Fire safety on board ships

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1 GENERAL

1.1 Purpose

The Finnish Transport Safety Agency hereby issues further provisions on fire safety on board ships, as referred to in sections 21(3), 22(2), 23(1) and 83 of the Act on the Technical Safety and Safe Operation of Ships (1686/2009), falling within the scope of application of this Regulation for them to meet the general safety requirements referred to in section 5 of the Act and in order to ensure an adequate level of ship safety.

1.2 Basic principles

1. The fire safety objectives of this Regulation are to:

   .1 prevent the occurrence of fire and explosion;
   .2 reduce the risk to life caused by fire;
   .3 reduce the risk of damage caused by fire to the ship, its cargo and the environment;
   .4 contain, control and suppress fire and explosion in the compartment of origin; and
   .5 provide adequate and readily accessible means of escape for passengers and crew.

2. In order to achieve the fire safety objectives set out above, the following functional requirements are embodied in the Regulation as appropriate, having regard to the type of ships and the potential fire hazard involved:

   .1 division of any passenger ship where the mean length of the accommodation and service spaces exceeds 40 m into main vertical zones by thermal and structural boundaries;
   .2 separation of accommodation spaces from the remainder of the ship by thermal and structural boundaries;
   .3 restricted use of combustible materials;
   .4 detection of any fire in the zone of origin;
   .5 containment and extinction of any fire in the space of origin;
   .6 protection of means of escape or access for fire-fighting;
   .7 ready availability of fire-extinguishing appliances;
   .8 minimisation of possible ignition of flammable cargo vapour.

3. The Finnish Transport Safety Agency may permit other arrangements than those set out in this Regulation if it has established that such an arrangement safeguards an equivalent standard of safety as the requirements in this Regulation. The owner or his representative shall submit sufficient written evidence to the Agency that the said arrangement meets at least the safety standard required in this Regulation.

1.3 Definitions

For the purposes of this Regulation:

1) SOLAS Convention means the International Convention for the Safety of Life at Sea, 1974, as amended.
2) IMO means the International Maritime Organization.
8) SPS Code means the Code of Safety for Special Purpose Ships, contained in Resolution A.534(13), adopted on 17 November 1983 by the IMO General Assembly and Resolution MSC.266(84), adopted on 13 May 2008 by the IMO Maritime Safety Committee, as amended.
9) Work boat means any vessel of not less than 2.5 m but less than 24 m in length used to carry out a profession or a trade.
10) A special purpose ship is a self-propelled ship which, in addition to the crew, carries more than 12 special personnel, i.e. persons who are specially needed for the particular operational duties of the ship such as scientific research, training of ships’ crews, cable laying, salvage of ships and property or other similar purposes, however not ships used as ordinary passenger ships.
11) A fishing vessel is any vessel equipped and used commercially for catching fish or other living resources of the sea.
12) A passenger ship is a ship used for merchant shipping which carries more than 12 passengers. A passenger is every person other than the master and the members of the crew or other persons employed or engaged in any capacity on board the ship on the business of that ship and a child under one year of age.
13) A ro-ro passenger ship is a ship intended to carry more than 12 passengers and equipped with ro-ro cargo spaces or special category spaces as defined in Annex I Regulation II-2/A/2 of the Non-SOLAS Directive.
14) A high-speed craft is a high-speed craft as defined in Chapter X Regulation 1 in the Annex to the SOLAS Convention.
15) A barge is a vessel of 12 m and over in length with no propulsion machinery of its own; the minimum length does not apply to barges used for underwater work;
16) A cargo ship is any ship of 5.5 m and over in length which is not defined in 9) to 15) above.
17) A tanker is a cargo ship constructed or chiefly adapted for the carriage of liquid cargoes in bulk.
18) A cable ferry is a ferry which is controlled by a steering rope or, alternatively, by other equipment approved by the Finnish Transport Safety Agency.
19) New ship means a ship constructed on or after 1 January 2013.
20) Ship constructed means a ship the keel of which is laid or which is at a similar stage of construction.
21) Similar stage of construction means the stage at which:
   a) construction identifiable with a specific ship begins; and
   b) assembly of that ship has commenced comprising at least 50 tonnes or 1 % of the estimated mass of all structural material, whichever is less.
22) Existing ship means a ship that is not a new ship.
23) All ships means new ships and existing ships.
24) Ship’s length means 96 % of the total length of the ship on a waterline at 85 % of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this is measured shall be parallel to the design waterline. In ships less than 12 m in length, the length equals the ship’s overall length.
25) International voyages mean sea voyages from Finnish ports to foreign ports or vice versa.
26) Domestic trade means voyages between Finnish ports. Voyages to Vyborg via the Saimaa Canal and its connecting Russian territorial waters, and voyages between Vichrevoy and Vyborg are considered equivalent to domestic trade. Domestic trade is divided into three trading areas as follows:
a) trading area I, comprising rivers, canals, ports and lakes, and areas in the inner archipelago which are not directly exposed to swell from the open sea;
b) trading area II, comprising the outer archipelago and island areas directly exposed to swell from the open sea - inter alia, the sea lane between Vichrevoy and Santio, the reaches of Kaunissaari and Porkkala, the Hanko western reach, the reaches of Gullkrona, Vidskär and Österskär, Skiftet and Delet, and the coastal areas of the Sea of Bothnia and the Bay of Bothnia;
c) trading area III, comprising the areas of open sea in domestic trade.

27) Domestic voyages mean voyages in Finnish waters from Finnish ports to other Finnish ports or to the same Finnish ports.

28) Classes of passenger ships mean the classes of non-SOLAS ships defined according to the sea area in which they operate:
   a) Class A means a passenger ship engaged on domestic voyages in or beyond the areas covered by Classes B, C and D;
   b) Class B means a passenger ship engaged on domestic voyages, also in sea areas covered by Classes C and D, in the course of which it is at no time more than 20 miles from the line of coast, where shipwrecked persons can land, corresponding to the medium tide height;
   c) Class C means a passenger ship engaged on domestic voyages, also in sea areas covered by Class D, in sea areas where the probability of a significant wave height exceeding 2.5 m is smaller than 10 % over a one-year period for all-year round operation, or over a specific restricted period of the year for operation exclusively in such a period, in the course of which it is at no time more than 15 miles from a place of refuge, nor more than 5 miles from the line of coast, where shipwrecked persons can land, corresponding to the medium tide height;
   d) Class D means a passenger ship engaged on domestic voyages in sea areas where the probability of a significant wave height exceeding 1.5 m is smaller than 10 % over a one-year period for all-year-round operation, or over a specific restricted period of the year for operation exclusively in such period, in the course of which it is at no time more than 6 miles from a place of refuge, nor more than 3 miles from the line of coast, where shipwrecked persons can land, corresponding to the medium tide height.

29) Gross tonnage means the gross tonnage specified in the tonnage certificate of a ship determined in accordance with the formula included in Annex I to the International Convention on Tonnage Measurement of Ships; the gross tonnage of an integrated system formed by a pusher and a barge is their overall gross tonnage.

30) Non-combustible material is a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750 °C, this being determined in accordance with the FTP Code. All other materials are combustible materials.

31) Material difficult to ignite (SL1) means material which is defined as material difficult to ignite in the guidelines of the Ministry of the Interior, Department for Rescue Services, on the fire safety of fixtures and fittings (A:56, No. 4/011/98, as amended)

32) A’ class divisions are those divisions formed by bulkheads and decks which comply with the following criteria:
   - they are constructed of steel or other equivalent material;
   - they are suitably stiffened;
   - they shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test.
   The Finnish Transport Safety Agency may require a test of a prototype bulkhead or deck to ensure that it meets the requirements for integrity and temperature rise in accordance with the Fire Test Procedures Code.

