

# *Dolski Rejestr Statków*

## **RULES**

### **FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS**

**AMENDMENTS NO. 7/2011**

to

**PART V**

**FIRE PROTECTION**

2008



GDĄSK

*Amendments No. 7/2011 to Part V – Fire Protection – 2008, of the Rules for the Classification and Construction of Sea-going Ships, were approved by PRS S.A. Executive Board on 28 January 2011 and enter into force on 1 February 2011.*

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*The following amendments to Part V – Fire Protection – 2008, have been introduced:*

1. *On the second page, the list of relevant publications has been supplemented by the following text:*

*Publication No. 88/P – Guidelines on Safety for Natural Gas-fuelled Engine Installations in Ships.*

2. *In the CONTENTS sub-chapter 3.6.8 has been deleted.*
3. *Both in the CONTENTS and in the Rules provisions Chapter 4 has been renamed to read:*

**4 Fire Signalling Systems and Hydrocarbon Gas Detection Systems.**

4. *In the CONTENTS sub-chapter 4.4 has been added:*

4.4 Fixed Hydrocarbon Gas Detection Systems

5. *In the CONTENTS sub-chapter 6.5.4 has been added:*

6.5.4 Early Detection of Fire in Periodically Unattended Machinery Spaces

6. *In the CONTENTS sub-chapter 6.16.5 has been added:*

6.16.5 Early Detection of Fire in Machinery Spaces

7. *In the CONTENTS sub-chapter 6.22 has been added:*

6.22 Ships with Natural Gas-fuelled Engines

8. *In the CONTENTS, in the part SUPPLEMENT – Retroactive Requirements, sub-chapter 2.17 has been added:*

2.17 Portable Instruments for Measuring Oxygen and Flammable Vapour Concentrations

9. *In paragraph 1.3.3 the following sub-paragraphs have been added:*

- .43 nozzles for fixed pressure water spraying fire extinguishing systems for machinery spaces;
- .44 dual-purpose type nozzles (spray/jet type);
- .45 fire hoses (reel type);
- .46 medium expansion foam fire extinguishing system components – fixed deck foam for tankers;
- .47 fixed low expansion foam fire extinguishing systems components for machinery spaces and tanker deck protection
- .48 expansion foam for fixed fire extinguishing systems for chemical tankers
- .49 nozzles for fixed pressure water-spraying fire-extinguishing systems for cabin balconies;
- .50 inside air high expansion foam systems for the protection of machinery spaces and cargo pump rooms.

10. In paragraph 1.3.5, the following sub-paragraphs: .3, .4, .5, .9, .12, .16, .21, .24, .25 and .26 have been deleted.

11. At the end of paragraph, 2.1.2.1.1 the following text has been added:

Insulation materials containing asbestos are prohibited.

12. In paragraph 2.2.6.1, the two final passages have been amended to read:

Doors approved as A class without the sill being part of the frame shall be so installed that the gap under the door does not exceed 12 mm and a non-combustible sill shall be so installed under the door that floor coverings do not extend beneath the closed door. Doors approved as B class without the sill being part of the frame shall be so installed that the gap under the door does not exceed 25 mm.

13. In the first passage of sub-chapter 2.5.7, the following sub-paragraph has been added:

.3 enclosed spaces containing incinerators.

14. In paragraph 3.2.2.1, the second sentence has been amended to read:

In the pump remote starting point, a gauge indicating water pressure or another indicator (e.g. an electric lamp) shall be provided to indicate the pump operation.

15. Paragraph 3.2.9.1 has been amended to read:

**3.2.9.1** In ships of gross tonnage 200 and above, the fire main system shall have a branch led to the open deck in way of superstructure. The branch shall be fitted with a permanent shore connection for the water supply. The shore connection shall be fitted with a shut-off valve as well as steel coupling for the international shore connection in accordance with the requirements specified in Table 2.1 of the *FSS Code*. The shut-off valve is not required if the shore connection is closed with a blind flange fitted with butterfly screws (not requiring a wrench to remove the flange).

16. Sub-chapter 3.4.4 has been amended to read:

#### **3.4.4 Fixed Pressure Water-spraying Fire-extinguishing Systems for Machinery Spaces and Cargo Pump-rooms**

**3.4.4.1** The system shall be based on the guidelines developed by IMO and specified in the Annex to MSC.1/Circ.1165 (as further amended by MSC.1/Circ.1269 and MSC.1/Circ.1386) and in the Annex to MSC.1/Circ.1385.

