

## Requirements for marine fuels ISO 8217:2005E category ISO-F

| Characteristic  | Limit | Residual                      |           |           |            |            |            |            |            |            | Distillate |       |      |
|---|-------|-------------------------------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|-------|------|
|   |       | RMA<br>30                     | RMB<br>30 | RMD<br>80 | RME<br>180 | RMF<br>180 | RMG<br>380 | RMH<br>380 | RMK<br>380 | RMH<br>700 | RMK<br>700 | DMA   | DMB  |
| Density at 15 °C, kg/m <sup>3</sup>                                 | max.  | 960,0                         | 975,0     | 980,0     | 991,0      |            |            | 1010,0     | 991,0      | 1010,0     | 890,0      | 900,0 |      |
| Kinematic viscosity, mm <sup>2</sup> /s<br>- at 40 °C<br>- at 50 °C | min.  |                               |           |           |            |            |            |            |            |            |            | 1,5   | -    |
|   | max.  |                               |           |           |            |            |            |            |            |            |            | 6,0   | 11,0 |
|   | max.  | 30,0                          |           | 80,0      | 180,0      |            | 380,0      |            | 700,0      |            |            |       |      |
| Flash point, °C   | min.  | 60                            |           |           |            |            |            |            |            |            | 60         |       |      |
| Pour point (upper), °C<br>- winter quality<br>- summer quality      | max.  | 0                             | 24        |           |            |            | 30         |            |            | -6         | 0          |       |      |
|   | max.  | 6                             | 24        |           |            |            | 30         |            |            | 0          | 6          |       |      |
| Cetane index  | min.  |                               |           |           |            |            |            |            |            |            |            | 40    | 35   |
| Carbon residue, % (m/m)<br>- 10% (V/V) distillation bottoms         | max.  | 10                            | 14        | 15        | 20         | 18         | 22         |            |            |            | -          | 0,30  |      |
|   | max.  |                               |           |           |            |            |            |            |            |            |            | 0,30  | -    |
| Ash, % (m/m)  | max.  | 0,10                          |           |           |            | 0,15       |            |            |            | 0,01       |            |       |      |
| Water, % (V/V)  | max.  | 0,5                           |           |           |            |            |            |            |            |            | -          | 0,3   |      |
| Sulfur, % (m/m)   | max.  | 3,50                          | 4,00      |           |            |            | 4,50       |            |            | 1,50       | 2,00       |       |      |
| Vanadium, mg/kg   | max.  | 150                           | 350       | 200       | 500        | 300        | 600        |            |            |            | -          |       |      |
| Total sediment, existent, % (m/m)                                   | max.  |                               |           |           |            |            |            |            |            |            |            | -     | 0,10 |
| Total sediment potential, % (m/m)                                   | max.  | 0,10                          |           |           |            |            |            |            |            |            |            |       |      |
| Aluminium plus silicon, mg/kg                                       | max.  | 80                            |           |           |            |            |            |            |            |            |            |       |      |
| Used lubricating oil (ULO), mg/kg                                   |       | The fuel shall be free of ULO |           |           |            |            |            |            |            |            |            |       |      |
| - Zinc  | max.  |                               |           |           |            |            |            |            |            |            |            | 15    |      |
| - Phosphorus  | max.  |                               |           |           |            |            |            |            |            |            |            | 15    |      |
| - Calcium   | max.  |                               |           |           |            |            |            |            |            |            |            | 30    |      |

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