

ISO 8217:2005

Table 1 - Requirements for Marine Distillate Fuels

Parameter	Unit		DMX	DMA	DMB	DMC ^{a)}	Test Method
Density at 15 °C	kg/m ³	Max	-	890	900	920	ISO 12185/3675
Viscosity at 40 °C	mm ² /s ^{b)}	Min	1.4	1.5	-	-	ISO 3104
		Max	5.5	6	11	14	
Micro Carbon Residue at 10% Residue	%m/m	Max	0.3	0.3	-	-	ISO 10370
Micro Carbon Residue	%m/m	Max	-	-	0.3	2.5	ISO 10370
Water	%V/V	Max	-	-	0.3 ^{e)}	0.3	ISO 3733
Sulphur	%m/m	Max	1	1.5	2.00 ^{d)}	2.00 ^{d)}	ISO 14596/8754
Total Sediment Existent	%m/m	Max	-	-	0.10 ^{e)}	0.1	ISO 10307-1
Ash	%m/m	Max	0.01	0.01	0.01	0.05	ISO 6245
Vanadium	mg/kg	Max	-	-	-	100	ISO 14597/IP 501/470
Aluminium + Silicon	mg/kg	Max	-	-	-	25	ISO 10478/IP 501/470
Flash point	°C	Min	43	60	60	60	ISO 2719
Pour point, Summer	°C	Max	-	0	6	6	ISO 3016
Pour point, Winter	°C	Max	-	-6	0	0	ISO 3016
Cloud point	°C	Max	-16 ^{c)}	-	-	-	ISO 3015
Calculated Cetane Index		Min	45	40	35	-	ISO 4264
Appearance ^{e)}			Clear & Bright		^{e)}	-	
Zinc	mg/kg	-	-	-	-	15	IP 501 or 470
Phosphorous	mg/kg	-	-	-	-	15	IP 501 or 500
Calcium	mg/kg	-	-	-	-	30	IP 501 or 470
Used lubricating Oil (ULO)						The fuel shall be free of ULO (see Table 2)	

a) Note that although predominantly consisting of distillate fuel, the residual oil proportion can be significant.

b) 1 mm²/s = 1cSt.

c) This fuel is suitable for use without heating at ambient temperatures down to -16 °C.

d) A sulfur limit of 1.5% m/m will apply in SOx Emission Control Areas designated by the International Maritime Organization, when its relevant Protocol becomes into force. There may be local variations, for example the EU requires that sulfur content of certain distillate grades be limited to 0.2 % in certain applications. See clause 0.3 and reference [7] in the Bibliography.

e) If the sample is clear and with no visible sediment or water, the total sediment existent and water tests shall not be required.

f) A fuel shall be considered to be free of used lubricating oils (ULOs) 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 ULOs.

ISO 8217:2005

Table 2 - Requirements for Marine Residual Fuels - Grade 30, 80, 180 mm²/s (cSt)

Parameter	Unit		RMA 30	RMB 30	RMD 80	RME 180	RMF 180	Test Method
Density at 15 °C	kg/m ³	Max	960	975	980	991	991	ISO 12185/3675
Viscosity at 50 °C ^{a)}	mm ² /s	Max	30	30	80	180	180	ISO 3104
Water	%V/V	Max	0.5	0.5	0.5	0.5	0.5	ISO 3733
Micro Carbon Residue	%m/m	Max	10	10	14	15	20	ISO 10370
Sulfur ^{c)}	%m/m	Max	3.5	3.5	4	4.5	4.5	ISO 14586/8754
Total Sediment Potential	%m/m	Max	0.1	0.1	0.1	0.1	0.1	ISO 10307-2
Ash	%m/m	Max	0.1	0.1	0.1	0.1	0.15	ISO 6245
Vanadium	mg/kg	Max	150	150	350	200	500	ISO 14597
Aluminium + Silicon	mg/kg	Max	80	80	80	80	80	ISO 10478
Flash point	°C	Min	60	60	60	60	60	ISO 2719
Pour point, Summer ^{b)}	°C	Max	6	24	30	30	30	ISO 3016
Pour point, Winter ^{b)}	°C	Max	0	24	30	30	30	ISO 3016
Zinc	mg/kg	-			15			IP 501 or 470
Phosphorous	mg/kg	-			15			IP 501 or 500
Calcium	mg/kg	-			30			IP 501 or 470
<p>The fuel shall be free of ULO. A fuel shall be considered to be free of ULO if one or more of the elements Zinc, Phosphorous 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.</p>								

a) Annex C gives a brief viscosity/temperature table, for information purposes only. 1 mm²/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_x Emission Control Areas designated by the International Maritime Organization, when its relevant Protocol becomes into force.

ISO 8217: 2005

Table 2 - Requirements for Marine Residual Fuels - Grades 380, 700 mm²/s (cSt)

Parameter	Unit		RMG 380	RMH 380	RMK 380	RMH 700	RMK 700	Test Method
Density at 15 °C	kg/m ³	Max	991	991	1010	991	1010	ISO 12185/3675
Viscosity at 50 °C ^{a)}	mm ² /s	Max	380	380	380	700	700	ISO 3104
Water	%V/V	Max	0.5	0.5	0.5	0.5	0.5	ISO 3733
Micro Carbon Residue	%m/m	Max	18	22	22	22	22	ISO 10370
Sulfur ^{c)}	%m/m	Max	4.5	4.5	4.5	4.5	4.5	ISO 14596/8754
Total Sediment Potential	%m/m	Max	0.1	0.1	0.1	0.1	0.1	ISO 10307-2
Ash	%m/m	Max	0.15	0.15	0.15	0.15	0.15	ISO 6245
Vanadium	mg/kg	Max	300	600	600	600	600	ISO 14597/IP 501
Aluminium + Silicon	mg/kg	Max	80	80	80	80	80	ISO 10478
Flash point	°C	Min	60	60	60	60	60	ISO 2719
Pour point, Summer ^{b)}	°C	Max	30	30	30	30	30	ISO 3016
Pour point, Winter ^{b)}	°C	Max	30	30	30	30	30	ISO 3016
Zinc	mg/kg	-			15			IP 501 or 470
Phosphorous	mg/kg	-			15			IP 501 or 500
Calcium	mg/kg	-			30			IP 501 or 470
<p>The fuel shall be free of ULO. A fuel shall be considered to be free of ULO if one or more of the elements Zinc, Phosphorous 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.</p>								
<p>a) Annex C gives a brief viscosity/temperature table, for information purposes only. 1 mm²/s = 1cSt.</p> <p>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.</p> <p>c) A sulfur limit of 1.5% m/m will apply in SO_x Emission Control Areas designated by the International Maritime Organization, when its relevant Protocol becomes into force.</p>								