**3.4.4.2** The system is subject to tests in accordance with the guidelines developed by IMO and specified in the annexes to MSC.1/Circ.1165, replacing MSC/Circ.668 (as further amended by MSC.1/Circ.1237, MSC.1/Circ.1269 and MSC.1/Circ.1386) and in the Annex to MSC.1/Circ.1385.

17. *Sub-chapter 3.4.5 has been amended to read:*

**3.4.5 High Pressure Equivalent Water-mist Fire-extinguishing Systems for Machinery Spaces and Cargo Pump-rooms**

**3.4.5.1** The system shall be based on the guidelines developed by IMO and specified in the Annex to MSC.1/Circ.1165 (as further amended by MSC.1/Circ.1269 and MSC.1/Circ.1386) and in the Annex to MSC.1/Circ.1385.

**3.4.5.2** The system is subject to tests in accordance with the guidelines developed by IMO and specified in the annexes to MSC.1/Circ.1165, replacing MSC/Circ.668 (as further amended by MSC.1/Circ.1237, MSC.1/Circ.1269 and MSC.1/Circ.1386) and in the Annex to MSC.1/Circ.1385.

18. *Paragraphs 3.4.6.4, 3.4.6.5 and 3.4.6.6 have been amended to read:*

**3.4.6.4** The system shall be based on the guidelines developed by IMO and specified in the Annex to MSC.1/Circ.1387.

**3.4.6.5** Spray nozzles shall be based on and tested in accordance with the guidelines developed by IMO and specified in Annex A to MSC/Circ.1165 (as further amended by MSC.1/Circ.1269) and with the amendments specified in the Annex to MSC.1/Circ.1387.

**3.4.6.6** The system is subject to tests in accordance with the guidelines developed by IMO and specified in the Annex to MSC.1/Circ.1387.

Fire and component tests previously conducted in accordance with the Annex to MSC/Circ.913, however, remain valid for approval of new systems.

19. *Paragraphs from 3.4.6.7 to 3.4.6.18 have been deleted.*

20. *Paragraph 3.5.7.8 has been amended to read:*

**3.5.7.8** Fixed high-expansion foam systems are subject to tests in accordance with the guidelines developed by IMO and specified in the annexes MSC.1/Circ. 1384, replacing MSC.1/Circ.1271.

Fire and component tests previously conducted in accordance with the Annex to MSC.1/Circ.1271, however, remain valid for approval of new systems.

21. *Paragraph 3.6.4.1.5 has been added:*

**3.6.4.1.5** For container and general cargo spaces (primarily intended to carry a variety of cargoes separately secured or packed), the fixed piping system shall be such that at least two-thirds of the carbon dioxide can be discharged into the space within 10 min. For solid bulk cargo spaces, the fixed piping system shall be such that at least two-thirds of the carbon dioxide can be discharged into the space within 20 min. The system controls shall be arranged to allow one-third, two-thirds or the entire quantity of carbon dioxide to be discharged based on the loading condition of the hold.

22. *In paragraph 3.6.4.2.2 the beginning of the first sentence has been amended to read:*

**3.6.4.2.2** Remote controls of the CO<sub>2</sub> system used in spaces in which personnel normally work or to which they have access, as specified in 3.6.3.7, shall fulfil the following requirements:

23. *Paragraph 3.6.4.6.1 has been amended to read:*

**3.6.4.6.1** Spaces protected by the CO<sub>2</sub> system in which personnel normally work or to which they have access shall be provided with a pre-discharge alarm, see paragraphs 3.6.3.7 and 3.6.3.8.

24. *Sub-chapter 3.6.8 has been deleted.*

25. *In Table 3.11, in item 3.1, points .2 and .3 have been amended to read:*

- .2 pipes from distribution valves to protected spaces and pipes of protective devices passing through accommodation and service spaces;
- .3 pipes passing through spaces other than accommodation and service spaces as well as pipes in the protected spaces.

26. *Paragraph 4.1.2.6 has been amended to read:*

**4.1.2.6** Manually operated call points shall be installed throughout the accommodation spaces, service spaces and control stations. One manually operated call point shall be located at each exit. Manually operated call points shall be located in the corridors of each deck at each exit (inside or outside) to the open deck and be readily accessible from the corridor such that no part of the corridor is more than 20 m from a manually operated call point.

Service spaces and control stations which have only one access, leading directly to the open deck, shall have a manually operated call point not more than 20 m (measured along the access route using the deck, stairs and/or corridors) from the exit.

Manually operated call points are not required to be installed for spaces having little or no fire risk, such as voids and carbon dioxide rooms, nor at each exit from the navigation bridge, in cases where the control panel is located in the navigation bridge.

