

**JET MSZ 10870:2012 HUNGARIAN NORMS
QUALITY REQUIREMENTS**

Product name	JET-A1^{(1), (2), (3)}	Test method
Properties	Requirements	
Appearance	Clear, transparent, bright, free of impurities and water	visual
Visual colour	Colourless to weak straw-coloured	visual
Saybolt colour	report	MSZ-09-60.0138
Acidity, max. mg KOH/g	0,015	MSZ ISO 6618
Aromatics through FIA method, max. % v/v	25	MSZ EN 15553
Sulphur Mercaptan, max., % m/m	0,003	MSZ ISO 3012 MSZ 15973
Sulphur total, max. % m/m	0,30	MSZ EN ISO 8754 MSZ EN ISO 20846 MSZ EN ISO 20884
Distillation: 10 % v/v, max., °C 50 % v/v, max., °C 90 % v/v, max., °C Final boiling point, max., °C Residue, max., % v/v Loss, max., % v/v	205 report report 300 1,5 1,5	MSZ EN ISO 3405
Flash point in covered room, min., °C	38 ²⁾	MSZ 10879 MSZ EN ISO 3679 MSZ EN ISO 2719
Density, 15 °C, g/cm ³	0,775 – 0,840	MSZ EN ISO 3675 MSZ EN ISO 12185
Freezing point, max., °C	- 47	MSZ 2047
Kinematic viscosity at – 20 °C, max., mm ² /s	8,0	MSZ EN ISO 3104
Calorific value (specific energy), min., MJ/kg	42,80	MSZ 19954
Smoke point ³⁾ , min., mm	25	MSZ 970
Smoke point ⁴⁾ , min., mm and Naphthalenes, max., % v/v	19 3,0	MSZ 970 MSZ 2046
Copper strip (2 hrs, 100 °C), max., corrosion class	1	MSZ EN ISO 2160
Thermal stability: Filter pressure differential, max., kPa Tube deposit rating, max., class	3,3 3	MSZ 10892

Existent gum ⁵⁾ , max., mg/100 cm ³	7,0	MSZ EN ISO 6246
Microseparator (MSEP-A): with conductivity improving additives, min.	70	MSZ 10876
without conductivity improving additives, min.	85	
Electrical conductivity at 20 °C ⁶⁾ , pS/m	50 - 600	MSZ ISO 6297
Particulates contamination, max., mg/l	1	MSZ 10875
Non hydrogenated, %, v/v	report	
Hydrogenated, %, v/v	report	
Hydrogenated in strict conditions ⁷⁾ , %, v/v	report	
Synthetic components, %, v/v	report	
<p>1) JET-A1 to be distilled as per 4th dist. class at 0-4 °C condenser temperature.</p> <p>2) If MSZ 10879 method is applied the flashpoint to be minimum 40 C°.</p> <p>3) and 4) Of test results to be given 3) or 4).</p> <p>5) Possible to use air blow.</p> <p>6) At 20 ± 0,5 C°.</p> <p>7) Hydrocarbon hydrogenated in strict conditions is the one during the hydrogenation of which the partial pressure of hydrogen is higher than 7000 kPa (70 bar or 1015 psi). If aviation fuel contains at least 20 % components hydrogenated in strict conditions and the whole share of hydrogenated material is more than 95 %, or if the aviation fuel contains synthetic components, one has to make lubricity test (4) and seizure wear diameter to be maximum 0.85 mm.</p>		

ADDITIVES TO GAS TURBINE AVIATION FUEL

Additive	Approved agent content mg/l
Antioxidant	17-24
Electrical conductivity improving agent, after production, max.	3,0
Electrical conductivity improving agent with additives given during storage and transport, max.	5,0
Metal deactivator, after production, max.	2,0
Metal deactivator with additives given during storage and transport, max.	5,7

ANNEX
(for information)

ADDITIVES TO GAS TURBINE AVIATION FUEL

Additive	Agents allowed to be used for adding, their marking
Antioxidant	<ul style="list-style-type: none"> - 2,6-di-tert-butylphenol; - 2,6-di-tert-butyl-4-methylphenol; - 2,4-dimethyl-6-tert-butylphenol; - mixture consisting of min. 75 % of 2,6-di-tert-butylphenol and max. 25 % tert- and tritert-butylphenol; - mixture consisting of min. 55 % of 2,4-dimethyl-6-tert-butylphenol; min. 15 % 4-methyl-2,6-ditert-butylphenol; the rest to be a mixture of max. 30 % monomethyl- and dimethyl-tert-butylphenol; - mixture of min. 72 % 2,4-dimethyl-6-tert-butylphenol and max. 28 % tert-butyl-methylphenol and tert-butyl-dimethylphenol
Anti-icing	Diethylene glycol monomethyl ether
Electrical conductivity improver	[5] or compound type
Metal desactivator	N,N'-disalicydene-1,2-propanediamine
Lubricity improver	[6], [7], [8], [9], [10], [11], [12] or compound type
Leakage indicator	[13] or compound type

[1] ASTM D 1655 Specification for Aviation Turbine Fuels

[2] Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS), Joint, Inspection Group (JIG), Bulletin No. 51, 2012. May;

[3] Turbine Fuel, Kerosine Type, Jet-A1 (NATO Code: F-35 Joint Service Designation: AVTUR)

[4] ASTM D 5001 Standard test method for measurement of lubricity of aviation turbine fuels by the ball-on-cylinder lubricity evaluator (BOCLE)

[5] RDE/A/621 (Stadis® 450).

[6] RDE/A/661 (Hitec 580),

[7] RDE/A/662 (Octel DCI-4A)

[8] RDE/A/663 (Octel DCI-6A)

[9] RDE/A/664 (Nalco 5403)

[10] RDE/A/665 (Tolad 4410)

[11] RDE/A/666 (Tolad 351)

[12] RDE/A/667 (Unicor J)

[13] RDE/A/640 (Tracer A/LDTA-A)