

# Heavy Fuel Oil

Residual Marine Fuels  
ISO 8217 2005 Specification for Marine Fuels

Characteristics	Unit	Limit	Category ISO-F-										Test method reference
			RMA	RMB	RMD	RME	RMF	RMG	RMH	RMK	RMH	RMK	
			30	30	80	180	180	380	380	380	700	700	
Density at 15 °C	kg/m <sup>3</sup>	max.	960,0	975,0	980,0	991,0		991,0	991,0	1010,0	991,0	1010,0	ISO 3675 or ISO 12185
Kinematic viscosity at 50 °C	mm <sup>2</sup> /s <sup>a</sup>	max.	30,00		80,00	180,0		380,0			700,0		ISO 3104
Flash point	°C	min.	60,0		60,0	60,0		60,0			60,0		ISO 2719
Pour point (upper) <sup>f</sup>	winter quality	°C	0	24	30	30		30			30		ISO 3016
	summer quality	°C	6	24	30	30		30			30		
Carbon residue	% (m/m)	max.	10		14	15	20	18	22		22		ISO 10370
Ash	% (m/m)	max.	0,10		0,10	0,10	0,15	0,15			0,15		ISO 6245
Water	% (V/V)	max.	0,5		0,5	0,5		0,5			0,5		ISO 3733
Sulfur <sup>c</sup>	% (m/m)	max.	3,50		4,00	4,50		4,50			4,50		ISO 8754 ISO 14596
Vanadium	mg/kg	max.	150		350	200	500	300	600		600		ISO 14597 or IP 501, IP 470
Total sediment potential	% (m/m)	max.	0,10		0,10	0,10		0,10			0,10		ISO 10307-2
Aluminium plus silicon	mg/kg	max.	80		80	80		80			80		ISO 10478 or IP 501 or IP 470
Used lubricating oils (ULO):			The fuel shall be free from ULO <sup>d</sup> .										
Zinc	mg/kg	max.	15										IP 501 or IP470
Phosphorus	mg/kg	max.	15										IP 501 or IP 500
calcium	mg/kg	max.	30										IP 501 or IP 470

a 1 mm<sup>2</sup>/s = 1cSt.

b Purchasers should ensure that this pour point is suitable for the equipment on board, especially if the vessel operates in both the northern and southern hemispheres.

c A sulfur limit of 1,5 % (m/m) will apply in SO<sub>x</sub> emission control areas designated by the International Maritime Organization, when its relevant protocol comes into force. There may be local variations.

d A fuel shall be considered to be free of ULO if one or more of the elements zinc, phosphorus and calcium are below or at the specified limits. All three elements shall exceed the same limits before a fuel shall be deemed to contain ULO.