

# RULES

## FOR THE CLASSIFICATION AND CONSTRUCTION OF HIGH-SPEED CRAFT

### PART VI FIRE PROTECTION

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# **RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF HIGH-SPEED CRAFT**

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Rules for the Classification and Construction of High-Speed Craft of Russian Maritime Register of Shipping (RS, the Register) have been approved in accordance with the established approval procedure and come into force on 1 March 2023.

The present edition of the Rules is based on the 2018 edition taking into account the amendments developed immediately before publication.

The procedural requirements, unified requirements, unified interpretations and recommendations of the International Association of Classification Societies (IACS) and the relevant resolutions of the International Maritime Organization (IMO) have been taken into consideration.

The Rules are published in the following parts:

- Part I "Classification";
- Part II "Hull Structure and Strength";
- Part III "Equipment, Arrangements and Outfit";
- Part IV "Stability";
- Part V "Reserve of Buoyancy and Subdivision";
- Part VI "Fire Protection";
- Part VII "Machinery Installations";
- Part VIII "Systems and Piping";
- Part IX "Machinery";
- Part X "Boilers, Heat Exchangers and Pressure Vessels";
- Part XI "Electrical Equipment";
- Part XII "Refrigerating Plants";
- Part XIII "Materials";
- Part XIV "Welding";
- Part XV "Automation";
- Part XVI "Live-Saving Appliances";
- Part XVII "Radio Equipment";
- Part XVIII "Navigational Equipment";
- Part XIX "Signal Means";
- Part XX "Equipment for Pollution Prevention";
- Part XXI "Craft for Personnel Transportation".

REVISION HISTORY

(purely editorial amendments are not included in the Revision History)

For this version, there are no amendments to be included in the Revision History.

## 1 GENERAL

**1.1** The requirements of Part VI "Fire Protection" of the Rules for the Classification and Construction of Sea-Going Ships<sup>1</sup>, including references to the International Code for Application of Fire Test Procedures<sup>2</sup>, as far as reasonable and practicable, having regard to the requirements given below, apply to high-speed craft<sup>3</sup>. However, the requirements of Section 8, Part VI "Fire Protection" of the Rules for the Classification may be applied for the craft under 500 gross tonnage.

**1.2** Definitions and explanations relating to general terminology are given in 1.1, Part I "Classification" of the Rules for the Classification and Construction of High-Speed Craft<sup>4</sup> and Part VI "Fire Protection" of the Rules for the Classification.

**1.3** In this Chapter the following definitions have been additionally accepted.

Smoke-tight or capable of preventing the passage of smoke means that a division made of non-combustible or fire-restricting materials is capable of preventing the passage of smoke at an ambient temperature.

Areas of major fire hazard referred to in [Tables 2.5.2](#) and [2.6.2](#) by "A" include:

- machinery spaces defined in 1.2.1, Part I "Classification";
- ro-ro cargo spaces;
- spaces containing dangerous goods;
- special-category spaces;
- storerooms containing flammable liquids;
- galleys;
- shops of 50 m<sup>2</sup> and more in area in which flammable liquids are sold;
- main ducts directly connected with the above-mentioned spaces.

Areas of moderate fire hazard referred to in [Tables 2.5.2](#) and [2.6.2](#) by "B" include: auxiliary machinery spaces defined in 1.2.1, Part I "Classification"; stores containing packaged beverages with alcohol content not exceeding 24 % by volume;

- crew accommodation spaces with berths;
- service spaces;
- shops of less than 50 m<sup>2</sup> in area, containing limited quantity of flammable liquids for sale and having no separate storage area;
- shops of more than 50 m<sup>2</sup> in area which do not sell flammable liquids;
- main ducts directly connected with the above-mentioned spaces.

Areas of minor fire hazard referred to in [Tables 2.5.2](#) and [2.6.2](#) by "C" include:

- auxiliary machinery spaces of little fire risk defined in 1.2.1, Part I "Classification";
- cargo spaces;
- oil fuel tanks compartments;
- public spaces;
- tanks, void spaces and areas of minor or no fire hazard;
- snack-bars;
- shops other than those arranged in the above-mentioned areas;
- corridors in passenger accommodation spaces and stairway enclosures;
- crew accommodation spaces without berths;
- main ducts directly connected with the above-mentioned spaces.

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<sup>1</sup> Hereinafter referred to as "the Rules for the Classification".

<sup>2</sup> Hereinafter referred to as "the FTP Code".

<sup>3</sup> Hereinafter referred to as "HSC".

<sup>4</sup> Hereinafter referred to as "these Rules".

IMDG Code is the International Maritime Dangerous Goods (IMDG) Code adopted by IMO resolution MSC.122(75), as amended by IMO resolutions MSC.157(78), MSC.205(81), MSC.262(84), MSC.294(87), MSC.328(90), MSC.372(93), MSC.406(96), MSC.442(99).

Evacuation stations and external escape routes referred to in [Tables 2.5.2](#) and [2.6.2](#) by "E", including the following areas:

external stairs and open decks used for escape routes; muster stations, internal and external;

open deck spaces and enclosed promenades forming lifeboat and liferaft embarkation and lowering stations;

craft side to the waterline in the lightest seagoing condition, superstructure and deckhouse sides situated below and adjacent to the liferaft and evacuation slide embarkation areas.