33) B’ class divisions are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following criteria:
- they shall be so constructed as to be capable of preventing the passage of flame to the end of the first half hour of the standard fire test;
- they shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of 'B' class divisions shall be non-combustible, but combustible veneers of a maximum thickness of 2 mm are permitted;

The Finnish Transport Safety Agency may require a test of a prototype bulkhead or deck to ensure that it meets the requirements for integrity and temperature rise in accordance with the Fire Test Procedures Code.

34) 'C' class divisions are divisions constructed of approved non-combustible materials. They need meet neither requirements relative to the passage of smoke and flame nor limitations relative to the temperature rise. Combustible veneers of a maximum thickness of 2 mm are permitted.

35) Non-steel ships are ships not built of steel or equivalent material.

36) Equivalent material means where the words 'steel or other equivalent material' occur, any non-combustible material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation).

37) Main vertical zones are those sections into which the hull, superstructure and deckhouses are divided by 'A' class divisions, the mean length and width of which on any deck does not in general exceed 40 m.

38) Accommodation spaces are those spaces used for public spaces, corridors, lavatories, cabins, offices, hospitals, cinemas, game and hobby rooms, barber shops, pantries containing no cooking appliances and similar spaces.

39) Public spaces are those portions of the accommodation spaces which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.

40) Service spaces are those spaces used for galleys, pantries containing cooking appliances, lockers, mail and specie rooms, storerooms, workshops other than those forming part of the machinery spaces, and similar spaces and trunks to such spaces.

41) Galleys and pantries containing cooking appliances are spaces containing cooking appliances; cooking appliances do not include coffee machines, toasters, dishwashers, microwave ovens, electric water boilers, induction heaters and similar appliances the power of which does not exceed 5 kW, nor cooking plates the power of which does not exceed 2 kW and the maximum surface temperature of which does not exceed 150 °C.

42) High fire risk accommodation and service spaces are galleys and pantries containing cooking appliances, storerooms of more than 4 m² where flammable liquids are stored, workshops other than those forming part of the machinery spaces, and similar spaces.

43) Cargo spaces are all spaces intended for the cargo (including cargo oil tanks) and trunks to such spaces.

44) Ro-ro cargo spaces are spaces not normally subdivided in any way and extending to either a substantial length or the entire length of the ship in which motor vehicles with fuel in their tanks for their own propulsion and/or goods (packaged or in bulk, in or on rail or road cars), vehicles (including road and rail tankers), trailers, containers, pallets, dismountable tanks or in or on similar stowage units or other receptacles) can be loaded and unloaded normally in a horizontal direction.

45) Open ro-ro cargo spaces are those ro-ro cargo spaces which are either open at both ends or have an opening at one end, and are provided with adequate natural ventilation effective over their entire length through permanent openings in the side plating or deckhead or from above.

46) Enclosed ro-ro cargo spaces are ro-ro cargo spaces which are neither open ro-ro cargo spaces nor weather decks.

47) Weather deck is a deck which is completely exposed to the weather from above and from at least two sides.

48) Special category spaces are those enclosed vehicle spaces above and below the bulkhead deck, which are intended for the carriage of motor vehicles with fuel in their tanks for their
own propulsion, into and from which vehicles can be driven and to which passengers have access.

49) **Machinery spaces of category A** are those spaces and trunks to such spaces which contain:
   .1 internal combustion machinery used for main propulsion;
   .2 internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or
   .3 any oil-fired boiler or oil fuel unit.

50) **Machinery spaces** are machinery spaces of category A and other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air conditioning machinery, and similar spaces, and trunks to such spaces.

51) **Oil fuel unit** is the equipment used for the preparation of oil fuel for delivery to an oil-fired boiler, or equipment used for the preparation for delivery of heated oil to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure of more than 0.18 N/mm² (1.8 bar).

52) **Control stations** are those spaces in which the ship's radio or main navigating equipment or the emergency source of power is located or where the fire recording or fire control equipment, fire and watertight door monitoring equipment or alarm or public address equipment is centralised.

53) **Central control station** is a control station in which the following control and indicator functions are centralized:
   .1 fixed fire detection and alarm systems;
   .2 automatic sprinklers, fire detection and alarm systems;
   .3 fire door indicator panels;
   .4 fire door closures;
   .5 watertight door indicator panels;
   .6 watertight door closures;
   .7 ventilation fans;
   .8 general/fire alarms;
   .9 communication systems including telephones; and
   .10 microphones to public address systems.

54) **Continuously manned control station** is a control station which is continuously manned by a responsible member of the crew.

55) A **standard fire test** is one in which specimens of the relevant bulkheads are exposed in a test furnace to temperatures corresponding approximately to the standard time-temperature curve. The specimen shall have an exposed surface of not less than 4.65 m² and height (or length of deck) of 2.44 m, resembling as closely as possible the intended construction and including where appropriate at least one joint. The standard time-temperature curve is defined by a smooth curve drawn through the following internal furnace temperature points:

- Initial internal furnace temperature: 20 °C
- At the end of the first 5 minutes: 576 °C
- At the end of 10 minutes: 679 °C
- At the end of 15 minutes: 738 °C
- At the end of 30 minutes: 841 °C
- At the end of 60 minutes: 945 °C

56) **Continuous 'B' class ceilings or linings** are those 'B' class ceilings and linings which terminate only at an 'A' or 'B' class division.

57) **Low flame-spread** means that the surface thus described will adequately restrict the spread of flame for bulkheads, ceilings and linings, this being determined in accordance with the Fire Test Procedures Code.
1.4 Application of the Regulation

1. This Regulation applies to:

1) Passenger ships of class C and D that fall within the scope of application of the Non-SOLAS Directive and are constructed before 1 July 1998;
2) Passenger ships engaged in domestic trade in trading area I;
3) Passenger ships engaged in domestic trade in trading areas II and III that are less than 24 m in length and are constructed before 1 July 1998;
4) Passenger ships not built of steel, engaged in domestic trade;
5) Cargo ships of less than 500 gross tonnage engaged in international trade;
6) Cargo ships engaged in domestic trade;
7) Tugs;
8) Barges;
9) Integrated systems formed by a pusher and a barge;
10) Dredgers;
11) Cable ferries;
12) Fishing vessels that do not fall within the scope of application of the Fishing Vessel Directive (97/70/EU).

2. This Regulation applies to new and existing ships, unless otherwise provided hereinafter.

3. All repairs, modifications, and outfitting related thereto which significantly alter the dimensions of the ship or the passenger accommodation spaces or significantly prolong the ship’s service life shall, in so far as the Finnish Transport Safety Agency deems reasonable and practicable, comply with the requirements applicable to new ships.

4. When an existing ship is modified to become a tanker, the tanker is regarded as being constructed on the date the modification work begins. When an existing cargo ship is modified to become a passenger ship, the passenger ship is regarded as being constructed on the date the modification work begins.

5. Ships which undergo modifications of a major character shall meet the requirements for new ships constructed on or after the day the modification work begins in so far as the Finnish Transport Safety Agency deems reasonable and practicable. Repairs, alterations and modifications of a major character include for example:

- Modification which substantially alters the dimensions of a ship, (for example prolonging the ship with a new mid-section);
- Modification which substantially alters the passenger capacity of the ship (for example altering a vehicle deck into passenger accommodation);
- Modification which substantially increases a ship’s service life.

