

# ISO 8217 Fuel Standard, Fourth Edition 2010

For marine distillate fuels and for marine residual fuels.

## MARINE DISTILLATE FUELS

| Parameter  | Unit   | Limit | DMX                         | DMA   | DMZ   | DMB               |
|--|--|-------|-----------------------------|-------|-------|-------------------|
| Viscosity at 40 °C   | mm <sup>2</sup> /s   | Max   | 5.500                       | 6.000 | 6.000 | 11.00             |
| Viscosity at 40 °C   | mm <sup>2</sup> /s   | Min   | 1.400                       | 2.000 | 3.000 | 2.000             |
| Micro Carbon Residue at 10% Residue                                    | % m/m  | Max   | 0.30                        | 0.30  | 0.30  | -                 |
| Density at 15 °C   | kg/m <sup>3</sup>  | Max   | -                           | 890.0 | 890.0 | 900.0             |
| Micro Carbon Residue   | % m/m  | Max   | -                           | -     | -     | 0.30              |
| Sulphur <sup>a</sup>   | % m/m  | Max   | 1.00                        | 1.50  | 1.50  | 2.00              |
| Water  | % V/V  | Max   | -                           | -     | -     | 0.30 <sup>b</sup> |
| Total sediment by hot filtration                                       | % m/m  | Max   | -                           | -     | -     | 0.10 <sup>b</sup> |
| Ash  | % m/m  | Max   | 0.010                       | 0.010 | 0.010 | 0.010             |
| Flash point  | °C   | Min   | 43.0                        | 60.0  | 60.0  | 60.0              |
| Pour point, Summer   | °C   | Max   | 0                           | 0     | 0     | 6                 |
| Pour point, Winter   | °C   | Max   | -6                          | -6    | -6    | 0                 |
| Cloud point  | °C   | Max   | -16                         | -     | -     | -                 |
| Calculated Cetane Index  |  | Min   | 45                          | 40    | 40    | 35                |
| Acid Number  | mgKOH/g  | Max   | 0.5                         | 0.5   | 0.5   | 0.5               |
| Oxidation stability  | g/m <sup>3</sup>   | Max   | 25                          | 25    | 25    | 25 <sup>c</sup>   |
| Lubricity, corrected wear scar diameter (wsd) 1.4 at 60°C <sup>d</sup> | um   | Max   | 520                         | 520   | 520   | 520 <sup>c</sup>  |
| Hydrogen sulphide <sup>e</sup>   | mg/kg  | Max   | 2.00                        | 2.00  | 2.00  | 2.00              |
| Appearance   |  |       | Clear & Bright <sup>f</sup> |       |       | <sup>b, c</sup>   |
| <sup>a</sup>   | A sulphur limit of 1.00% m/m applies in the Emission Control Areas designated by the International Maritime Organization. As there may be local variations, the purchaser shall define the maximum sulphur content according to the relevant statutory requirements, notwithstanding the limits given in this table. |       |                             |       |       |                   |
| <sup>b</sup>   | If the sample is not clear and bright, total sediment by hot filtration and water test shall be required.  |       |                             |       |       |                   |
| <sup>c</sup>   | Oxidation stability and lubricity tests are not applicable if the sample is not clear and bright.  |       |                             |       |       |                   |
| <sup>d</sup>   | Applicable if sulphur is less than 0.050% m/m.   |       |                             |       |       |                   |
| <sup>e</sup>   | Effective only from 1 July 2012.   |       |                             |       |       |                   |
| <sup>f</sup>   | If the sample is dyed and not transparent, water test shall be required. The water content shall not exceed 200 mg/kg (0.02% m/m).   |       |                             |       |       |                   |