In relation to the classification of spaces in [1.3](#), the following additional criteria shall be applied:

**.1** if a space is divided by partial bulkheads into two (or more) smaller areas such that they form enclosed spaces, then the enclosed spaces shall be surrounded by bulkheads and decks in accordance with [Tables 2.5.2](#) and [2.6.2](#), as applicable. However, if the separating bulkheads of such spaces are at least 30 % open, then the spaces may be considered as the same space;

**.2** cabinets having a deck area of less than 2 m<sup>2</sup> may be accepted as part of the space they serve, provided they have open ventilation to the space and do not contain any material or equipment that could be a fire risk;

**.3** where a space has the special characteristics of two or more space groupings, the structural fire protection time of the divisions shall be the highest for the space groupings concerned. For example, the structural fire protection time of the divisions of emergency generator rooms shall be of the highest value for the space when the space is considered as being a control station (D) and a machinery space (A).

Fire-restricting materials are materials which prevent flame propagation and have the properties in compliance with Part 10 of the FIP Code.

Fire-resisting divisions are divisions formed by bulkheads and decks and constructed of non-combustible or fire-restricting materials which by insulation or inherent fire-resisting properties satisfy the following requirements:

they shall be suitably stiffened;

they shall be constructed so as to be capable of preventing the passage of smoke and flame up to the end of the appropriate standard fire test time;

where required, they shall maintain load-carrying capabilities during the appropriate standard fire test time;

they shall have thermal properties such that the average temperature on the unexposed side will not rise more than 139 °C above the original temperature, nor will the temperature at any point, including any joint, rise more than 180 °C above the original temperature during the appropriate standard fire test time;

specimens of the relevant bulkheads or decks shall be tested in accordance with the FTP Code to ensure that they meet the above-mentioned requirements.

Open spaces referred to in [Tables 2.5.2](#) and [2.6.2](#) by "F" are spaces including open spaces which are not control stations of evacuation stations and external escape routes.

**1.4** Enclosed spaces with low illumination level (cinemas, discotheques, and similar spaces) are not permitted. Pantries which do not contain cooking facilities with exposed heating surfaces may be permitted. Galleys, if fitted, shall be in full compliance with the requirements of 2.1.5.2, Part VI "Fire Protection" of the Rules for the Classification.

**1.5** The structural fire protection items shall be considered regarding the spread of heat and provision of heat barriers.

**1.6** On each craft fire control plans meeting the requirements of 1.4, Part VI "Fire Protection" of the Rules for the Classification shall be provided.

## 2 STRUCTURAL FIRE PROTECTION

### 2.1 Requirements for materials.

**2.1.1** The requirements given below apply to all craft, irrespective of construction materials of the hull.

**2.1.2** The hull, superstructure, structural bulkheads, decks, deckhouses and pillars shall be constructed of approved non-combustible materials having the adequate structural characteristics. The use of other fire-restricting materials may be permitted provided the requirements of this Section are met and the materials comply with the requirements of the FTP Code.

Requirements in [2.1.2](#) do not apply to appendages such as propellers, air ducts to propellers, transmission shafts, rudders and other control surfaces, struts, spars, flexible skirts, etc., which do not comprise part of the main structure of the craft.

**2.1.3** All separating divisions, ceilings or linings if they are not fire-resisting, shall be of non-combustible or fire-restricting materials. Draught stops shall be of non-combustible or fire-restricting materials.

**2.1.4** Where insulation is installed in areas where it could come into contact with any flammable fluids or their vapours, its surface shall be impermeable to such flammable fluids or vapours.

The fire insulation in such spaces may be covered by metal sheets (not perforated) or by vapour proof glass cloth sealed at joints.

**2.1.5** Furniture in crew accommodation spaces shall comply with the following requirements:

all case furniture, e.g., desks, wardrobes, dressing tables, bureaux and dressers shall be constructed entirely of approved non-combustible or fire-restricting materials, except that a combustible veneer with a calorific value not exceeding 15 MJ/m<sup>2</sup> may be used on the exposed surface of such articles;

all furniture, such as chairs, sofas and tables, shall be constructed with frames of non-combustible or fire-restricting materials;

all upholstered furniture shall be resistant to ignition and flame spreading, as defined by the FTP Code.

**2.1.6** All draperies, curtains and other suspended textile materials, bedding components and deck finish materials shall be of a type approved by the Register based on the positive results of standard tests in accordance with the FTP Code.

**2.1.7** Subject to [2.1.8](#) the following surfaces shall, as a minimum, be constructed of materials having low flame-spread characteristics:

**.1** exposed surfaces of corridors, stairway enclosures, bulkheads (including windows), wall and ceiling linings in all public, crew accommodation and service spaces, control stations, internal muster and evacuation stations;

**.2** surfaces in concealed and inaccessible areas in corridors and stairway enclosures, public, service and crew accommodation spaces, control stations and internal muster and evacuation stations.

Requirements in [2.1.7](#) do not apply to partitions, windows and side scuttles made of glass which are deemed to be non-combustible and to comply with the requirements for low-flame spread surfaces or to items and materials referred to in [2.1.5](#)<sup>1</sup>.

**2.1.8** Any thermal or acoustic insulation material shall be of non-combustible material, except when the use of fire-restricting materials is permitted in compliance with these Rules.

**2.1.9** Surfaces referred to in [2.1.7.1](#) shall be of materials which, when exposed to fire, do not emit smoke or toxic gases in excessive quantities as defined by the FTP Code.

<sup>1</sup> Refer to paragraph 7.9.3.4 of the HSC Code and paragraphs 1 and 5.1, Annex 2 of the FTP Code.

**2.1.10** Void compartments, where low-density combustible materials are used to provide buoyancy shall be protected from adjacent fire hazardous areas by fire-resisting divisions in accordance with [Tables 2.5.2](#) and [2.6.2](#). Besides, spaces and closures to them shall be gastight but ventilated to atmosphere.

**2.1.11** In compartments where smoking is allowed, suitable non-combustible ash containers shall be provided. In compartments where smoking is not allowed, adequate notices shall be displayed.

