

ISO 8217 2012 FUEL STANDARD

ISO 8217 2012 Fuel Standard for marine distillate fuels



REQUIREMENTS FOR MARINE DISTILLATE FUELS

Characteristic	Unit	Limit	Category ISO-F-				Test method reference	
			DMX	DMA	DMZ	DMB		
Kinematic viscosity at 40 °C ^a	mm ² /s	max.	5,500	6,000	6,000	11,00	ISO 3104	
		min.	1,400	2,000	3,000	2,000		
Density at 15 °C	kg/m ³	max.	–	890,0	890,0	900,0	see 7.1 ISO 3675 or ISO 12185	
Cetane index	–	min.	45	40	40	35	ISO 4264	
Sulfur ^b	mass %	max.	1,00	1,50	1,50	2,00	see 7.2 ISO 8754 ISO 14596	
Flash point	°C	min.	43,0	60,0	60,0	60,0	see 7.3 ISO 2719	
Hydrogen sulfide	mg/kg	max.	2,00	2,00	2,00	2,00	See 7.11 IP 570	
Acid number	mg KOH/g	max.	0,5	0,5	0,5	0,5	ASTM D664	
Total sediment by hot filtration	mass %	max.	–	–	–	0,10 ^d	see 7.4 ISO 10307-1	
Oxidation stability	g/m ³	max.	25	25	25	25 ^e	ISO 12205	
Carbon residue: micro method on the 10 % volume distillation residue	mass %	max.	0,30	0,30	0,30	–	ISO 10370	
Carbon residue: micro method	mass %	max.	–	–	–	0,30	ISO 10370	
Cloud point	°C	max.	–16	–	–	–	ISO 3015	
Pour point (upper) ^c	winter quality	°C	max.	–	–6	–6	0	ISO 3016
	summer quality	°C	max.	–	0	0	6	ISO 3016
Appearance	–	–	Clear and bright ^h			^{d, e, f}	see 7.6	
Water	volume %	max.	–	–	–	0,30 ^d	ISO 3733	
Ash	mass %	max.	0,010	0,010	0,010	0,010	ISO 6245	
Lubricity, corrected wear scar diameter (wsd 1,4) at 60 °C ^h	µm	max.	520	520	520	520 ^g	ISO 12156-1	

- a 1 mm²/s = 1 cSt.
- b Notwithstanding the limits given, the purchaser shall define the maximum sulfur content in accordance with relevant statutory limitations. See Annex C.
- c Purchasers should ensure that this pour point is suitable for the equipment on board, especially if the ship operates in cold climates.
- d If the sample is not clear and bright, the total sediment by hot filtration and water tests shall be required, see 7.4 and 7.6.
- e If the sample is not clear and bright, the test cannot be undertaken and hence the oxidation stability limit shall not apply.
- f If the sample is not clear and bright, the test cannot be undertaken and hence the lubricity limit shall not apply.
- g This requirement is applicable to fuels with a sulfur content below 500 mg/kg (0,050 mass %).
- h If the sample is dyed and not transparent, then the water limit and test method as given in 7.6 shall apply.

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REQUIREMENTS FOR MARINE RESIDUAL FUELS

Characteristic	Unit	Limit	Category ISO-F-											Test method reference	
			RMA	RMB	RMD	RME	RMG				RMK				
			10 ^a	30	80	180	180	380	500	700	380	500	700		
Kinematic viscosity at 50 °C ^b	mm ² /s	max.	10,00	30,00	80,00	180,0	180,0	380,0	500,0	700,0	380,0	500,0	700,0	ISO 3104	
Density at 15 °C	kg/m ³	max.	920,0	960,0	975,0	991,0	991,0				1010,0			see 7.1 ISO 3675 or ISO 12185	
CCAI	–	max.	850	860	860	860	870				870			see 6.3 a)	
Sulfur ^c	mass %	max.	Statutory requirements											see 7.2 ISO 8754 ISO 14596	
Flash point	°C	min.	60,0	60,0	60,0	60,0	60,0				60,0			see 7.3 ISO 2719	
Hydrogen sulfide	mg/kg	max.	2,00	2,00	2,00	2,00	2,00				2,00			see 7.11 IP 570	
Acid number ^d	mg KOH/g	max.	2,5	2,5	2,5	2,5	2,5				2,5			ASTM D664	
Total sediment aged	mass %	max.	0,10	0,10	0,10	0,10	0,10				0,10			see 7.5 ISO 10307-2	
Carbon residue: micro method	mass %	max.	2,50	10,00	14,00	15,00	18,00				20,00			ISO 10370	
Pour point (upper) ^e	winter quality	°C	max.	0	0	30	30	30				30			ISO 3016
	summer quality	°C	max.	6	6	30	30	30				30			ISO 3016
Water	volume %	max.	0,30	0,50	0,50	0,50	0,50				0,50			ISO 3733	
Ash	mass %	max.	0,040	0,070	0,070	0,070	0,100				0,150			ISO 6245	
Vanadium	mg/kg	max.	50	150	150	150	350				450			see 7.7 IP 501, IP 470 or ISO 14597	
Sodium	mg/kg	max.	50	100	100	50	100				100			see 7.8 IP 501 IP 470	
Aluminium plus silicon	mg/kg	max.	25	40	40	50	60				60			see 7.9 IP 501, IP 470 or ISO 10478	
Used lubricating oils (ULO): – calcium and zinc; or – calcium and phosphorus	mg/kg	–	The fuel shall be free from ULO. A fuel shall be considered to contain ULO when either one of the following conditions is met: – calcium > 30 and zinc > 15; or – calcium > 30 and phosphorus > 15											see 7.10 IP 501 or IP 470 IP 500	

- a This category is based on a previously defined distillate DMC category that was described in ISO 8217:2005, Table 1. ISO 8217:2005 has been withdrawn.
- b 1 mm²/s = 1 cSt.
- c The purchaser shall define the maximum sulfur content in accordance with relevant statutory limitations. See 0.3 and Annex C.
- d See Annex H.
- e Purchasers shall ensure that this pour point is suitable for the equipment on board, especially if the ship operates in cold climates.