

Specification for White Oil for the year 2025/26

Unleaded Motor Gasoline (Mogas 95 RON)

S. N	CHARACTERISTICS	UNITS	REQUIREMENT	LIMIT	TEST METHODS
1	Appearance		Clear, bright and free from visible water and solid matter		ASTM D4176
2	Color, Visual		Orange		Visual
3	Density at 15 °C	kg/m3	720.0 – 775.0	Min-Max	ASTM D 4052 EN ISO 12185
4	Research Octane Number, RON		95.0	Min	ASTM D 2699 EN ISO 5164
5	Motor Octane Number, MON		85.0	Min	ASTM D 2700/ EN ISO 5163
6	Distillation				
	% Evaporated at 70 °C	% V/V	20.0 – 48.0	Min-Max	ASTM D 86/ EN ISO 3405
	% Evaporated at 100 °C	% V/V	46.0 – 71.0	Min-Max	
	% Evaporated at 150 °C	% V/V	75.0	Min	
7	Final Boiling Point	°C	208.0	Max	
8	Residue	% V/V	2.0	Max	
9	Reid Vapour Pressure @ 37.8 °C, Class B	kPa	45.0 – 70.0	Min-Max	ASTM D5191 EN 13016-1
10	Existent Gum	mg/100 ml	4.0	Max	ASTM D 381 EN ISO 6246
11	Oxidation Stability- Induction Period	minutes	360	Min	ASTM D525 EN ISO 7536
12	Lead Content	mgPb/L	3.0	Max	ASTM D 5059, EN 237, ASTM D3237, ASTM D3116
13	Sulphur Content	mg/kg	10.0	Max	EN ISO 20846 EN ISO 20884 ASTM D5453 ASTM D2622
14	Copper Strip Corrosion, 3 hrs at 50 °C	rating	Class 1	Max	ASTM D130 EN ISO 2160
15	Olefins	% V/V	18.0	Max	EN 15553 EN ISO 22854 ASTM D 1319
16	Aromatics	% V/V	35.0	Max	
17	Benzene	% V/V	1.0	Max	ASTM D5580 EN 238 EN 12177 EN ISO 22854
18	Oxygen Content(Note a)	% (m/m)	Nil		EN 1601 EN 13132 EN ISO 22854
19	Manganese	mg/l	2.0	Max	ASTM D3831 EN 16135 IP 589/ EN 16136
20	Other Metals (Note b)		Traces		ASTM D3831 IP 589/ EN 16136
21	Potential Gum (2.5hrs@100°C)	mg/100 ml	4.0	Max	ASTM D 873
22	Mercaptan Sulphur	(% m/m)	0.0015	Max	ASTM D 3227

Note:

- a) Product shall be free of oxygenates (ethers & Alcohols)
- b) Examples of trace metals include, but are not limited to Cu, Fe, Na, P, Pb, Si and Zn. No trace metal should exceed 1 mg/kg. No intentional addition of any metals allowed.
- c) Latest version of test methods mentioned above may be used, subject to STC's acceptance on same.
- d) In addition to meeting above specification, product should be fit for intended purpose.

Gasoil 10 PPM

S.N	CHARACTERISTICS	UNITS	REQUIREMENT	LIMIT	TEST METHODS
1	Appearance		Clear & Bright, visually free from undissolved water and solid matter		ASTM D 4176
2	Density @ 15 °C	kg/m3	820.0 – 845.0	Min-Max	ASTM D 4052 EN ISO 12185
3	Kinematic Viscosity, @ 40 °C, cSt		2.0 - 4.5	Min-Max	ASTM D 445 EN ISO 3104
4	Cetane Number		51.0	Min	ASTM D 613
5	Cetane Index		46.0	Min	ASTM D976 ASTM D4737*
6	Distillation				
	% recovered at 250 °C	% (V/V)	65.0	Max	ASTM D 86 ISO 3405
	% recovered at 350 °C	% (V/V)	85.0	Min	
	95 % recovered at, °C	% (V/V)	360.0	Max	
7	Carbon Residue (RamsBottom on 10 % Residue	% mass	0.30	Max	ASTM D524 ISO 10370
8	Flash Point by PMCC	°C	62	Min	ASTM D93 ISO 2719 ASTM D3828
9	Pour Point	°C	Minus 9	Max	ASTM D97 ASTM D 5950
10	Cold Filter Plugging Point	°C	Plus 3	Max	IP309
11	Cloud Point	°C	Plus 6	Max	ISO 3015 IP 219 ASTM D2500
12	Acid Number,	mg/KOH/g	NIL	Max	ASTM D664 (Method A) ASTM D974
13	Acidity Total,	mg KOH/g	0.25	Max	
14	Cu-Strip Corrosion 3 hours at 100 °C		No.1	Max	ASTM D130 EN ISO 2160
15	Ash	% Mass	0.01	Max	ASTM D 482 ISO 6245
16	Total Sulphur	mg/Kg	10	Max	ASTM D5453
17	Water Content	mg/Kg	200	Max	ISO 3733 ASTM D95 ASTM D6304*
18	Total contamination	mg/Kg	24	Max	ASTM D 6217 IP 440 EN 12662*
19	Lubricity, corrected wear scar diameter (wsd 1,4) at 60°C,	µm	460	Max	ISO 12156
20	Oxidation Stability	g/m ³	25.0	Max	ASTM D 2274 ISO 12205
21	Polycyclic Aromatic Hydrocarbons	% (m/m)	8.0	Max	EN 12916
22	Conductivity ^(note 3)	pS/m	200	Min	ASTM D2624
23	Fatty Acids Methyl Ester	%v/v	Nil	Max	EN 14078