**2.2 Closures of doorways and other openings.**

**2.2.1** Except for hatches between cargo, special category, store, and baggage spaces, and between such spaces and weather decks, all openings shall be provided with permanently attached means of closing which shall be at least as effective for resisting fires as the divisions in which they are fitted.

**2.2.2** It shall be possible for each door to be opened and closed from each side of the bulkhead by one person only.

**2.2.3** Fire doors in bounding bulkheads of areas of major fire hazard and stairway enclosures shall satisfy the following requirements:

**2.2.3.1** Doors shall be self-closing and be capable of closing with an angle of inclination up to 3,5° opposing closure, the time of closure for hinged doors shall be no more than 40 s but no less than 10 s from the beginning of their movement with the craft in the upright position. Sliding doors shall move with the uniform rate of no more than 0,2 m/s but no less than 0,1 m/s with the craft in the upright position.

**2.2.3.2** Remote-controlled doors or power-operated doors shall be equipped with an alarm that sounds at least 5 s but no more than 10 s before the door begins to move and continues sounding until the door is completely closed. A door shall be designed so that to re-open when contacting an object in its path; it shall re-open sufficiently to allow a clear passage of no more than 1 m from the point of contact.

**2.2.3.3** All doors shall be capable of remote and automatic release from a continuously manned control station, either simultaneously or in groups, and also individually from a position at both sides of the door. Indication shall be provided in the continuously manned central control station panel whether each of the remote-controlled doors is closed. The release mechanism shall be designed so that the door will automatically close in the event of disruption of control system or central power supply. Release switches shall have an on-off function to prevent automatic resetting of the system. Hold-back hooks not subject to central control station release are prohibited.

**2.2.3.4** Local power accumulators for power-operated doors shall be provided in the immediate vicinity of the doors to enable the doors to be operated at least 10 times (fully opened and closed).

**2.2.3.5** Double-leaf doors equipped with a latch necessary to their fire integrity shall have a latch that is automatically activated by the operation of doors when the operating system is released.

**2.2.3.6** Doors giving direct access to special-category spaces which are power-operated and automatically closed need not be equipped with alarms and remote-release mechanisms required in [2.2.3.2](#) and [2.2.3.3](#).

**2.2.3.7** Doors closed remotely from a continuously manned control station shall be capable of being re-opened at both sides of the door by local control. After such local opening, the door shall close again automatically.

**2.2.3.8** Disruption of the control system or the main source of electrical power of one door shall not impair safe functioning of other doors.

**2.2.3.9** Access shall be provided to local controls for adjustment and maintenance.



**2.2.3.10** Power-operated doors shall be provided with a control system of the approved type which shall ensure functioning of doors in case of fire as defined by the FTP Code. This system shall comply with the following requirements:

- .1 the control system shall be able to operate the door at the temperature of at least 200 °C for at least 60 min, served by power supply;
- .2 power supply for doors not subject to fire shall not be impaired;
- .3 at temperatures exceeding 200 °C the control system shall be automatically isolated from the power supply and shall be capable of keeping the door closed up to at least 945 °C.

**2.2.3.11** Doors in smoke-tight divisions shall be self-closing. Doors which are normally in open position shall be closed automatically or remotely from a continuously manned control station.

**2.2.4** The requirements for fire integrity of outer boundaries facing open decks do not apply to glass partitions, windows and side scuttles and to exterior doors of superstructures and deckhouses.

**2.2.5** In public, crew accommodation and service spaces, control stations, corridors and stairways air spaces enclosed behind ceilings, panels and linings shall be suitably divided by close-fitting draught stops spaced not more than 14 m apart. Draught stops are not required in public spaces of category A craft having only one public space and on other craft in spaces with open ceilings (perforated ceilings) where the opening is 40 % or more and the ceiling is arranged in such a way that a fire behind the ceiling can be easily seen and extinguished.

**2.2.6** Indicators shall be provided on the navigating bridge, which shall indicate when any door leading to or from the special category space or ro-ro space is closed.

**2.2.7** Fire doors in boundaries of special category spaces leading to spaces below the vehicle deck shall be arranged with coamings of a height of at least 100 mm.

### **2.3 Arrangement of stairways.**

**2.3.1** For internal stairways connecting two decks, enclosures with self-closing doors may be provided on one deck only. In such cases, the fire protection time for these enclosures shall comply with the requirements of [Tables 2.5.2](#) and [2.6.2](#) for divisions separating spaces served by the stairway involved.

**2.3.2** Lift trunks shall be fitted so as to prevent the passage of smoke and flame from one deck to another and shall be provided with means of closing so as to permit the control of draught and smoke.

**2.3.3** Open stairways may be fitted in public spaces consisting of only two decks, provided the stairways be wholly within such public spaces and the following conditions are met:

- .1 all levels are used for the same purpose;
- .2 the area of the opening between the lower and upper parts of the space is at least 10 % of the deck area between the upper and lower parts of the space;
- .3 the design is such that persons within the space should be generally aware, or could easily be made aware of, a developing fire or other hazardous situation located within that space;
- .4 sufficient means of escape are provided from both levels of the space directly leading to an adjacent safe area or compartment;
- .5 the whole space is served by one section of the sprinkler system.

### **2.4 Fire-resisting divisions.**

**2.4.1** Areas of major and moderate fire hazard shall be enclosed by fire-resisting divisions, except where the omission of any such division would not affect the safety of the craft. The requirements need not be applied to parts of the structure in contact with water at least 300 mm below the craft's waterline in the lightweight condition in displacement mode, but due regard shall be given to the effect of temperature of hull in contact with water and heat transfer from any uninsulated structure in contact with water to insulated structure above water.

