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# ISO 8217 2010
## FUEL STANDARD

ISO 8217 2010 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<br>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<br>ISO 8754<br>ISO 14596 |
| Flash point | | °C | min. | 43,0 | 60,0 | 60,0 | 60,0 | see 7.3<br>ISO 2719 |
| Hydrogen sulfide [c] | | mg/kg | max. | 2,00 | 2,00 | 2,00 | 2,00 | 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 [e] | see 7.4<br>ISO 10307-1 |
| Oxidation stability | | $g/m^3$ | max. | 25 | 25 | 25 | 25 [f] | 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) [d] | winter quality | °C | max. | – 6 | – 6 | – 6 | 0 | ISO 3016 |
| | summer quality | °C | max. | 0 | 0 | 0 | 6 | ISO 3016 |
| Appearance | | – | – | Clear and bright [j] | | | [e, f, g] | see 7.6 |
| Water | | volume % | max. | – | – | – | 0,30 [e] | 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 $mm^2/s$ = 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** Due to reasons stated in Annex D, the implementation date for compliance with the limit shall be 1 July 2012. Until such time, the specified value is given for guidance. For distillate fuels the precision data are currently being developed.

**d** Purchasers should ensure that this pour point is suitable for the equipment on board, especially if the ship operates in cold climates.

**e** 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.

**f** If the sample is not clear and bright, the test cannot be undertaken and hence the oxidation stability limit shall not apply.

**g** If the sample is not clear and bright, the test cannot be undertaken and hence the lubricity limit shall not apply.

**h** This requirement is applicable to fuels with a sulfur content below 500 mg/kg (0,050 mass %).

**i** 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<br>ISO 3675 or<br>ISO 12185 |
| CCAI | | – | max. | 850 | 860 | 860 | 860 | 870 | | | | 870 | | | see 6.3 a) |
| Sulfur [c] | | mass % | max. | Statutory requirements | | | | | | | | | | | see 7.2<br>ISO 8754<br>ISO 14596 |
| Flash point | | °C | min. | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | | | | 60,0 | | | see 7.3<br>ISO 2719 |
| Hydrogen sulfide [d] | | mg/kg | max. | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | | | | 2,00 | | | IP 570 |
| Acid number [e] | | 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<br>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) [f] | 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<br>IP 501,<br>IP 470 or<br>ISO 14597 |
| Sodium | | mg/kg | max. | 50 | 100 | 100 | 50 | 100 | | | | 100 | | | see 7.8<br>IP 501,<br>IP 470 |
| Aluminium plus silicon | | mg/kg | max. | 25 | 40 | 40 | 50 | 60 | | | | 60 | | | see 7.9<br>IP 501,<br>IP 470 or<br>ISO 10478 |
| Used lubricating oils (ULO):<br><br>calcium and zinc or<br>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:<br>calcium > 30 and zinc > 15; or<br>calcium > 30 and phosphorus > 15 | | | | | | | | | | | see 7.10<br>IP 501 or<br>IP 470<br>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 $mm^2/s$ = 1 cSt.
**c** The purchaser shall define the maximum sulfur content in accordance with relevant statutory limitations. See 0.3 and Annex C.
**d** Due to reasons stated in Annex D, the implementation date for compliance with the limit shall be 1 July 2012. Until such time, the specified value is given for guidance.
**e** See Annex H.
**f** Purchasers shall ensure that this pour point is suitable for the equipment on board, especially if the ship operates in cold climates.