ISO 8217:2024 Fuel Standards

REQUIREMENTS FOR MARINE DISTILLATE FUELS

Characteristic	Unit	Limit	DMX	DMA	DFA	DMZ	DFZ	DMB	DFB
General Requirements			Clauses 5 to 10						
Viscosity @ 40°C	mm2/s (a)	max.	5.500	6.000				11.00	
		min.	1.400	2.000		3.000		2.000	
Density @15°C	kg/m3	max.	-	890.0				900.0	
Cetane Index		min.	45.0	40.0	-	40.0	-	35.0	-
Cetane Number		min.	-	-	40.0	-	40.0		35.0
Sulfur Content	% mass	max.	Statutory Requirements (b)						
Flash Point	°C	min.	43.0	60.0					
Hydrogen Sulfide	mg/kg	max.	2.00						
Acid Number	mg KOH/g	max.	0.5						
Existent Total Sediment (TSE)	% mass	max.	-					0.10 (c)	
Oxidation Stability	g/m3	max.	25	25	-	25	-	25 (d)	-
	h	min.	-	-	8.0	-	8.0	-	8.0
FAME Content	% mass or vol.	-	Minimis		(e)	Minimis	(e)	Minimis	(e)
Net Heat of Combustion (LCV)	MJ/kg	-	-	-	(f)	-	(f)	-	(f)
MCR on 10% Dist. Residue	% mass	max.	0.30					-	
Carbon Residue, Micro (MCR)	% mass	max.	-					0.30	
Cloud Point (g)	°C	max.	-16	(f)				-(h)	(f, h)
Cold Filter Plugging Point (g)	°C	-	-	(f)				-(h)	(f, h)
Pour Point (upper) (g)	°C	max. Winter	-	-6				0	
		max. Summer	-	0				6	
Appearance		-	Clear and Bright (i)					(c)	
Water Content	% vol.	max.	-					0.30 (c)	
Ash Content	% mass	max.	0.010						
Lubricity (WSD) @ 60°C (j)	µm	max.	520					520 (d)	

(a) 1 mm 2/s = 1 cSt

(b) The buyer is expected to define the maximum sulfur content according to relevant statutory limitations

(c) If the sample is not clear and bright, the existent total sediment and water shall be required

(d) If the sample is not clear and bright, the test cannot be undertaken and therefore, compliance with this limit cannot be shown

(e) 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)

(f) The value shall be reported according to the test method given

(g) Pour point cannot guarantee operability for all ships in all climates. The buyer should confirm that the cold flow characteristics (PP, CP, CFPP) are suitable for the ship's design and intended voyage

(h) For some products, it is possible that this test does not work due to appearance, therefore other means to evaluate usability of the product should be considered

(i) If the sample is dyed and not transparent, then the water content shall not exceed 200 mg/kg in accordance with ISO 12937

(j) This requirement is applicable to fuels with a sulfur content below 500 mg/kg (0.050% by mass)

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REQUIREMENTS FOR MARINE RESIDUAL FUELS

Characteristic	Unit	Limit	RF20	RF80	RF180	RD380	RF500
General Requirements			Clauses 5 to 10				
Viscosity @ 50°C (a)	mm2/s (b)	max.	20.00	80.00	180.00	380.00	500.00
		min.	2.000 (c)	20.00	80.00	120.00	380.00
Density @ 15°C	kg/m3	max.	955.00	991.00			1,010.00
CCAI		max.	860	870			
Sulfur	% mass	max.	Statutory requirements (d)				
Flash Point	°C	min.	60.0				
Hydrogen Sulfide	mg/kg	max.	2.00				
Acid Number	mg KOH/g	max.	2.5				
Carbon Residue, Micro (MCR)	% mass	max.	10.00	15.00		18.00	20.00
Pour Point (upper) (e)	°C	max.	6	30			
Water Content	% vol.	max.	0.30	0.50			
Ash Content	% mass	max.	0.070	0.100			0.150
Vanadium	mg/kg	max.	150	350			450
Sodium	mg/kg	max.	50	100			
Aluminum + Silicon	mg/kg	max.	40	60			
Unrefined Used lubricating Oil (ULO)	mg/kg		Ca > 30 and Zn > 15 or Ca > 30 and P > 15				
Potential Total Sediment (TSP)	% mass	max.	0.10 (f)				
Accelerated Total Sediment (TSA)	% mass	-	Report (g)				
Existent Total Sediment (TSE)	% mass	-	Report (g)				
FAME Content	% mass	-	Report (h)				
Net Heat of Combustion (LCV)	MJ/kg	-	Report (g)				

(a) Actual viscosity to be reported to the ship. For fuels with high pour point, the viscosity can be calculated provided that the kinematic viscosities at two temperatures are known

(b) 1 mm 2/s = 1 cSt

(c) For fuels with viscosity in the range of 2 mm 2/s to 5 mm 2/s, the minimum viscosity requirement of the engine should be checked against the original equipment manufacturers' recommendations

(d) The buyer is expected to define the maximum sulfur content according to relevant statutory limitations

(e) The buyer should confirm that this pour point is suitable for the ship's intended area of operation

(f) This limit applies to 10 g og test specimen only. Failure to complete filtration of 10 g within 25 min means the fuel does not meet the specification. In such case and for information only, 5 g filtration results can be reported according to the test method

(g) The value shall be reported according to the test method given

(h) 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)

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