**2.4.2** Fire-resisting bulkheads and decks shall be constructed to resist exposure to the standard fire test for a period of 30 min for areas of moderate fire hazard and 60 min for areas of major fire hazard except as provided in [2.5.2](#) and [2.6.2](#).

For open ro-ro cargo spaces (category F spaces) which are not essential elements of main load-bearing structure, and are not accessible for passengers and crew members in emergency situations, the structural fire protection time may be reduced to 0 min.

**2.4.3** Main load-bearing structures within areas of major fire hazard and areas of moderate fire hazard and structures supporting control stations shall be arranged to distribute load so that there will be no collapse of the construction of the hull and superstructure when it is exposed to fire for the appropriate fire protection time. The load-carrying structure shall also comply with the requirements of [2.4.4](#) and [2.4.5](#) below.

**2.4.4** If the structures specified in 2.4.3 are made of aluminium alloy their insulation shall be such that the temperature of the core does not exceed the ambient temperature more than 200 °C in accordance with the periods of time specified in [2.4.2](#) with regard to provisions of [2.5.2](#) and [2.6.2](#).

**2.4.5** If the structures specified in [2.4.3](#) are made of combustible material, their insulation shall be such that their temperatures will not rise to a level where deterioration of the construction will occur during the exposure to the composite fire test in compliance with Part 11 of the FTP Code, to such an extent that the load-carrying capability will be impaired within the periods of time specified in [2.4.3](#), [2.5.2](#) and [2.6.2](#).

**2.4.6** Construction of all doors and door frames in fire-resisting divisions with means of securing them when closed, shall provide fire resistance as well as resistance to passage of smoke and flame equivalent to that of the bulkheads in which they are situated. Watertight doors of steel need not be insulated. Where a fire-resisting division has openings for pipes, ducts, controls, electrical cables or for other purposes, arrangements and necessary testing in compliance with the FTP Code shall be made to ensure that fire-resisting integrity of the division is not impaired.

Where machinery shafts penetrate fire-resisting watertight divisions, arrangements shall be made to ensure that the required fire-resisting integrity of the division is not impaired.

**2.4.7** In approving structural fire protection details, the risk of heat transmission at intersections and terminal points of required thermal barriers shall be regarded.

**.1** to prevent heat transmission at intersections and terminal points the insulation of the deck, bulkhead or pillars maintaining a control station shall be carried past the intersection or terminal point for a distance of at least 450 mm in the case of steel or aluminium structures (refer to Figs. [2.4.7.1a](#) and [1b](#));

**.2** if the space is divided by a deck or bulkhead and the fire insulation required for each space is different, the insulation with the higher structural fire protection time shall continue on the deck or bulkhead with the insulation of the lesser structural fire protection time for a distance of at least 450 mm beyond the boundary between the spaces;

**.3** where the lower part of the fire insulation has to be cut for drainage, the construction shall be in accordance with the structural details shown in [Fig. 2.4.7c](#).

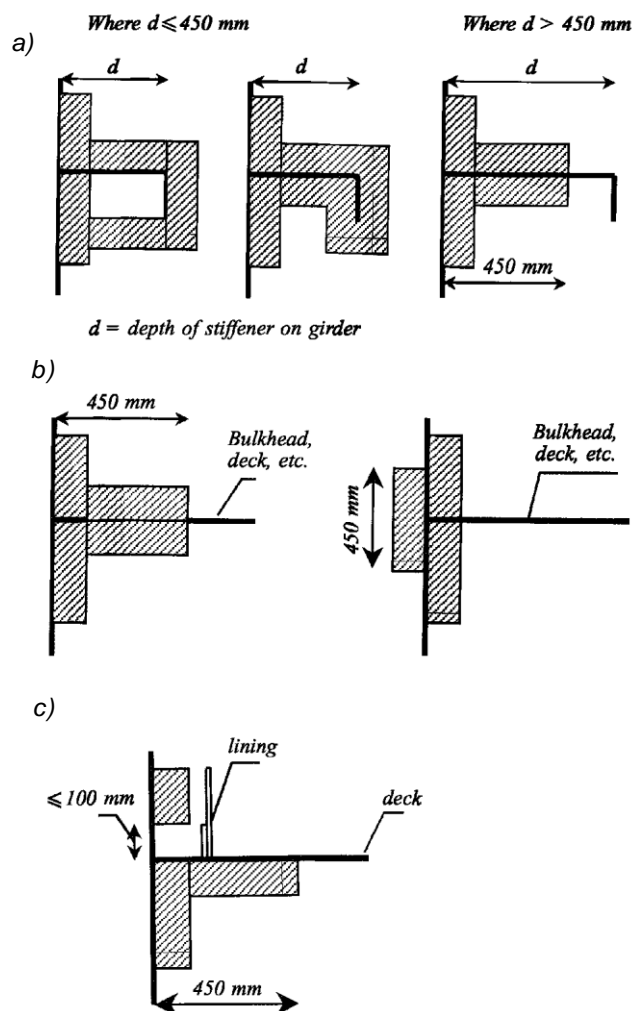


Fig. 2.4.7.1

**2.4.8** Ventilation openings may be accepted in entrance doors to public toilets, provided they are positioned in the lower portion of the door and fitted with closable grilles made of non-combustible or fire-restricting material and operable from outside the space.

**2.4.9** Boundaries of special category spaces shall be insulated in accordance with [Tables 2.5.2](#) and [2.6.2](#). The vehicle deck of the special category space or a ro-ro space, including an open ro-ro space, need only be insulated on the underside if required. Vehicle decks located totally within ro-ro spaces may be accepted without structural fire protection, provided these decks are not part of, or do not provide support to, the craft's main load-carrying structure and provided satisfactory measures are taken to ensure that the safety of the craft, including fire-fighting abilities, integrity of fire resisting divisions and means of evacuation, is not affected by a partial or total collapse of these internal decks.