1.5 Ships falling within the scope of application of other rules and regulations

1. Ships that fall within the scope of the SOLAS Convention shall meet the requirements relating to fire safety set out in the SOLAS Convention.

2. The requirements regarding fire safety for passenger ships and high speed passenger craft engaged on domestic voyages that fall within the scope of application of the Non-SOLAS Directive are set in the Finnish Transport Safety Agency Regulations on the safety of pas-
senger ships engaged on domestic voyages and falling within the scope of the Non-SOLAS Directive.

3. Special purpose ships shall meet the requirements in relation to fire safety set in the SPS Code in accordance with the Finnish Transport Safety Agency Regulations on the safety of special purpose ships.

4. Fishing vessels that fall within the scope of application of the Fishing Vessel Directive shall meet the requirements in relation to fire safety set in the Finnish Transport Safety Agency Regulations on the safety of fishing vessels.

5. The fire safety requirements for high speed craft that do not fall within the scope of application of the Non-SOLAS Directive are set in the Finnish Transport Safety Agency Regulations on the safety of high-speed craft.


7. Work boats shall fulfil the fire safety requirements set in the Finnish Transport Safety Agency Regulations on the safety of work boats.

1.6 Approved products, their equivalents and procedure of approval

1. Fire safety structures, equipment, and systems and their arrangements shall be approved by the Finnish Transport Safety Agency. Equipment which has been approved under the Maritime Equipment Act (1503/2011) is regarded as complying with this Regulation.

2. The application for approval of fire safety structures and equipment that are installed in a new ship, a ship to be repaired, a ship acquired from abroad and a ship to be modified to become a merchant vessel shall be submitted to the Finnish Transport Safety Agency well in advance of the time when the ship is to be put into service. The intended service of the ship, the trading area and any other information essential with regard to the installations shall be presented in the application.

3. Drawings and other documentation including the information listed below shall, as far as applicable, be enclosed:

- fire control plan;
- general arrangement drawing (names and sizes of spaces and main dimensions of the ship);
- protection method;
- drawing of fire compartments;
- structure, isolating materials and fire classification of fire-classed boundaries (decks, bulkheads and doors);
- construction of penetrations in fire- and watertight bulkheads and decks;
- fixed distribution networks for flammable gases;
- means of escape (means of access and escape routes);
- ventilation arrangements (ventilation ducts, fans, closing devices, stopping devices and penetrations);
- fire indication appliances, fire alarm systems and flammable gas indicators (names, location, description of operation, main and emergency sources of power), and insulation plans;
.11 remote control of closing devices for ventilation fans and ducts, fire doors, fuel valves etc.
.12 fire piping plan specifying hydrants, pipe size and materials, closing devices and pump locations, pressure and power, as well as hoses (name and length) and spaying nozzles;
.13 fixed fire extinction systems (location plan, description of operation, alarms, user’s manual, maintenance instructions and extinguishing medium calculations);
.14 fire extinction system for paint store;
.15 portable fire extinguishers and wheeled extinguishers (brand, size, fire class, location and reserve charges);
.16 fire-fighter’s outfit (brand, location and number);
.17 certificates of approval for equipment requiring fire classification;
.18 instructions for use, safety, maintenance and test instructions, which must be available on board.

4. For passenger ships, documentation on the power and location of bilge pumps shall also be presented.

5. In approving fire safety structures, systems and equipment for onboard installation the Finnish Transport Safety Agency considers the suitability, efficiency, safety, etc. of the structures, systems and equipment in view of their intended use.

6. Fire safety structures, systems and equipment that are installed, although not mandatory according to this Regulation, shall likewise meet the requirements set in this Regulation and be approved by the Finnish Transport Safety Agency.

7. In applying this Regulation to ships of less than 500 gross tonnage, structures tested as ‘A’ class structures may be replaced by alternative structures as follows:
   - A steel structure of at least 4 mm which is insulated with at least 75 mm thick non-combustible mineral wool with a density of at least 100 kg/m³, or material which will guarantee an equivalent safety level, shall be considered equivalent to an ‘A-60’ class structure. Similarly, a steel structure insulated with 50 mm thick non-combustible mineral wool with a density of at least 100 kg/m³ or material which will guarantee an equivalent safety level, shall be considered equivalent to an ‘A-30’ class structure;
   - An aluminium structure of at least 6 mm which is insulated on both sides with at least 90 mm thick non-combustible mineral wool with a density of at least 100 kg/m³, or material which will guarantee an equivalent safety level, shall be considered equivalent to an ‘A-60’ and ‘A-30’ class structure.

2 FIRE SAFETY REQUIREMENTS

2.1 Application

The requirements in this chapter apply to new and existing passenger ships and cargo ships. This chapter does not apply to cable ferries. The requirements for cable ferries are contained in chapter 5. This chapter does not apply to fishing vessels either. The requirements for fishing vessels are contained in chapter 10. Provisions regarding the application of this chapter to non-steel passenger ships engaged in domestic trade are included in paragraph 4.1 and provisions regarding the application of this chapter to non-steel cargo ships are included in paragraph 9.1.
2.2  Fire pumps, fire mains, hydrants, hoses and nozzles

2.2.1  Arrangement of fire pumps, fire mains and ready availability of water supply

1. Passenger and cargo ships shall be provided with fixed power-driven fire pumps as follows:

   .1  Passenger ships of 50 gross tonnage and upwards shall have at least one fire pump.
   .2  Cargo ships of 50 gross tonnage and upwards shall have at least one fire pump.
   .3  The fire pump may be driven by the main engine in passenger ships of less than 100 gross tonnage and carries up to 100 passengers, and in cargo ships of less than 100 gross tonnage.
   .4  Passenger ships of 500 gross tonnage and upwards but less than 1 000 gross tonnage shall have at least two fire pumps, one of which may be a pump driven by the main engine.
   .5  Cargo ships of 500 gross tonnage and upwards but less than 1 000 gross tonnage shall have at least two fire pumps, one of which may be a pump driven by the main engine.
   .6  New passenger ships of 1 000 gross tonnage and upwards, or which carry up to 250 passengers, and new cargo ships of 1 000 gross tonnage and upwards, shall have an independently driven emergency fire pump with its source of power and sea connection located outside the machinery space, if a fire in any one compartment could put all the pumps out of action.

2. Sanitary, ballast, bilge or general service pumps may be accepted as fire pumps, provided that they are not used for pumping oil.

3. In passenger ships of 24 m in length and over and in cargo ships of 500 gross tonnage and upwards with a periodically unattended machinery space or when only one person is required on watch, there shall be immediate water delivery from the fire main system at a suitable pressure, either by remote starting of one of the main fire pumps from the navigating bridge or permanent pressurisation of the fire main system.

4. The delivery valve of each fire pump shall be fitted with a non-return valve, if it is necessary for immediate water delivery to the fire pump.

5. In ships where an emergency fire pump is required, isolating valves are to be installed outside the machinery space in an easily accessible space to separate the part of the fire main in the machinery space from the other parts of the fire main. The fire main shall be so arranged that when the isolating valves are shut all the hydrants on the ship, except those in the machinery space, can be supplied with water by a fire pump located outside the machinery space. Short lengths of suction or discharge piping may penetrate the machinery space, if they cannot be arranged outside the machinery space, provided the fire main is insulated with non-combustible material.

