



# U. S. Oil & Refining Co.

3001 Marshall Avenue, Tacoma, Washington, 98421 (253) 383-1651

## ISO Marine Distillate Fuel Oil

<u>Characteristic</u>	<u>Limit</u>	<u>Test Method</u>		<u>Specifications<sup>a</sup></u>	
		ISO	ASTM	ISO-F-DMA <sup>b</sup>	ISO-F-DMB
Viscosity @40°C, mm <sup>2</sup> /s	max min	3104	D 445	6.000 2.000	11.00 2.000
Density @15°C, kg/m <sup>3</sup>	max	12185	D 4052	890.0	900.0
Gravity, °API, reference only	min		D 4052	27.5	25.7
Cetane Index	min	4264	D 976	40	35
Sulfur, mass %	max	8754	D 4294	0.0015 <sup>c</sup>	0.50 <sup>c</sup>
Flash Point, PMCC, °C	min	2719	D 93	60.0	60.0
Acid Number, mg KOH/g	max	D 664	D 664	0.5	0.5
Total sediment, existent, mass %	max	10307-1	D 4870	----	0.10 <sup>d</sup>
Oxygen stability, g/m <sup>3</sup>	max	12205		25	-- <sup>e</sup>
Carbon residue, 10% vol., mass %	max			0.30	---
Carbon residue, mass %	max	10370	D 4530	---	0.30
Pour Point, °C Winter/Summer	max	3016	D 5950	-6/0	0/6 <sup>f</sup>
Appearance	---		D 4176	Clear & bright	--- <sup>d</sup>
Water, volume %	max	3733	D 4006	---	0.3 <sup>d</sup>
Ash, mass %	max	6245	D 482	0.01	0.010
Lubricity, μm wsd@ 60°C	max	12156-1	D 6079	520	---- <sup>g</sup>
Distillation, °C, 90% point		3405	D 86	---	371

a. Products, conform to ISO 8217:2010(E) listed grades.

b. ISO-F-DMA is dyed red.

c. ;More stringent than ISO 8217:2010(E)

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

e. Appearance is not C & B therefore oxygen stability not determined.

f. The higher Pour Point limit is effective April 16 – October 17 unless requested otherwise by the purchaser.

g. Sulfur >0.050 mass%, therefore lubricity not determined.