## **2.5 Passenger craft.**

**2.5.1** The requirements of this Chapter are supplementary to those of [2.1 – 2.4](#).

**2.5.2** The structural fire protection time for separating bulkheads and decks shall be in accordance with [Table 2.5.2](#) (the structural fire protection periods of time are all based on providing protection for a period of 60 min as referred to in 12.1, Part XVI "Life-Saving Appliances"). If any other lesser structural fire protection time is specified for category A craft in 13.1, Part XVI "Life-Saving Appliances", the periods of time given in [2.4.2](#) and [2.4.3](#) may be amended pro rata. In no case shall the structural fire protection time be less than 30 min.

Table 2.5.2

**Structural fire protection time for separating bulkheads and decks of passenger craft**

Categories		A	B	C	D	E	F
Zones							
Areas of major fire hazard	A	60 1,2	30	3	3 4	3	60 1,7,9
Areas of moderate fire hazard	B	60 1,2	30 2	3 8	3 4	3	3
Areas of minor fire hazard	C			3	3 4	3	3
Control stations	D				3 4	3 4	3
Evacuation stations and escape routes	E					3	3
Open spaces	F						-

**Notes :** Figures on both sides of the diagonal line represent the required structural fire protection time for the protection system on the relevant side of the division.

When a steel division separates spaces of different zones, the structural fire protection time shall be set with regard to the area of the highest fire hazard.

**1.** The upper side of decks within spaces protected by fixed fire-extinguishing systems need not be insulated.

**2.** Where adjacent spaces are in the same alphabetical category and a note 2 appears, a bulkhead or deck between such spaces need not be fitted if deemed unnecessary by the Register. For example, a bulkhead need not be required between two store-rooms.

A bulkhead is, however, required between a machinery space and a special-category space even if both spaces are in the same category.

**3.** No fire resistance requirements; however, smoke-tight bulkhead made of non-combustible or fire-restricting material is required.

**4.** Control stations which are also auxiliary machinery spaces shall be provided with 30 min structural fire protection.

**5.** There are no special requirements for materials or integrity of boundaries where only a dash appears in the tables.

**6.** Fire protection time is 0 min and the time for prevention of passage of smoke and flame is 30 min as determined by the first 30 min of the standard fire test.

**7.** Fire-restricting divisions may not comply with the requirements for fire-resisting divisions (refer to [1.3](#)) as regards their insulation properties governed by the temperatures during standard fire test.

**8.** When steel construction is used, fire resisting divisions adjacent to void spaces need not comply with the requirement for a temperature rise according to the standard fire test (refer to [1.3](#)).

**9.** The fire protection time may be reduced to 0 min for those parts of open ro-ro spaces which are not essential parts of the craft's main load bearing structure, where passengers have no access to them and the crew need not have access to them during any emergency.

**10.** On category A craft, the fire protection time may be reduced to 0 min where the craft is provided with only a single public space (excluding lavatories) protected by a sprinkler system and adjacent to the operating compartment.

**2.5.3** In using [Table 2.5.2](#), it shall be noted that the title of each category is intended to be typical rather than restricted. If while determining the appropriate fire integrity standards to be applied to boundaries between adjacent spaces, there is doubt as to their classification for the purpose of this section, they shall be treated as spaces within the relevant category having the most stringent boundary requirement.

**2.5.4** For category B craft, public spaces shall be divided into zones according to the following.

**2.5.4.1** The craft shall be divided into at least two zones. The mean length of each zone shall not exceed 40 m.

**2.5.4.2** For the occupants of each zone there shall be an alternative safe area to which it is possible to escape in case of fire. The alternative safe area shall be separated from other passenger zones by smoke-tight divisions of non-combustible or fire-restricting materials extending from deck to deck. The alternative safe area can be another passenger zone provided the additional number of passengers may be accommodated in case of emergency.

The alternative safe area shall be sized according to the number of occupants plus 0,35 m<sup>2</sup> of net area per occupant.

**2.5.4.3** The alternative safe area shall, as far as practicable, be located adjacent to the passenger zone it is intended to serve. There shall be at least two exits from each passenger zone, located as far away from each other as possible, leading to the alternative safe area. Escape routes shall be provided to enable all passengers and crew to be safely evacuated from the alternative safe area within the structural fire protection time for areas of major fire hazard.

**2.5.5** Category A craft need not be divided into zones.

**2.5.6** Control stations, stowage positions of lifesaving appliances, escape routes and places of embarkation into survival craft shall not, as far as practicable, be located adjacent to any areas of major or moderate fire hazard.

**2.6 Cargo craft.**

**2.6.1** The requirements of this Chapter are supplementary to those of [2.1 to 2.4](#).

**2.6.2** Fire integrity of separating bulkheads and decks shall be in accordance with [Table 2.6.2](#) to which notes given in [Table 2.5.2](#) and provisions of [2.5.3](#) apply. If any other lesser structural fire protection time is specified for cargo craft in 12.1, Part XVI "Life-Saving Appliances" the period of time given above in [2.4.2](#) and [2.4.3](#) may be amended pro rata. In no case shall the structural fire protection time be less than 30 min.

**2.6.3** Control stations, stowage positions of lifesaving appliances, escape routes and places of embarkation into survival craft shall be located adjacent to crew accommodation spaces.

