmonised through the Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS) Check List, commonly referred to as the Joint Inspection Group (JIG) standard.

Afri-Fuel-Consult (Pty) Ltd trades Jet A-1 in support of aviation fuel supply requirements across Sub-Saharan Africa and selected international markets. All Jet A-1 product is sourced from approved refinery origins and supported by full inspection documentation and chain-of-custody records.

2. Jet A-1 Technical Specification (DEF STAN 91-091 / ASTM D1655)

Parameter	Unit	Min	Max	Test Method
Acidity (Total)	mg KOH/g	--	0.015	ASTM D3242
Aromatics	% vol	--	25.0	ASTM D1319
Sulphur (Total)	% mass	--	0.30	ASTM D1266 / D2622
Sulphur (Mercaptan)	% mass	--	0.003	ASTM D3227
Distillation: 10% Rec.	deg C	--	205	ASTM D86
Distillation: 50% Rec.	deg C	Report	--	ASTM D86
Distillation: 90% Rec.	deg C	Report	--	ASTM D86
Final Boiling Point	deg C	--	300	ASTM D86
Flash Point	deg C	38	--	ASTM D56 / IP 170
Density at 15 deg C	kg/m3	775	840	ASTM D4052
Freezing Point	deg C	--	-47	ASTM D2386
Viscosity at -20 deg C	mm2/s	--	8.0	ASTM D445
Net Heat of Combustion	MJ/kg	42.8	--	ASTM D3338 / D4529
Smoke Point	mm	25	--	ASTM D1322
Naphthalene Content	% vol	--	3.0	ASTM D1840
Copper Strip Corrosion	Class	--	No. 1	ASTM D130
Thermal Stability (JFTOT)	deg C	260	--	ASTM D3241
Existent Gum	mg/100 mL	--	7	ASTM D381
Water Separation Index	MSEP	70	--	ASTM D3948
Electrical Conductivity	pS/m	50	600	ASTM D2624
Lubricity (BOCLE)	mm wear scar	--	0.85	ASTM D5001

3. Additive Requirements

Jet A-1 may include the following additives, subject to approval under the DEF STAN 91-091 Qualified Products List (QPL) and ASTM D1655 Annex A approval lists:

Antioxidants

Required for thermally stable product. Concentrations per approved additive QPL limits.

Static Dissipator Additive (SDA)

Required to achieve minimum electrical conductivity of 50 pS/m at point of use. Applied at approved concentrations.

Corrosion Inhibitor / Lubricity Improver

Dual-function additives applied to enhance lubricity and protect metal surfaces in fuel systems and pipelines.

Thermal Stability Improver

Applied where base fuel thermal stability testing requires support.

Metal Deactivator

Applied where trace metal contamination risks are identified.

4. Handling, Storage, and Contamination Control

AFC applies the following standards across all Jet A-1 transactions:

- Clean, dry, and dedicated aviation fuel tankage is mandatory. Shared tankage with non-aviation products is prohibited.
 - All handling equipment (hoses, meters, pumps, nozzles) must be aviation-grade and regularly inspected.
 - Water and particulate contamination checks are required at each transfer point, including vessel, shore tank, bowser, and aircraft.
 - Filtration to API/EI 1581 standards is required at the point of fuelling.
 - Chain-of-custody documentation must be maintained from refinery to wing tip.
 - Re-certification is required following any period of storage exceeding six months.
 - Product must not be mixed with Jet B, AvGas, or any non-approved hydrocarbon stream.
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5. Inspection and Certification Documentation

All Jet A-1 supplied by AFC is accompanied by the following documentation package:

- Refinery Certificate of Quality (CoQ) against DEF STAN 91-091 and ASTM D1655
- Independent Third-Party Inspection Certificate (SGS, Intertek, or Bureau Veritas)
- Release Certificate (confirming product meets AFQRJOS Check List)
- Bill of Lading with quantity certification
- Material Safety Data Sheet (MSDS / SDS)
- Certificate of Origin
- Additive injection records (where applicable)

6. Safety Classification

Property	Value
UN Number	UN 1863
Packing Group	III
Hazard Class	3 (Flammable Liquid)
Flash Point	Min. 38 deg C
Auto-ignition Temp	Approx. 210 deg C
Flammable Limits	0.6% (lower) -- 4.7% (upper) in air

All specifications are indicative and subject to final certificate of quality at load port. This document does not constitute a contractual specification unless incorporated by reference in a signed Sales and Purchase Agreement. Afri-Fuel-Consult (Pty) Ltd | Reg. No. BW00003299246 | Gaborone, Botswana.