## MARINE RESIDUAL FUELS

| Parameter                                   | Unit   | Limit | RMA <sup>a</sup>  | RMB   | RMD   | RME   | RMG   |       |       |       | RMK    |       |       |
|---|--|-------|---|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
|   |  |       | 10  | 30    | 80    | 180   | 180   | 380   | 500   | 700   | 380    | 500   | 700   |
| Viscosity at 50 °C                          | mm <sup>2</sup> /s   | Max   | 10.00   | 30.00 | 80.00 | 180.0 | 180.0 | 380.0 | 500.0 | 700.0 | 380.0  | 500.0 | 700.0 |
| Density at 15 °C                            | kg/m <sup>3</sup>  | Max   | 920.0   | 960.0 | 975.0 | 991.0 | 991.0 |       |       |       | 1010.0 |       |       |
| Micro Carbon Residue                        | % m/m  | Max   | 2.50  | 10.00 | 14.00 | 15.00 | 18.00 |       |       |       | 20.00  |       |       |
| Aluminium + Silicon                         | mg/kg  | Max   | 25  | 40    |       | 50    | 60    |       |       |       |        |       |       |
| Sodium                                      | mg/kg  | Max   | 50  | 100   |       | 50    | 100   |       |       |       |        |       |       |
| Ash   | % m/m  | Max   | 0.040   | 0.070 |       |       | 0.100 |       |       |       | 0.150  |       |       |
| Vanadium                                    | mg/kg  | Max   | 50  | 150   |       |       | 350   |       |       |       | 450    |       |       |
| CCAI  | -  | Max   | 850   | 860   |       |       | 870   |       |       |       |        |       |       |
| Water                                       | % V/V  | Max   | 0.30  | 0.50  |       |       |       |       |       |       |        |       |       |
| Pour point (upper) <sup>b</sup> , Summer    | °C   | Max   | 6   |       | 30    |       |       |       |       |       |        |       |       |
| Pour point (upper) <sup>b</sup> , Winter    | °C   | Max   | 0   |       | 30    |       |       |       |       |       |        |       |       |
| Flash point                                 | °C   | Min   | 60.0  |       |       |       |       |       |       |       |        |       |       |
| Sulphur <sup>c</sup>                        | % m/m  | Max   | Statutory requirements  |       |       |       |       |       |       |       |        |       |       |
| Total Sediment, aged                        | % m/m  | Max   | 0.10  |       |       |       |       |       |       |       |        |       |       |
| Acid Number <sup>e</sup>                    | mgKOH/g  | Max   | 2.5   |       |       |       |       |       |       |       |        |       |       |
| Used lubricating oils (ULO):                |  |       | The fuel shall be free from ULO, and shall be considered to contain ULO when either one of the following conditions is met: |       |       |       |       |       |       |       |        |       |       |
| Calcium and Zinc; or Calcium and Phosphorus | mg/kg  | -     | Calcium > 30 and zinc > 15; or Calcium > 30 and phosphorus > 15.  |       |       |       |       |       |       |       |        |       |       |
| Hydrogen sulphide <sup>d</sup>              | mg/kg  | Max   | 2.00  |       |       |       |       |       |       |       |        |       |       |
| <sup>a</sup>                                | This residual marine fuel grade is formerly DMC distillate under ISO 8217:2005.  |       |   |       |       |       |       |       |       |       |        |       |       |
| <sup>b</sup>                                | Purchasers shall ensure that this pour point is suitable for the equipment on board, especially in cold climates.  |       |   |       |       |       |       |       |       |       |        |       |       |
| <sup>c</sup>                                | The purchaser shall define the maximum sulphur content according to the relevant statutory requirements.   |       |   |       |       |       |       |       |       |       |        |       |       |
| <sup>d</sup>                                | Effective only from 1 July 2012.   |       |   |       |       |       |       |       |       |       |        |       |       |
| <sup>e</sup>                                | Strong acids are not acceptable, even at levels not detectable by the standard test methods for SAN. As acid numbers below the values stated in the table do not guarantee that the fuels are free from problems associated with the presence of acidic compounds, it is the responsibility of the supplier and the purchaser to agree upon an acceptable acid number. |       |   |       |       |       |       |       |       |       |        |       |       |