Table 2.6.2

**Structural fire protection time for separating bulkheads and decks of cargo craft**

Categories		A	B	C	D	E	F
Zones							
Areas of major fire hazard	A	60 1,2	30	3	3 4	3	—
Areas of moderate fire hazard	B	60 1,2	60 1	60 1,8	60 1	60 1	60 1,7
Areas of minor fire hazard	C		6 2	3	3 4	3	—
Control stations	D		6 2	6	60	6	3
Evacuation stations and escape routes	E			3	3,4	3	—
Open spaces	F			30 8	3 4	3	3
						3 4	—
						3	3
							—

### **3 FIRE FIGHTING EQUIPMENT AND SYSTEMS**

**3.1** Areas of major fire hazard shall be protected by an approved fixed fire-extinguishing system which corresponds to a potential fire hazard and is operated from the operating compartment and, where provided, from a control station. Provision shall be made for remote and manual control of the system from continuously manned control stations.

This system shall comply with the requirements of [3.2](#) and [3.3](#) or with the provisions of MSC/Circ.1165, MSC/Circ.848, MSC.1/Circ.1267.

**3.1.1** Additional fixed fire-extinguishing systems not required by the HSC Code, but fitted to the craft shall meet the design requirements of this Code, except for the second discharge required for fixed gas fire-extinguishing systems.

**3.2** In all craft where gas is used as the fire-extinguishing medium, the quantity of gas shall be sufficient to provide two independent discharges. The second discharge into the space shall only be activated (released) manually from a position outside the space being protected. Where a local fire-extinguishing system complying with the requirements of MSC1/Circ.1387 and intended to give diesel oil, lubricating and hydraulic oil a fire-retarding treatment, arranged in the vicinity of exhaust headers, turbochargers or similar heated surfaces of main and auxiliary engines, is installed in the space, the second discharge is not required.

**3.3** Fixed fire-extinguishing systems (having regard to the requirements of [1.1](#)) shall comply with the following requirements.

**3.3.1** The use of a fire-extinguishing medium which either by itself or under expected conditions of use will adversely affect the earth ozone layer and/or gives off toxic gases in such quantities as to endanger persons is not permitted.

**3.3.2** Means shall be provided to close all openings which may admit air to, or allow gas to escape from, a protected space.

Openings that may admit air to, or allow gas to escape from, a protected space shall be capable of being closed from outside the protected space.

**3.3.3** Means shall be provided for automatically giving audible warning of fire-extinguishing medium release into any space in which personnel work or which personnel can be expected to enter (e.g., ro-ro spaces) and where their access is facilitated by doors or hatches. The alarm shall automatically operate (e.g. by opening of the release cabinet door) for a suitable period before the medium is released and last not less than 20 s. In addition to audible alarm, visual alarm shall be provided.

**3.3.4** Automatic release of fire-extinguishing medium shall not be permitted.

**3.3.5** Pressure containers required for the storage of fire-extinguishing medium shall be located outside protected spaces.

Pressure containers may be located inside protected spaces, unless in case of an accidental gas blow-by a threat is produced to human life.

**3.3.6** Means shall be provided for the crew to check safely the quantity of medium in the containers without moving the containers completely from their fixing position.

**3.3.7** Containers for the storage of fire-extinguishing medium and associated pressure components shall be designed having regard to their locations and maximum ambient air temperatures expected in service.



**3.3.8** When the fire-extinguishing medium is stored outside a protected space, it shall be stored in a room which shall be situated in a safe and readily accessible location. For the purpose of the application of [Tables 2.5.2](#) and [2.6.2](#), such storage rooms shall be treated as control stations. For the storage rooms for fire-extinguishing media of fixed gas fire-extinguishing systems, the following apply:

- .1** the storage room shall not be used for any other purposes;
- .2** if the storage space is located below deck, it shall be located no more than one deck below the open deck and shall be directly accessible by a stairway or ladder from the open deck;
- .3** spaces shall be effectively ventilated. Spaces which are located below deck or spaces where access from the open deck is not provided, shall be fitted with a mechanical ventilation system designed to take exhaust air from the bottom of the space and to provide at least 6 air changes per hour; and
- .4** access doors shall open outwards, and bulkheads and decks including doors and other means of closing any opening therein, which form the boundaries between such rooms and adjacent enclosed spaces shall be gastight.

**3.3.9** Spare parts for the system shall be stored on board or at a base port.

**3.3.10** Pipelines may pass through accommodation spaces, provided they are of substantial thickness and their tightness is verified with a pressure test, after their installation, at a pressure head not less than 5 N/mm<sup>2</sup>. In addition, pipelines passing through accommodation area shall only be joined by welding and shall not be fitted with drains or other openings within such spaces. Pipelines shall not pass through refrigerated spaces.

**3.3.11** Where the volume of free air contained in air receivers in any space is such that, if released in such space in the event of fire, such release of air within that space would seriously affect the efficiency of the fixed fire-extinguishing system, it is necessary to require the provision of an additional quantity of fire-extinguishing medium corresponding to the gross volume of the machinery space being increased by the volume of air receivers converted to free air volume. Alternatively, a discharge pipe connected to a safety valve may be fitted to each air receiver, provided it leads directly to the open air.

**3.3.12** Where the extinguishing medium is required to protect more than one space, the quantity of medium available need not be more than the largest quantity required for any one space so protected. Spaces are considered as separated where divisions comply with [Tables 2.5.2](#) and [2.6.2](#), as appropriate, or the divisions are gastight and of steel or equivalent materials.

**3.4** The carbon dioxide system shall comply with the requirements of 3.8, Part VI "Fire Protection" of the Rules for the Classification.

**3.5** The water fire main system shall comply with the relevant requirements of 3.2, Part VI "Fire Protection" of the Rules for the Classification, having regard to the following:

**3.5.1** At least two pumps powered by independent sources of power shall be arranged. Each pump shall have at least two-thirds of the capacity of a bilge pump (refer to 2.6 and 2.7, Part VIII "Systems and Piping") but not less than 25 m<sup>3</sup>/h. Each pump shall be capable to deliver sufficient quantity and pressure of water to simultaneously operate two hydrants.

