

Table 2 — Residual marine fuels

| Characteristic                            |                | Unit               | Limit | Category ISO-F-        |       |       |       |       |       |       |       |        |       |       | Test method reference                        |
|-------------------------------------------|----------------|--------------------|-------|------------------------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|----------------------------------------------|
|                                           |                |                    |       | RMA                    | RMB   | RMD   | RME   | RMG   |       |       |       | RMK    |       |       |                                              |
|                                           |                |                    |       | 10 <sup>a</sup>        | 30    | 80    | 180   | 180   | 380   | 500   | 700   | 380    | 500   | 700   |                                              |
| Kinematic viscosity at 50 °C <sup>b</sup> |                | 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 | ISO 3104                                     |
| Density at 15 °C                          |                | kg/m <sup>3</sup>  | 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 <sup>c</sup>                       |                | 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 <sup>d</sup>             |                | mg/kg              | max.  | 2,00                   | 2,00  | 2,00  | 2,00  | 2,00  |       |       |       | 2,00   |       |       | IP 570                                       |
| Acid number <sup>e</sup>                  |                | mg<br>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<br>(upper) <sup>f</sup>        | 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                  |

ISO/FDIS 8217:2010(E)

Table 2 (continued)

| Characteristic                                                                     | Unit  | Limit | Category ISO-F-                                                                                                                                                                                          |     |     |     |     |     |     |     |     |     |     | Test method reference                        |
|------------------------------------------------------------------------------------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------------------------------------------|
|                                                                                    |       |       | RMA                                                                                                                                                                                                      | RMB | RMD | RME | RMG |     |     |     | RMK |     |     |                                              |
|                                                                                    |       |       | 10 <sup>a</sup>                                                                                                                                                                                          | 30  | 80  | 180 | 180 | 380 | 500 | 700 | 380 | 500 | 700 |                                              |
| 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><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    |

<sup>a</sup> 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.

<sup>b</sup> 1 mm<sup>2</sup>/s = 1cSt

<sup>c</sup> The purchaser shall define the maximum sulfur content in accordance with relevant statutory limitations. See 0.3 and Annex C.

<sup>d</sup> 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.

<sup>e</sup> See Annex H.

<sup>f</sup> Purchasers shall ensure that this pour point is suitable for the equipment on board, especially if the ship operates in cold climates.

ISO/FDIS 8217:2010(E)