Note:

1. Fatty acid methyl ester (FAME) content shall be Nil.
2. No intentional addition of metallic additives.
3. The STC may accept to discharge the Gas Oil supplied with Conductivity level of 60 pS/m **minimum** at discharge port.
4. Latest version of test methods mentioned above may be used, subject to STC's acceptance on same.
5. Test methods marked * shall be the referee procedures in matters of dispute
6. In addition to meeting above specification, product should be fit for intended purpose.

Jet Aviation Fuel (Jet A1)

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S.N	CHARACTERISTICS	REQUIREMENT	TEST METHODS
1	APPEARANCE		
a.	Visual Appearance	Clear, bright and visually free from solid matter and un-dissolved water at ambient fuel temperature	Visual
b.	Colour	Report	ASTM D 156 or ASTM 6045
c.	Particulate Contamination , mg/l	Max 1.0	ASTM D 5452 or IP 423
d.	<u>Particulate, cumulative channel particle counts, ISO Code & Individual Channel Counts</u>		IP 564 IP 565 IP 577
	$\geq 4 \mu\text{m(c)}$	Report/ Max 19	
	$\geq 6 \mu\text{m(c)}$	Report/ Max 17	
	$\geq 14 \mu\text{m(c)}$	Report/ Max 14	
	$\geq 21 \mu\text{m(c)}$	Report	
	$\geq 25 \mu\text{m(c)}$	Report	
	$\geq 30 \mu\text{m(c)}$	Report/ Max 13	
2	<u>COMPOSITION</u>	-	-
a	Total Acidity, mg KOH/ g	Max 0.015	ASTM D 3242 IP 354
b	Aromatics % vol	Max 25.0	ASTM D1319 ASTM 6379 IP 156 IP 436
c	Sulphur, Total % wt.	Max 0.30	ASTM D 4294 ASTM 1266 ASTM D2622 ASTM D5453 IP 336
d	Sulphur Mercaptan % wt.	Max 0.003	ASTM D 3227 IP 342
	Or Doctor Test	Doctor Negative	ASTM D 4952 or IP30
e	Non hydro processed component, in batch ,% vol	Report (incl. 'nil' or '100%')	
	Mildly Hydro processed component in batch , % vol	Report (incl. 'nil' or '100%')	
	Severely Hydro processed component in batch, % vol	Report (incl. 'nil' or '100%')	
	Synthetic components, %vol	Report (incl. 'nil' or '50%')	

Jet Aviation Fuel (Jet A1)

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S.N	CHARACTERISTICS	REQUIREMENT	TEST METHODS
3	<u>VOLATILITY</u>	-	-
a	Distillation - IBP deg. C,	Report	ASTM D 86 or IP 123
	Fuel recovered 10% volume at °C	Max 205.0	
	Fuel recovered 50% volume at °C	Report	
	Fuel recovered 90% volume at °C	Report	
	End Point, °C	Max 300 .0	
	Residue % volume	Max 1.5	
	Loss % volume	Max 1.5	
b	Flash Point ° C.	Min 38 .0	IP 170 or IP 523 or ASTM D56 or ASTM D3828
c	Density at 15°C, kg/m ³	775.0 min to 840.0 max	ASTM D4052 ASTM D1298
4	<u>FLUIDITY</u>	-	-
a	Freezing point, °C	Max Minus 47.0	ASTM D 2386(referee method) ASTM D5972 ASTM D7153 ASTM D7154 IP 16 (referee method) IP 435 IP 528 IP 529
b	Viscosity at -20°C, mm ² /s(cSt)	Max 8.000	ASTM D 445 IP 71
5	<u>COMBUSTION</u>		
a	Smoke point, mm ,OR	Min 25 .0	ASTM D 1322 IP 598(referee method)
b	Smoke Point	Min 18.0	ASTM D 1322-18 IP 598(referee method)
-	And Naphthalene, % vol	Max 3.0	ASTM D1840
c	Specific energy MJ/kg	Min 42.80	D 3338 or D 4809
6	<u>CORROSION</u>		
	Corrosion, Copper strip, classification (2 hours +/- 5 min. at 100 °C +/- 1°C)	Max No.1	ASTM D 130 IP 154
7	<u>STABILITY</u>		ASTM D3241 IP 323
7.1	Thermal Stability (JFTOT) Control temperature, °C	Min 260	
7.2	Tube Rating(One of the following requirements shall be met)		
7.2.1 or	(1) Annex B VTR	<3 Max (No peacock or abnormal color deposits)	