2.2.2  Capacity of fire pumps

1. The required fire pumps shall be capable of delivering for fire-fighting purposes a quantity of water, at the pressure prescribed in paragraph 2.2.3, not less than two thirds of the quantity required to be dealt with by the bilge pumps when employed for bilge pumping.
2. The flow rate of each bilge pump shall be calculated according to the following formula:

\[ Q = 0.00575 \times d^2, \text{ where} \]
\[ Q = \text{pump flow rate} \ [\text{m}^3/\text{h}] \]
\[ d = \text{internal diameter} \ [\text{mm}] \] of the bilge main which shall be calculated according to the following formula:

\[ d = 1.68 \times (L \times (B+D))^{1/3} + 25, \text{ where} \]
\[ L = \text{the length of the ship} \ [\text{m}] \]
\[ B = \text{moulded breadth of the ship} \ [\text{m}] \]
\[ D = \text{moulded depth of the ship to the main deck} \ [\text{m}] \]

3. In every ship which is required to be provided with more than one fire pump, each of the required fire pumps shall have a capacity not less than 80 % of the total required capacity divided by the minimum number of required fire pumps but in any case not less than 20 m$^3$/h, and each such pump shall in any event be capable of delivering at least the two required jets of water.

### 2.2.3 Diameter of and pressure in the fire mains

1. The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously.

2. With the two pumps simultaneously delivering the maximum required discharge through the nozzles specified in paragraph 2.2.7 through any adjacent hydrants, the following minimum pressures shall be maintained at all hydrants:
   - new ships: 0.3 N/mm$^2$ (3 bar);
   - existing ships: 0.2 N/mm$^2$ (2 bar).

In passenger ships of less than 200 gross tonnage and in cargo ships of less than 500 gross tonnage, one jet of water at the pressure indicated above is sufficient.

3. The maximum pressure at any hydrant shall not exceed that at which the effective control of a fire hose can be demonstrated.

4. The fire main shall be fitted with a safety valve and pressure gauge.

### 2.2.4 Number and position of hydrants

1. In passenger ships of 200 gross tonnage and upwards and in cargo ships of 500 gross tonnage and upwards, the number and position of hydrants shall be such that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of hose, may reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated and any part of any cargo space when empty. In ro-ro cargo spaces and special category spaces the two jets shall reach any part of such space, each from a single length of hose. Furthermore, such hydrants shall be positioned near the accesses to the protected spaces.

2. In passenger ships of less than 200 gross tonnage and in cargo ships of less than 500 gross tonnage, the number and position of hydrants shall be such that at least one jet of water from a single length of hose may reach any part of the ship normally accessible to
the passengers or crew while the ship is being navigated and any part of any cargo space when empty. Furthermore, such hydrants shall be positioned near the accesses to the protected spaces.

3. The requirements of paragraphs 2.2.4.1 and 2.2.4.2 must be complied with when all watertight doors and all doors in main vertical zone bulkheads are closed.

4. Where access is provided to a machinery space at a low level from an adjacent shaft tunnel, a hydrant shall be provided external to, but near the entrance to, that machinery space. Where such access is provided from other spaces, in one of those spaces a hydrant shall be provided near the entrance of the machinery space. Such provision need not be made where the tunnel or adjacent spaces are not part of the escape route.

2.2.5 Pipes and hydrants

1. Materials readily rendered ineffective by heat shall not be used for fire mains and hydrants unless adequately protected. The pipes and hydrants shall be so placed that the fire hoses may be easily coupled to them. The arrangement of pipes and hydrants shall be such as to avoid the possibility of freezing. In ships where deck cargo may be carried, the positions of the hydrants shall be such that they are always readily accessible and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo.

2. A valve shall be fitted to serve each fire hose so that any fire hose may be removed while the fire pumps are at work.

2.2.6 Fire hoses

1. Fire hoses shall be approved as prescribed in paragraph 1.6. They shall be of non-perishable material and sufficient in length to project a jet of water to any of the spaces in which they may be required to be used. Each hose shall be provided with a nozzle and the necessary couplings. There shall be complete interchangeability of hose couplings and nozzles. Hoses specified as ‘fire hoses’ shall, together with any necessary fittings and tools, be kept ready for use in conspicuous positions near the water service hydrants or connections. Additionally, in interior locations in passenger ships constructed on or after 1 January 2013 and carrying more than 36 passengers, fire hoses shall be permanently connected to the hydrants.

2. There shall be at least one fire hose for each of the hydrants required in paragraph 2.2.4. The length of a fire hose should be restricted to not more than 15 m on deck and in superstructures and to 10 m in machinery spaces.

2.2.7 Nozzles

1. The standard diameter of nozzles shall be 12 mm as a minimum.

2. Nozzles shall be of an approved dual-purpose type (spray/jet type), and shall have a shut-off facility.
2.3 Fixed fire-extinguishing systems

2.3.1 Fixed gas fire-extinguishing systems

2.3.1.1 General

1. The necessary pipes for conveying fire-extinguishing medium into protected spaces shall be provided with control valves so marked as to indicate clearly the spaces to which the pipes are led. Suitable provision shall be made to prevent inadvertent admission of the medium to any space.

2. The piping for the distribution of fire-extinguishing medium shall be arranged and discharge nozzles so positioned that a uniform distribution of medium is obtained.

3. Means shall be provided to close from outside the protected spaces all openings which may admit air to or allow gas to escape from the protected space.

4. Means shall be provided for automatically giving audible warning of the release of fire-extinguishing medium into any space in which personnel normally work or to which they have access. The alarm shall operate for a suitable period before the medium is released.

5. The means of control of any fixed gas fire-extinguishing system shall be readily accessible and simple to operate and shall be grouped together in as few locations as possible at positions not likely to be cut off by a fire in a protected space. At each location there shall be clear instructions relating to the operation of the system.

6. Automatic release of fire-extinguishing medium shall not be permitted. Automatic release may, however, be permitted in respect of local automatically operated units fitted in minor machinery spaces to which there is no access during the voyage.

7. Where the quantity of 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.

8. Pressure containers required for the storage of fire-extinguishing medium shall be located outside protected spaces in the manner provided below, unless otherwise permitted for the system.

9. Means shall be provided for the crew or maintenance company personnel to safely check the quantity of medium in the containers. There shall be suitable suspension points above the rows of bottles for weighing if the check is carried out by weighing.

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

11. 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 position and shall be effectively ventilated. Any entrance to such a storage room shall preferably be from the open deck and in any case shall be independent of the protected space. 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 adjoining enclosed spaces.
shall be gastight. For the purpose of application of the tables for fire integrity of bulkheads and decks such storage rooms shall be treated as control stations.

12. The use of a fire-extinguishing medium, which either by itself or under expected conditions of use gives off toxic gases in such quantities as to endanger persons or gives off gases which are harmful to the environment, is not permitted.

13. The necessary pipes for conveying fire-extinguishing medium into the protected spaces shall be provided with control valves so marked as to indicate clearly the spaces to which the pipes are led.

14. 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, an additional quantity of fire-extinguishing medium shall be provided.

15. Suppliers of fixed fire-extinguishing installations shall provide a description of the installation, including a checklist for maintenance covering the requirements in paragraph 2.11, in the working language of the ship.

16. Fixed gas extinguishing systems shall be approved as prescribed in paragraph 1.6.

2.3.1.2 Carbon dioxide systems

1. For cargo spaces other than vehicle spaces the quantity of CO₂ available shall be sufficient to give a minimum volume of free gas equal to 30 % of the gross volume of the largest cargo space so protected in the ship. If there is a connection through ventilation ducts or other openings between two or more cargo spaces, they shall be considered as forming one space. The volume of CO₂ required in vehicle spaces shall be at least 45 % of the gross cubic content of the largest cargo space. If vehicles that use hydrogen or natural gas are carried, the amount of CO₂ gas shall be at least 100 % of the gross cubic content of such a cargo space.