27. *In paragraph 4.3.1 the number of IMO Resolution A.830(19) has been amended to read A.1021 (26).*

28. *Sub-chapter 4.4 has been added:*

## **4.4 Fixed Hydrocarbon Gas Detection Systems**

### **4.4.1 General**

**4.4.1.1** The system shall comprise a central unit for gas measurement and analysis and gas sampling pipes from all ballast tanks and void spaces of double-hull and double-bottom spaces adjacent to the cargo tanks, including the forepeak tank and any other tanks and spaces under the bulkhead deck adjacent to cargo tanks.

**4.4.1.2** The system may be integrated with the cargo pump-room gas detection system, provided that the spaces referred to in paragraph 4.4.1.1 are sampled at the rate required in paragraph 4.4.2.3.1. Continuous sampling from other locations may also be considered provided the sampling rate is complied with.

**4.4.1.3** The system shall be designed, constructed and tested in accordance with the guidelines developed by IMO and specified in MSC.1/Circ.1370.

## **4.4.2 Component Requirements**

### **4.4.2.1 Gas Sampling Lines**

**4.4.2.1.1** Common sampling lines to the detection equipment shall not be fitted, except the lines serving each pair of sampling points as required in paragraph 4.4.2.1.3.

**4.4.2.1.2** The materials of construction and the dimensions of gas sampling lines shall be such as to prevent flow restriction. Where non-metallic materials are used, they shall be electrically conductive. The gas sampling lines shall not be made of aluminium.

**4.4.2.1.3** Configuration of gas sampling lines shall be adapted to the design and size of each space. Except as provided in paragraphs 4.4.2.1.4 and 4.4.2.1.5, the sampling system shall allow for a minimum of two hydrocarbon gas sampling points, one located on the lower and one on the upper part of the space where sampling is required. Where required, the upper gas sampling point shall not be located lower than 1 m from the tank top. The position of the lower located gas sampling point shall be above the height of the bottom shell-plating girder, however at least 0.5 m from the bottom of the tank and it shall be provided with means to be closed when clogged. While positioning the fixed sampling points, due regard shall also be paid to the density of vapours of the oil products intended to be transported and the dilution from space purging or ventilation.

**4.4.2.1.4** For ships with deadweight of less than 50,000 tonnes, installation of one sampling location for each tank may be permitted for practical and/or operational reasons.

**4.4.2.1.5** For ballast tanks in the double-bottom, ballast tanks not intended to be partially filled and void spaces, the upper gas sampling point is not required.

**4.4.2.1.6** Means shall be provided to prevent gas sampling lines from clogging when tanks are being ballasted by using compressed air flushing to clean the line after switching from ballast to cargo loaded mode. The system shall have an alarm to indicate if the gas sampling lines are clogged.

#### **4.4.2.2 Gas Analysis Unit**

**4.4.2.2.1** Gas analysis unit shall be located in a safe space and may be located in areas outside the ship's cargo area; for example, in the cargo control room and/or navigation bridge in addition to the hydraulic room when mounted on the forward bulkhead, provided the following requirements are fulfilled:

- .1** sampling lines shall not run through gas safe spaces, except where permitted under .5;
- .2** hydrocarbon gas sampling pipes shall be equipped with flame arresters. Sample hydrocarbon gas shall be led to the atmosphere with outlets arranged in a safe location, not close to a source of ignitions and not close to the accommodation area air intakes;
- .3** manual isolating valve, which shall be easily accessible for operation and maintenance, shall be fitted in each of the sampling lines at the bulkhead on the gas safe side;
- .4** hydrocarbon gas detection equipment including sample piping, sample pumps, solenoids, analysing units etc., shall be located in a reasonably gas-tight cabinet (e.g., fully enclosed steel cabinet with a door with gaskets) which shall be monitored by its own sampling point. At a gas concentration above 30% of the lower flammable limit inside the steel enclosure the entire gas analysing unit shall be automatically shut down; and
- .5** where the enclosure cannot be arranged directly on the bulkhead, sample pipes shall be of steel or other equivalent material and without detachable connections, except for the connection points for isolating valves at the bulkhead and analysing unit, and shall be routed on their shortest ways.

#### **4.4.2.3 Gas Detection Equipment**

**4.4.2.3.1** Gas detection equipment shall be designed to sample and analyse from each sampling line of each protected space, sequentially at intervals not exceeding 30 min.

**4.4.2.3.2** Means shall be provided to enable measurements with portable instruments, in case the fixed system is out of order or for system calibration. In case the system is out of order, procedures shall be in place to continue to monitor the atmosphere with portable instruments and to record the measurement results.

**4.4.2.3.3** Audible and visual alarms shall be initiated in the cargo control room, navigation bridge and at the analysing unit when the vapour concentration in a particular space reaches a pre-set value, which shall not be higher than the equivalent of 30% of the lower flammable limit.