Jet Aviation Fuel (Jet A1)

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S.N	CHARACTERISTICS	REQUIREMENT	TEST METHODS
7.2.2	(2) Annex A2 ITR or Annex A3 ETR, or Annex A4 MWETR, nm average over area of 2.5 mm ²	85 nm max	
7.3	Filter Pressure Differential, mm Hg	Max 25	
8	CONTAMINANTS	-	
a	Existent gum, mg/100ml.	Max 7 .0	IP 540
b	Water Separation Characteristics		
	Without SDA (Static Dissipator Additive)	Min 85	ASTM D3948
	With SDA	Min 70	ASTM D3948
	With or without SDA	Min 85 Min 88	ASTM D7224 ASTM D8073/ IP 624
9	CONDUCTIVITY:		
	Electrical Conductivity , pS/m	50 – 600	ASTM D 2624 IP 274
10	LUBRICITY		
	BOCLE wear scar diameter, mm	Max 0.85	ASTM D 5001
11	ADDITIVES (Names and approval code from DEF STAN 91-091 should be quoted on quality certificates).		
	Antioxidant, mg/l in final batch (Optional)	Max 24.0	
	Metal Deactivator, mg/l (Optional) * First Doping Cumulative concentration after field re-doping	Max 2.0 Max 5.7	
	Static Dissipator, mg/l * First Doping Cumulative concentration after field re-doping	Max 3.0 Max 5.0	

Notes:

The Jet Aviation Fuel (Jet A1) shall also comply with the latest Issue of Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS) & DEF STAN 91-091.

- Desirable Conductivity level shall be a minimum of 150 pS/m at discharge port.
- Referee method as specified in the AFQRJOS bulletin shall be used as and when required.
- Latest version of test method shall be used.
- In addition to meeting above specification, product should be fit for intended purpose.
- Fuel System Icing Inhibitor is not permitted.
- Lubricity Improver Additive (LIA) additive may be added to the fuel.

Marine Gas Oil

S. N	CHARACTERISTICS	REQUIREMENT	UNIT	LIMIT	TEST METHODS
1	Kinematic viscosity at 40°C	6,000	mm ² /s	max.	ISO 3104
		2,000		min.	
2	Density at 15 °C	890.0	kg/m ³	max.	ISO 3675 or ISO 12185
3	Cetane Index	40.0	—	min.	ISO 4264
4	Sulfur	0.1	mass %	max.	ISO 8754
					ISO14596
5	Flash point	60.0	°C	min.	ISO 2719
6	Hydrogen Sulfide	2.00	mg/kg	max.	IP 570
7	Acid number	0.5	mg KOH/g	max.	ASTM D664
8	Total sediment by hot filtration	Report	mass %	max.	ISO 10307-1
9	Oxidation stability	25	g/m ³	max.	ISO 12205
10	Carbon residue : Micro method on the 10 % volume distillation residue	0.30	mass %	max.	ISO 10370
11	Carbon residue : Micro method	—	mass %	max.	ISO 10370
12	Cloud point	Report	°C	max.	ISO 3015
13	Pour point (upper)c Winter Summer	-6 0	°C	max.	ISO 3016
14	Appearance	Clear and Bright, visually free from solid matter and free water			VISUAL
15	Water	Report	volume %	max.	Coulometric Karl Fischer ISO 12937/ ASTM D6304
16	Ash	0.010	mass %	max.	ISO 6245
17	Lubricity, corrected wear scar diameter (WSD) at 60 °C	520	µm	max.	ISO 12156-1
18	Fatty acid methyl ester (FAME) content by mass or volume	Note 4	%	Max.	ASTM D7963 or EN 14078/ASTM D7371

Note:

- 1) The fuel shall comply with the Marine Gas Oil (Distillate Marine Fuel Category ISO-F DMA) specifications as per **latest edition of ISO 8217 standards**.
- 2) Water test to be performed if the sample is not transparent.
- 3) The fuel shall comply with MARPOL Annex VI regulation, including but not limited to Regulation 18.3.1. The fuel shall not include any added substance or chemical waste which either:
 - jeopardizes the safety of ships or adversely affects the performance of the machinery, or
 - is harmful to personnel, or
 - contributes overall to additional air pollution.
- 4) De minimis level amount of FAME means an amount not exceeding approximately 0,5 %. The seller shall report the FAME content according to the test method given or as per blend ratio (stating whether it is a mass or volume ratio)."