2. For machinery spaces the quantity of carbon dioxide carried shall be sufficient to give a minimum volume of free gas equal to the larger of the following volumes, either:

   .1 40 % of the gross volume of the largest machinery space so protected, the volume to exclude that part of the casing above the level at which the horizontal area of the casing is 40 % or less of the horizontal area of the space concerned taken midway between the tank top and the lowest part of the casing; or

   .2 35 % of the gross volume of the largest machinery space protected, including the casing; provided that if two or more machinery spaces are not entirely separated they shall be considered as forming one space.

3. For the purpose of this paragraph the volume of free carbon dioxide shall be calculated at 0.56 m³/kg.

4. The fixed piping system in the machinery space shall be such that 85 % of the gas can be discharged into the machinery space in 2 minutes. Cargo piping shall be such that two-thirds of the required volume of gas can be discharged into the cargo space in 10 minutes.
5. Release mechanism of carbon dioxide:
   
   .1 Two separate controls shall be provided for releasing carbon dioxide into a protected space and to ensure the activities of the alarm. One control opens the block valve of the piping which leads into the protected space. A second control shall be used to discharge the gas from its storage containers. The system shall be such as to operate only in this order.

   .2 The two controls shall be located inside a release box clearly identified for the particular space. If the box containing the controls is to be locked, a key to the box shall be in a break-glass-type enclosure conspicuously located adjacent to the box. Opening the release box shall automatically set off an alarm in the associated protected space. In other cargo spaces than ro-ro cargo spaces and in spaces where there is only a local release there need not be an alarm.

6. The CO₂ containers shall be located at positions where they are not likely to be affected by a fire in the protected space. The containers shall be easily accessible.

7. The CO₂ containers shall be located in a space that is well ventilated and to which there is generally direct access from the deck.

8. There shall be communications devices from the CO₂ equipment release locations to the locations where fire-fighting is being directed.

9. There shall be as many spare parts for the CO₂ equipment as recommended by the manufacturer.

10. All access doors to spaces protected by CO₂ equipment shall be marked: “This space is protected by CO₂ equipment. Leave this space when the alarm is given.” The signs shall be in the ship’s working language.

2.3.1.3 Other fixed gas fire-extinguishing systems

Other fixed gas extinguishing systems shall be approved as prescribed in paragraph 1.6.

2.3.2 Fixed low-expansion foam fire-extinguishing systems in machinery spaces

1. Where in any machinery space a fixed low-expansion foam fire-extinguishing system is fitted in addition to the requirements of paragraph 2.5, such system shall be capable of discharging through fixed discharge outlets in not more than five minutes a quantity of foam sufficient to cover to a depth of 150 mm the largest single area over which oil fuel is liable to spread. The system shall be capable of generating foam suitable for extinguishing oil fires. Means shall be provided for effective distribution of the foam through a permanent system of piping and control valves or cocks to suitable discharge outlets and for the foam to be effectively directed by fixed sprayers on the main fire hazards in the protected space. The expansion ratio of the foam shall not exceed 12 to 1.

2. The means of control of any such systems shall be readily accessible and simple to operate and shall be grouped together in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

3. Any fixed low-expansion foam fire-extinguishing system shall be approved as prescribed in paragraph 1.6.
2.3.3 Fixed high-expansion foam fire-extinguishing systems in machinery spaces

1. Any required fixed high-expansion foam system in machinery spaces shall be capable of rapidly discharging through fixed discharge outlets a quantity of foam sufficient to fill the greatest space to be protected at a rate of at least 1 m in depth per minute. The quantity of foam-forming liquid available shall be sufficient to produce a volume of foam equal to five times the volume of the largest space to be protected. The expansion ratio of the foam shall not exceed 1 000 to 1.

2. Supply ducts for delivering foam, air intakes to the foam generator and the number of foam-producing units shall be such as will provide effective foam production and distribution.

3. The arrangement of the foam generator delivery ducting shall be such that a fire in the protected space will not affect the foam generating equipment.

4. The foam generator, its sources of power supply, foam-forming liquid and means of controlling the system shall be readily accessible and simple to operate and shall be grouped in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

5. The pumps shall be powered from the ship’s emergency power supply.

6. Any fixed high-expansion foam fire-extinguishing system shall be approved as prescribed in paragraph 1.6.

2.3.4 Fixed pressure water-spraying fire-extinguishing systems in machinery spaces

1. Any required fixed pressure water-spraying fire-extinguishing system in machinery spaces shall be provided with spraying nozzles of an approved type.

2. The number and arrangement of the nozzles shall be such as to ensure an effective average distribution of water of at least 5 l/m² per minute in the spaces to be protected. Application rates may be increased if necessary for particular hazardous areas. Nozzles shall be fitted above bilges, tank tops and other areas over which fuel oil is liable to spread and also above other specific fire hazards in the machinery spaces.

3. The system may be divided into sections, the distribution valves of which shall be operated from easily accessible positions outside the spaces to be protected and will not be readily cut off by a fire in the protected space.

4. The system may be automatic or manually operated from outside the spaces to be protected.

5. The pump shall be capable of simultaneously supplying at the necessary pressure all sections of the system in any one compartment to be protected. The pump and its controls shall be installed outside the spaces to be protected. It shall not be possible for a fire in the space or spaces protected by the water-spraying system to put the system out of action.

6. The pump may be driven by independent internal combustion machinery or by electric power, but if it is dependent on power being supplied, the system shall comply with the Finnish Transport Safety Agency’s Regulations on electrical installations in ships. When the
pump is driven by independent internal combustion machinery it shall be so situated that a fire in the protected space will not affect the air supply to the engine.

7. Precautions shall be taken to prevent the nozzles from becoming clogged by impurities in the water or corrosion of piping, nozzles, valves and pump.

8. Fixed pressure water-spraying fire-extinguishing systems shall be approved as prescribed in paragraph 1.6.

2.3.5 Automatic sprinkler, fire detection and fire alarm systems

Automatic sprinkler, fire detection and fire alarm systems shall be approved as prescribed in paragraph 1.6.

2.4 Fire extinguishers

1. All new portable fire extinguishers on ships shall be of approved types and designs under the EN-3 standard.

2. The required portable fire extinguishers shall be at least extinguisher class 21A for fibre fires and 144B for liquid fires in accordance with the place of use, unless otherwise provided in this Regulation.

3. Fire extinguishers containing an extinguishing medium which either by itself or under expected conditions of use gives off toxic gases in such quantities as to endanger persons or gives off gases which are harmful to the environment are not permitted.

4. Fire extinguishers shall be suitable for extinguishing fires which are possible in the vicinity of the fire extinguisher location.

5. One portable fire extinguisher intended for use in any space shall be located near the entrance of that space.

6. The minimum number of fire extinguishers shall be as follows:

   .1 In accommodation and service spaces the fire extinguisher shall be so located that no point in the space is more than 10 m walking distance from an extinguisher.

   .2 An extinguisher suitable for use in high voltage areas shall be located in the proximity of any electric panel or subpanel having a power of 20 kW or more.

   .3 In galleys the extinguishers shall be so located that no point in the space is more than 10 m walking distance from an extinguisher. At least one fire extinguisher and fire blanket are to be located in the galley.