**3.5.2** The arrangement of pumps shall be such that, in the event of fire, in any one compartment, all fire pumps will not be put out of action.

**3.5.3** Fire hoses, together with all the necessary fittings and tools, shall be kept ready for use in conspicuous positions near hydrants. All fire hoses in interior locations shall be always connected to hydrants. One fire hose shall be provided for each hydrant.

Each fire hose shall be of non-perishable material. Fire hoses shall have a length of:

- .1** at least 10 m;
- .2** not more than 15 m in machinery spaces; and
- .3** not more than 20 m for other spaces and open decks.



**3.5.4** The fire main shall be capable of being drained and shall be fitted with valves arranged so that fire main branches can be isolated when the main is used for purposes other than fire-fighting.

**3.5.5** Hydrants shall be arranged so that any location on the craft can be reached by the waterjets from two fire hoses from two different hydrants, one of the jets being from a single length of hose.

Ro-ro space hydrants shall be located so that any location within the space can be reached by two water jets from two different hydrants, each jet being supplied from a single length of hose.

One hydrant shall be located in the vicinity of and outside each entrance to a machinery space.

**3.5.6** Air-cushion vehicles (ACV) not engaged in international voyages need not be equipped with the water fire main system.

**3.6** Each special-category space and ro-ro spaces shall be fitted with an approved fixed pressure water-spraying system for manual operation which shall protect all parts of any deck and vehicle platform in such space.

**3.6.1** The pumps of the system shall be capable of maintaining:

.1 half the total required application rate with any one pump unit out of function, for category A craft; and

.2 the total required application rate with any one pump unit out of function, for category B craft.

**3.6.2** Fixed fire-extinguishing systems shall meet the following requirements:

.1 the valve manifold shall be provided with a pressure gauge, and each of the valves shall be marked to identify the protected areas;

.2 instructions for maintenance and operation of the installation shall be set up in the room where the valves are located; and

.3 the piping system shall be provided with a sufficient number of drainage valves.

However, the Register may permit the use of any other fixed fire-extinguishing system, provided it has been shown by full-scale test in conditions simulating a flowing petrol fire in a special-category space that it is not less effective in controlling fires likely to occur in such a space.

**3.7** Each space in which independent tanks are located shall be fitted by a fire-extinguishing system referred to in [3.1](#).

**3.8** On cargo craft cargo spaces, except open deck areas or refrigerated holds shall be protected with an approved fixed quick-acting fire-extinguishing system complying with [3.3](#) operable from the control station.

**3.9** Public spaces, service spaces, crew accommodation spaces with berths (in case of cargo craft, only these spaces of more than 50 m<sup>2</sup> in area including corridors leading thereto), storage rooms other than those containing flammable liquids, and similar spaces shall be protected by a sprinkler system complying with IMO resolution MSC.44(65) as amended by MSC/Circ.912. A stairway open at one deck shall be considered part of the space to which it is open and consequently shall be protected by any sprinkler system provided for that space. Manually operated sprinkler systems shall be divided into sections of appropriate size, and valves for each section, start of sprinkler pump(s) and alarms shall be operable from two spaces separated as widely as possible, one of which shall be a continuously manned control station. In category B craft, no section of the system shall serve more than one of the zones required in [2.5.4](#).

Plans of the system shall be displayed at each control station. Suitable measures shall be taken for the drainage of water discharged when the system is activated.

**3.10** In category A craft engaged in international voyages, the requirements of [3.9](#) may not be fulfilled, provided that:

- .1 smoking is forbidden;
- .2 the maximum number of passengers on board does not exceed 200 persons;
- .3 sales shops, galleys, service spaces, ro-ro spaces and cargo spaces are not fitted;
- .4 duration of voyage at 90 % of maximum speed from the port of departure to destination when fully laden does not exceed 2 h.

**3.11** In category A craft not engaged in international voyages, the requirements of [3.9](#) may not be fulfilled, provided that:

- .1 smoking is forbidden;
- .2 the maximum number of passengers on board does not exceed 200 persons;
- .3 sales shops, galleys, store-rooms, which area exceeds 2 m<sup>2</sup>, ro-ro spaces and cargo spaces are not fitted;
- .4 duration of voyage at 90 % of maximum speed from the port of departure to destination when fully laden does not exceed 2 h.

#### **4 FIRE DETECTION AND ALARM SYSTEMS**

**4.1** Fire detection and alarm systems shall comply with the requirements of Section 4, Part VI "Fire Protection" of the Rules for the Classification.

It shall be taken into consideration that the term "machinery spaces of major fire hazard" (refer to 1.3) shall be used instead of the term "machinery spaces of category A".

**4.2** Areas of major and moderate fire hazard and other enclosed spaces within crew accommodation spaces and public spaces not regularly occupied (such as toilets, stairway enclosures, corridors and means of escape) shall be provided with an approved automatic smoke-detection system and manually operated call points complying with the requirements of 7.4, Part XI "Electrical Equipment" of the Rules for the Classification, to indicate at the control station the location of fire outbreak in all normal operating conditions of installations.

Control stations not normally occupied (e.g., emergency generator rooms) need not be provided with manually operated call points.

Galleys may be provided with heat detectors instead of smoke detectors. Main propulsion machinery rooms shall, in addition to smoke detectors, have detectors sensing factors other than smoke and be supervised by TV cameras monitored from the operating compartment.

One manually operated call point shall be located in each public space, crew space, corridor and stairway enclosure, service space and, where required, control station.