**4.4.2.3.4** Gas detection equipment shall be so designed that it may readily be tested and calibrated.



29. *In paragraph 6.1.8.2, the last passage has been amended to read:*

Doors approved as A class without the sill being part of the frame shall be so installed that the gap under the door does not exceed 12 mm and a non-combustible sill shall be installed under the door such that floor coverings do not extend beneath the closed door.

30. *In paragraph 6.1.9.1, the last passage has been amended to read:*

Doors approved as B class without the sill being part of the frame shall be so installed that the gap under the door does not exceed 25 mm.

31. *In sub-chapter 6.1.23.3, the last sentence has been deleted.*

32. *In paragraph 6.1.24.2.1, the last sentence has been amended to read:*

Ship's systems/installations/equipment which should remain operational after exceeding a fire or flooding casualty threshold shall fulfil the requirements developed by IMO and specified in MSC.1/Circ.1369.

33. *At the end of paragraph 6.1.25.2.1, the following text has been added:*

Clarifications on the interrelation between the central control station, navigation bridge and safety centre are specified in MSC.1/Circ.1368 developed by IMO.

34. *Paragraphs 6.3.4.3.4, 6.3.4.3.5 and 6.3.4.3.6 have been added:*

**6.3.4.3.4** In addition to fulfilment of the requirements for portable equipment for measuring oxygen and for measuring flammable vapour concentrations specified in 6.3.11, oil tankers of 20,000 tonnes deadweight and above constructed on or after 1 January 2012 shall be provided with fixed hydrocarbon gas detection system in accordance with the requirements specified in sub-chapter 4.4.

**6.3.4.3.5** Oil tankers provided with constant operative inerting systems for such spaces need not be equipped with fixed hydrocarbon gas detection equipment.

**6.3.4.3.6** Cargo pump-rooms provided with additional arrangements to prevent explosion in cargo pump-rooms, as required in 6.3.5.2, need not be equipped with fixed hydrocarbon gas detection system.

35. *Sub-chapter 6.5.4 has been added:*

#### **6.5.4 Early Detection of Fire in Periodically Unattended Machinery Spaces**

On special purpose ships carrying not more than 240 persons on board, in periodically unattended machinery spaces means shall be provided for early detection of fire in accordance with the requirements specified in sub-chapter 6.16.5.

36. *Paragraph 6.10.2.4.3 has been added:*

**6.10.2.4.3** Carbon dioxide systems shall not be used for the protection of special category spaces.

37. *Sub-chapter 6.16.5 has been added:*

### **6.16.5 Early Detection of Fire in Machinery Spaces**

**6.16.5.1** Means shall be provided to detect and give alarms at an early stage in case of fires:

- .1 in boiler air supply casings and exhausts (uptakes); and
- .2 in scavenging air belts of propulsion machinery,

unless PRS deems this to be unnecessary in a particular case.

**6.16.5.2** Internal combustion engines of 2,250 kW and above or having cylinders of more than 300 mm bore shall be provided with crankcase oil mist detectors or engine bearing temperature monitors or equivalent devices.

38. *Paragraph 6.20.4.5 has been added:*

**6.20.4.5** If – taking account of the ship service restrictions – PRS deems it unreasonable or impracticable to place a fire-fighter’s outfit aboard, the ship may be exempt from the requirement to carry one or more such outfits.

39. *Sub-chapter 6.22 has been added:*

### **6.22 Ships with Natural Gas-fuelled Engines**

Fire protection of those ships shall be in accordance with *Publication No. 88/P – Guidelines on Safety for Natural Gas-fuelled Engine Installations in Ships* (IMO Resolution MSC.285(86)).

40. *In the SUPPLEMENT – Retroactive Requirements, in paragraph 2.2.20.1, sub-paragraph .4 has been amended to read:*

- .4 corridors or parts of corridors from which there is only one route of escape shall not exceed the following lengths:
  - .1 5 m – in ships constructed on or after 1 October 1994;
  - .2 13 m – in ships constructed before 1 October 1994 carrying more than 36 passengers;
  - .3 7 m – in ships constructed before 1 October 1994 carrying not more than 36 passengers.

41. *In the SUPPLEMENT – RETROACTIVE REQUIREMENTS, sub-chapter 2.17 has been added:*

### **2.17 Portable Instruments for Measuring Oxygen and Flammable Vapour Concentrations**

Tankers shall be equipped with at least one portable instrument for measuring oxygen and one for measuring flammable vapour concentrations, together with a sufficient set of spares. Suitable means shall be provided for the calibration of such instruments.