   .4 An extinguisher shall be located in the proximity of paint lockers and store rooms containing readily flammable products.

   .5 At least one extinguisher shall be located on the navigating bridge and in each control station.

7. Portable fire extinguishers provided for use in accommodation and service spaces shall so far as practicable have a uniform method of operation.

8. Portable CO₂ fire extinguishers shall not be located in accommodation spaces unless other kinds of extinguishing media are not suitable for such spaces. Where such extinguishers are provided in radio rooms, at switchboards and in other similar positions, the volume of
any space containing one or more extinguishers shall be such as to limit the concentration of vapour that can occur due to discharge to not more than 5 % of the net volume of the space. The volume of CO₂ shall be calculated at 0.56 m³/kg.

2.5 Fire-extinguishing arrangements in machinery spaces

1. Machinery spaces in cargo ships of 500 gross tonnage and upwards, powered by main propulsion machinery of 750 kW propulsion power or more, machinery spaces of category A in passenger ships, and machinery spaces of category A in cargo ships with periodically unattended machinery spaces shall be provided with any one of the following fixed fire-extinguishing systems:

   .1 A gas system complying with the requirements of paragraph 2.3.1, or an equivalent gas-based system approved as prescribed in paragraph 1.6;
   .2 A high-expansion foam system complying with the requirements in paragraph 2.3.3.
   .3 A pressure water-spraying system complying with the requirements of paragraph 2.3.4 or a similar water-based system approved as prescribed in paragraph 1.6.
   .4 In addition, passenger ships and cargo ships of 500 gross tonnage and upwards shall have at least one set of portable air-foam equipment 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 at least 20 litres of foam-making liquid and one spare tank. The nozzle shall be capable of producing effective foam suitable for extinguishing an oil fire, at a rate of at least 1.5 m³ per minute, the expansion coefficient being 10. The amount of foam generated having other expansion coefficients shall correspond to the same amount of foam-making liquid.

2. The following fire-extinguishing equipment shall be available in all machinery spaces:

   .1 At least two portable fire extinguishers in any spaces containing internal combustion engines, oil-fired boilers, fuel settling tanks or oil-fuel units, provided that there is at least one portable extinguisher suitable for oil fires with a power class of at least 183B for each 750 kW or part thereof of such machinery in the space. If there is only one internal combustion engine of less than 200 kW power output in the space, one extinguisher is sufficient.
   .2 Extinguishers suitable for extinguishing oil fires so located that no point in the space is more than 10 m walking distance from an extinguisher, and at least two extinguishers of this type in every space of this type. If the power output is less than 200 kW one extinguisher is sufficient. The extinguishers are to be located close to means of access.
   .3 In passenger ships of 500 gross tonnage and upwards there shall be at least one approved foam-type fire extinguisher of at least 45 L capacity equivalent, to enable foam or its equivalent to be directed onto any part of the fuel and lubricating oil pressure systems, gearing, and other fire hazards.
   .4 Hot oil boiler rooms shall be protected by fixed or portable local application fire extinguishing appliances to jet spray pressurised water or spread foam above and below the floor.

2.6 Special arrangements in machinery spaces

1. The number of skylights, doors, ventilators, openings in funnels to permit exhaust ventilation and other openings to machinery spaces shall be reduced to a minimum consistent with the needs of ventilation and the proper and safe working of the ship.
2. Skylights shall be of steel. If they contain glass panels, they shall be capable of being closed by fire dampers. Skylights shall be capable of being closed from the outside. Suitable arrangements shall be made to permit the release of smoke in the event of fire, from the space to be protected.

3. Windows shall not be fitted in machinery space boundaries. This does not preclude the use of glass in control rooms within the machinery spaces.

4. There shall be a drip pan under each oil boiler burner.

5. Means of control shall be provided for:
   
   .1 opening and closure of skylights, closure of openings in funnels which normally allow exhaust ventilation, and closure of ventilator dampers;
   
   .2 permitting the release of smoke;
   
   .3 closing power-operated doors or actuating release mechanisms on doors other than power-operated watertight doors;
   
   .4 stopping ventilating fans;
   
   .5 stopping forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps and for closing the fuel valves of the tanks above the double bottom;
   
   .6 for the fuel oil quick closing valves.

6. The controls shall be located outside the space concerned, where they will not be cut off in the event of a fire in the space they serve.

7. When access to any machinery space of category A is provided at a low level from an adjacent shaft tunnel, there shall be provided in the shaft tunnel, near the watertight door, a light steel fire-screen door operable from each side.

2.7 Fixed fire detection and fire alarm systems

2.7.1 Approval of fixed fire detection and fire alarm systems

Fixed fire detection and fire alarm systems shall be approved as prescribed in paragraph 1.6.

2.7.2 General

1. Any required fixed fire detection and fire alarm system with manually operated call points shall be capable of immediate operation at all times.

2. Power supplies and electric circuits necessary for the operation of the system shall be monitored for loss of power or fault conditions automatically. Occurrence of a fault condition shall initiate a visual and audible fault signal at the control panel which shall be distinct from a fire signal.

3. The power supply for the fire detection and fire alarm system on passenger ships and on cargo ships of 100 gross tonnage and upwards shall be from the emergency source of electrical power.

4. Detectors and manually operated call points shall be grouped into sections. A section of fire detectors which covers a control station, a service space, or an accommodation space shall not include a machinery space.
5. The activation of any detector or manually operated call point shall initiate a visual and audible fire signal at the control panel and indicating units. If the signals have not received attention within 2 minutes an audible fire alarm shall be automatically sounded throughout the crew accommodation and service spaces, control stations and machinery spaces.

6. The control panel shall be located on the navigating bridge or in the main fire control station.

7. Indicating units shall, as a minimum, denote the section in which a detector or manually operated call point has operated. At least one unit shall be located so that it is easily accessible to responsible members of the crew at all times, when at sea or in port. One indicating unit shall also be located on the navigating bridge if the control panel is located in the main fire control station.

8. Clear information shall be displayed on or adjacent to each indicating unit about the spaces covered and the location of the sections.

9. Detectors shall be operated by heat, smoke or other products of combustion, flame or any combination of these factors. Flame detectors shall only be used in addition to smoke or heat detectors.

10. Suitable instructions and component spares for testing and maintenance shall be provided.

11. The function of the detection system shall be periodically tested by means of equipment producing hot air at the appropriate temperature, or smoke or aerosol particles having the appropriate range of density or particle size, or other phenomena associated with incipient fires to which the detector is designed to respond. All detectors shall be of a type such that they can be tested for correct operation and restored to normal surveillance without the renewal of any component.

12. The fire detection system shall not be used for any other purpose, except that closing of fire doors and similar functions may be permitted at the control panel.

13. If the fire detection system is not capable of individually identifying each detector, a section of detectors may not normally serve spaces on both sides of the ship or on more than one deck except a section which covers an enclosed stairway. However, such a section of detectors may serve both sides of the ship or more than one deck in ships of a maximum of 15 m in breadth or which have zone address identifiable fire detectors.

14. Fire detection systems with a zone address identification capability shall be so arranged that:

.1 a loop cannot be damaged at more than one point by a fire;
.2 means are provided to ensure that any fault (e.g. power break, short circuit, earth) occurring in the loop will not render that whole loop ineffective;
.3 all arrangements are made to enable the initial configuration of the system to be restored in the event of failure (e.g. electrical, electronic, informative);
.4 the first initiated fire alarm will not prevent any other detector from initiating further fire alarms.
2.7.3 Installation requirements

1. 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 readily accessible in the corridors of each deck such that no part of the corridor is more than 20 m from a manually operated call point.