**4.3** Fire detection system shall be provided in spaces where independent oil fuel tanks are arranged.

**4.4** In cargo craft, cargo spaces, except open deck areas or refrigerated holds, shall be provided with a smoke-detection system to indicate at the control station the location of a fire outbreak in all normal operating conditions of installations.

**4.5** Special-category spaces and ro-ro spaces:  
where no continuous fire patrol is maintained a fixed fire-detection and fire-alarm system and a television monitoring system shall be provided.

The fixed fire-detection system shall be capable of rapidly detecting a fire outbreak. The spacing and location of detectors shall be tested taking into account the effects of ventilation and other factors;

manually operated call points shall be provided, one close to each exit from such spaces.

The maximum distance between call points shall not exceed 20 m.

**4.6** The fire detection system in vehicle deck spaces, excluding manual call points, may be switched off with a timer during loading/unloading of vehicles.

## **5 FIRE OUTFIT AND SPARE PARTS**

**5.1** Control stations, public spaces, crew accommodation spaces, corridors and service spaces shall be provided with portable fire extinguishers of the Register-approved type complying with the requirements in 5.1.9, Part VI "Fire Protection" of the Rules for the Classification, except 5.1.9.3 and 5.1.9.4 for ships with gross tonnage below 500.

At least five portable fire extinguishers shall be provided and positioned so as to be accessible and available for immediate use. In addition, at least one fire extinguisher suitable for machinery space fires shall be positioned outside each machinery space entrance.

**5.2** All craft other than category A passenger craft shall carry at least two fireman outfits complying with the requirements of 5.1.15, Part VI "Fire Protection" of the Rules for the Classification. On the craft other than passenger craft of less than 150 gross tonnage the fireman outfit may be omitted.

**5.3** In addition, in category B passenger craft for every 80 m, or part thereof, of the aggregate length of all passenger spaces and service spaces on the deck which carries such spaces or, if there is more than one such deck, on the deck which has the largest aggregate length of such spaces, there shall be provided two fireman outfits and two sets of personal equipment, each set comprising the items stipulated in 5.1.15.1.1 to 5.1.15.1.3, Part VI "Fire Protection" of the Rules for the Classification.

**5.4** In category B passenger craft for each pair of breathing apparatuses there shall be provided one water fog applicator meeting the requirements of [5.7.1](#), which shall be stored adjacent to such apparatus.

**5.5** The Register may require additional sets of personal equipment and breathing apparatus, with due regard to the size and type of the craft.

**5.6** Fireman outfits and sets of personal equipment shall be stored in permanently and clearly marked locations arranged so as to be easily accessible and ready for use and, where more than one set of personal equipment is carried, they shall be stored in widely separated positions. In passenger craft, at least two fireman outfits and one set of personal equipment shall be available at one of control stations (refer to 5.1.15, Part VI "Fire Protection" of the Rules for the Classification).

**5.7** In each special-category space there shall be provided:

**.1** at least three water fog applicators, which shall consist of a metal L-shaped pipe, the long limb being approximately 2 m in length and capable of being fitted to a fire hose, and the short limb being approximately 250 mm in length and fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle;

**.2** one portable foam applicator unit consisting of an air-foam nozzle of an inductor type capable of being connected to the fire main by a fire hose together with a portable tank containing 20 l of foam-making liquid and one spare tank. The nozzle shall be capable of producing effective foam suitable for extinguishing an oil fire at the rate of at least 1,5 m<sup>3</sup>/min. At least two portable foam applicator units shall be available on the craft for use in such spaces;

**.3** portable fire extinguishers having a total capacity of 12 kg dry powder or equivalent shall be located so that no point in the space is more than approximately 15 m from an extinguisher, provided that at least one portable fire extinguisher is located at each access to such space.

In addition to complying with 5.1, the fire extinguishers shall be suitable for A and B class<sup>1</sup> fires.

**5.8** Spare parts and tools shall meet the requirements stipulated in 5.2, Part VI "Fire Protection" of the Rules for the Classification (refer also to [3.3.9](#)).

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<sup>1</sup> Refer to IEC 60529 — Degrees of protection provided by enclosures (IP Code), in particular, refer to the standards for an ingress protection of at least IP 55 or refer to IEC 60079 series — Electrical apparatus for explosive gas atmospheres, in particular, refer to the standards for protection by an apparatus for use in zone 2 areas.

## **6 OPEN RO-RO SPACES**

**6.1** Open ro-ro spaces shall comply with the requirements set out in [2.5.2](#), [2.6.2](#), [3.6](#), [4.5](#), [5.7](#) of this Part and those stipulated in 2.17 and 2.18, Part VIII "Systems and Piping".

**6.2** For those parts of a ro-ro space, which are completely open from above, the requirements set out in [3.6](#) and [4.5](#) of this Part and those stipulated in 2.17 and 2.18, Part VIII "Systems and Piping", need not be complied with. However, a continuous fire patrol or a television surveillance system shall be maintained.

## **7 CRAFT AND CARGO SPACES INTENDED FOR THE CARRIAGE OF DANGEROUS GOODS**

**7.1** Craft and cargo spaces intended for the carriage of dangerous goods shall comply with special requirements for structures, equipment and outfit set out in 7.1 and 7.2, Part VI "Fire Protection" of the Rules for the Classification in compliance with IMO resolution MSC.271(85).

**7.2** Craft carrying dangerous cargoes shall be provided with three fire hoses and dual-purpose type nozzles (i.e., producing a compact and a sprayed jet) in addition to those required by [3.5.3](#).

Russian Maritime Register of Shipping

**Rules for the Classification and Construction of High-Speed Craft**  
**Part VI**  
**Fire Protection**

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