2. Smoke detectors shall be installed in all stairways, corridors and escape routes within accommodation spaces. Where a fixed fire detection and fire alarm is required for the protection of spaces other than those specified above, at least one detector complying with paragraph 2.7.2.9 shall be installed in each such space.

3. Detectors shall be located for optimum performance. Positions near beams and ventilation ducts or other positions where patterns of air flow could adversely affect performance and positions where impact or physical damage is likely shall be avoided. In general, detectors which are located on the overhead shall be a minimum distance of 0.5 m away from bulkheads.

4. The maximum spacing of detectors is:

<table>
<thead>
<tr>
<th>Type of detector</th>
<th>Maximum floor area per detector</th>
<th>Maximum distance apart between centres</th>
<th>Maximum distance away from bulkheads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat</td>
<td>37 m²</td>
<td>9 m</td>
<td>4.5 m</td>
</tr>
<tr>
<td>Smoke</td>
<td>74 m²</td>
<td>11 m</td>
<td>5.5 m</td>
</tr>
</tbody>
</table>

5. The Finnish Transport Safety Agency may require or permit other spacing based upon test data which demonstrate the characteristics of the detectors.

6. Electrical wiring which forms part of the system shall be so arranged as to avoid galleys, machinery spaces, and other enclosed spaces, and spaces of high fire risk except where it is necessary to provide for fire detection or fire alarm in such spaces or to connect to the appropriate power supply.

2.7.4 Design requirements

1. The system and equipment shall be suitably designed to withstand supply voltage variation and transients, ambient temperature changes, vibration, humidity, corrosion, shock and impact normally encountered in ships.

2. Smoke detectors to be installed in stairways, corridors and escape routes within accommodation spaces shall be certified to operate before the smoke density exceeds 12.5 % obscuration per metre, but not until the smoke density exceeds 2 % obscuration per metre. Smoke detectors to be installed in other spaces shall operate within sensitivity limits having regard to the avoidance of detector insensitivity or oversensitivity.

3. Heat detectors shall be certified to operate before the temperature exceeds 78 °C but not until the temperature exceeds 54 °C, when the temperature is raised to those limits at a rate less than 1 °C per minute. At higher rates of temperature rise, the heat detector shall
operate within temperature limits having regard to the avoidance of detector insensitivity or oversensitivity.

4. The permissible temperature of operation of heat detectors may be increased to 30 °C above the maximum deckhead temperature in drying rooms and similar spaces of a normal high ambient temperature.

5. In addition to the above provisions, safety provisions on the installations regarding their independence from other installations or systems, the corrosion resistance of their components, the electrical power supply to their control system shall be complied with.

6. Instructions for the operation and maintenance of systems and equipment shall be available on board the ship.

2.8 Firefighter’s outfit

1. A firefighter’s outfit shall consist of:

   .1 Personal equipment comprising:

      .1 protective clothing of material to protect the skin from the heat radiating from the fire and from burns and scalding by steam. The outer surface shall be water-resistant;
      .2 boots and gloves of rubber or other electrically non-conducting material;
      .3 a rigid helmet providing effective protection against impact;
      .4 an electric safety lamp (hand lantern) of an approved type with a minimum burning period of three hours;
      .5 a firefighter’s axe.

   .2 A breathing apparatus of an approved type consisting of a self-contained compressed-air-operated breathing apparatus (SCBA), the volume of air contained in the cylinders of which shall be at least 1 200 L, or other self-contained breathing apparatus which shall be capable of functioning for at least 30 minutes. Each compressed air cylinder shall have at least one reserve compressed air cylinder. All air cylinders for SCBAs shall be interchangeable. For each breathing apparatus a fireproof lifeline of sufficient length and strength shall be provided capable of being attached by means of a snaphook to the harness of the apparatus or to a separate belt in order to prevent the breathing apparatus from becoming detached when the lifeline is operated.

2. In passenger ships the following number of firefighter’s outfits shall be provided:

   .1 In passenger ships of 24 m in length and over at least one set of personal equipment shall be provided.
   .2 In passenger ships of 300 gross tonnage and upwards but less than 500 gross tonnage at least two sets of personal equipment shall be provided.
   .3 In passenger ships of 500 gross tonnage and upwards at least two firefighters’ outfits shall be provided.

3. In cargo ships the following number of firemen’s outfits shall be provided:

   .1 In cargo ships of 500 gross tonnage and upwards at least two firefighter’s outfits shall be provided.
.2 In cargo ships of 20 000 gross tonnage and upwards and tankers two additional firefighters’ outfits shall be provided.

4. The firefighters’ outfits shall be so stored as to be easily accessible and ready for use.

2.9 Miscellaneous provisions

1. Electric radiators, if used, shall be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiators shall be fitted with an element so exposed that clothing, curtains, or other similar materials can be scorched or set on fire by heat from the element.

2. All waste receptacles shall be constructed of non-combustible materials with no openings in the sides or bottom. Waste receptacles in machinery spaces shall have lids. Plastic, lidded rubbish bins may be used in galleys.

3. Paint and other flammable liquids shall be stored in a dedicated, closed space. If such a space has a deck area of more than 1 m², it shall be protected by a fire extinguishing arrangement, approved as prescribed in paragraph 1.6. The arrangement shall be such as to enable the crew to extinguish a fire without entering the space.

4. When deep-fat cooking equipment and boiling or roasting apparatus are installed and used in spaces outside the main galley, the arrangements shall meet the same requirements as in the main galley.

5. When deep-fat cooking equipment and boiling and roasting apparatus are installed and used in external spaces there shall be a fire blanket and portable fire extinguisher in the immediate vicinity of the equipment.

6. Where class ‘A’ divisions are penetrated for the passage of electric cables, pipes, trunks, ducts, or for beams or other structural members, arrangements shall be made to ensure that the fire resistance of the divisions is not impaired.

7. Where class ‘B’ divisions are penetrated for the passage of electric cables, pipes, trunks, ducts, or for the fitting of ventilation terminals, lighting fixtures, and similar devices, arrangements shall be made to ensure that the fire resistance is not impaired.

8. Pipes penetrating ‘A’ or ‘B’ class divisions shall be of approved materials having regard to the temperature such divisions are required to withstand.

9. In accommodation spaces, service spaces, or control stations, pipes intended to convey oil or other flammable liquids shall be of a suitable material and construction having regard to the fire risk.

10. Materials readily rendered ineffective by heat shall not be used for over board scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.

11. In spaces in which there is a risk of oils splashing or oil vapour, e.g. in machinery spaces of category A, the surface of the insulating material shall be impermeable by oil and oil vapour. Where there is covering by non-perforated steel plate or other non-combustible materials (not aluminium) which is the ultimate physical surface, this covering may be joined by seaming or riveting.
12. In the implementation of fire proofing measures, steps shall be undertaken to prevent heat transfer through heat bridges, e.g. between decks and bulkheads.

13. All portable containers for gases which are compressed, liquefied, or broken down under pressure, which may feed a possible fire, shall immediately after use be put in a suitable place above the bulkhead deck, from which there is direct access to open deck. Gas container valves shall always be closed after use.

2.10 Fire control plans, instructions and fire drills

2.10.1 Fire control plans

1. In all ships, general arrangement plans shall be permanently exhibited for the guidance of the ship’s officers, showing clearly for each deck the control stations, the various fire sections enclosed by ‘A’ class divisions, the sections enclosed by ‘B’ class divisions together with particulars of the fire detection and fire alarm systems, the sprinkler installation, the fire-extinguishing appliances, means of access to different compartments, decks, etc., and the ventilating system including particulars of the fan control positions, the position of dampers, and identification numbers of the ventilating fans serving each section. Alternatively the aforementioned details may be set out in a booklet, a copy of which shall be supplied to each officer, and one copy shall at all times be available on board in an accessible position. Plans and booklets shall be kept up to date, any alterations being recorded therein as soon as practicable. Descriptions in such plans and booklets shall be in the working language of the ship. Fire control plans shall be approved as prescribed in paragraph 1.6.

2. For ships constructed on or after 1 January 2013, the information to be provided with the required fire control plans, fire-fighting appliances, and fire-fighting equipment and the graphical symbols to be used for the fire control plans shall be in accordance with the ISO 17631:2002 standard. Ships constructed before 1 January 2013, may alternatively continue to use the previous marking instructions (e.g. IMO Resolution A.654(16)).

2.10.2 Operational readiness and maintenance

1. Clear operating instructions for fire-fighting appliances and systems shall be available at their place of use.

2. Instructions for maintenance and operation of all appliances and systems on board for the fire-fighting and containment of fire shall be kept on board the ship under one cover, readily available, and in an easily accessible location.

3. The ship shall have a maintenance plan for the appliances and systems used in fire-fighting and fire containment on board the ship, which shall be based on the requirements of paragraph 2.11.

2.10.3 Fire drills

Fire drills shall be conducted in accordance with the Finnish Transport Safety Agency’s Regulations on ships’ life-saving appliances.
2.11 Operational readiness of fire-fighting appliances

1. Fire-fighting appliances shall be kept in good order and be maintained for immediate use at all times, and there shall be clear instructions regarding their testing and maintenance, and a maintenance plan.

2. Maintenance and inspection of fire-fighting systems and appliances shall be carried out as follows:

3. Weekly tests and inspections:
   .1 operation of the public address and alarm systems;
   .2 leakage inspection for breathing apparatus compressed air cylinders.

4. Monthly tests and inspections:
   .1 fire-fighter's outfits, fire extinguishers, hydrants and correct location and good operation condition of fire hoses and nozzles;
   .2 fixed fire-extinguishing system devices, such as the correct position of shut-off valves, pressures, surface level in the sprinkler system pressure tank;
   .3 automatic start of sprinkler system pump by a drop in pressure in the system;
   .4 operation of fire pumps;
   .5 leakage inspection of gas fire-extinguishing systems.

5. Quarterly tests and inspections:
   .1 automatic sprinkler system alarms using test valves of each section;
   .2 manual operation of all fire doors and dampers;
   .3 tightness of the joints of fixed gas fire-extinguishing system gas cartridges.

6. Annual tests and inspections:
   .1 inspection of locations, pressures, and condition of all fire extinguishers;
   .2 operation of fire detection system;
   .3 remote operation of all fire doors and dampers;
   .4 operation of fixed foam and water spray extinguishing systems;
   .5 visual inspection of the condition of all accessible fixed fire-extinguishing system components;
   .6 flow test of fire pumps and other fixed fire-extinguishing system pumps to determine correct pressure and flow;
   .7 operation of all hydrants;
   .8 sprinkler system feed by fire pumps;
   .9 testing of all fire hoses with water;
   .10 control valves of fixed fire-extinguishing systems;
   .11 air blowing through gas extinguishing systems’ piping;
   .12 checking the amount of fire-extinguishing medium in the fixed gas fire-extinguishing systems; and
   .13 checking the amount of fire-extinguishing medium in the foam or other water-based fire-extinguishing system that uses additives.

7. Tests and inspections at five-year intervals:
   .1 internal inspection of the control valves of fixed fire-extinguishing system.
8. Inspections and testing of pressure vessels shall be carried out in accordance with the pressure equipment regulations in force.

9. Inspection of portable extinguishers shall be carried out annually. Inspection and maintenance of portable fire extinguishers shall be carried out in accordance with the provisions of the Decree of the Ministry of the Interior on the inspection and maintenance of portable fire extinguishers (917/2005).

10. There shall be clear instructions for maintenance, operation and inspection of the ship’s fire-extinguishing systems carried out by the ship’s crew or shore-based maintenance company.

11. The dates of maintenance and inspections carried out as well as any deficiencies observed shall be recorded.

3 FIRE SAFETY MEASURES FOR PASSENGER SHIPS ENGAGED IN DOMESTIC TRADE

3.1 Application

In addition to the requirements of this Part, passenger ships shall comply with the requirements for passenger ships set in Part 2.

3.2 Structure

3.2.1 New ships

1. The hull, superstructures, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material. For the purpose of applying the definition of steel or other equivalent material as given in paragraph 1.3, the ‘applicable fire exposure’ shall be according to the integrity and insulation standards given in tables 1 and 2 of paragraph 3.5. For example, where divisions such as decks or sides and ends of deckhouses are permitted to have ‘B-0’ fire integrity, the ‘applicable fire exposure’ shall be half an hour.

2. However, in cases where any part of the structure is of aluminium alloy, it shall be insulated to ensure sufficient strength of the structure in such a manner that it corresponds to the required fire classification and that the temperature of the structural core does not rise more than 200 °C above the ambient temperature during the applicable fire exposure to the standard fire test.

3.3 Main vertical zones and horizontal zones

1. In new ships carrying more than 36 passengers, the hull, superstructure and deckhouses shall be subdivided into main vertical zones, as given in paragraph 1.3, by A-60 class divisions. Steps and recesses shall be kept to a minimum, but where they are necessary they shall also be A-60 class divisions.

2. For new ships carrying not more than 36 passengers, and for existing ships carrying more than 36 passengers, the hull, superstructure, and deckhouses in way of accommodation and service spaces shall be subdivided into main vertical zones by ‘A’ class divisions. These divisions shall have insulation values in accordance with tables 1 and 2 in paragraph 3.5.
3. Where an open deck space, a sanitary, or similar space or a tank including a fuel oil tank, void space, or auxiliary machinery space having little or no fire risk, is on one side of the division the standard may be reduced to A-0.

4. As far as practicable, the bulkheads forming the boundaries of the main vertical zones above the bulkhead deck shall be in line with watertight subdivision bulkheads situated immediately below the bulkhead deck. The length and width of main vertical zones may be extended to a maximum of 48 m in order to bring the ends of main vertical zones to coincide with subdivision watertight bulkheads or in order to accommodate a large public space extending for the whole length of the main vertical zone provided that the total area of the main vertical zone is not greater than 1 600 m² on any deck. The length or width of a main vertical zone is the maximum distance between the furthestmost points of the bulkheads bounding it.

5. Main vertical zone bulkheads shall extend from deck to deck and to the shell or other boundaries.

6. On ships designed for special purposes, such as automobile or railroad car ferries where the provision of main vertical zone bulkheads would defeat the purpose for which the ship is intended, equivalent protection shall be obtained by dividing space in horizontal zones. In a ship with special category spaces, any such space shall comply with the requirements of paragraph 3.13.

3.4 Bulkheads and decks within a main vertical zone

3.4.1 New ships carrying more than 36 passengers

The fire integrity of all bulkheads and decks shall be at least as prescribed in tables 1 and 2 of paragraph 3.5.

3.4.2 New ships carrying not more than 36 passengers

1. The fire integrity of all machinery spaces and galleys shall be as prescribed in tables 1 and 2 of paragraph 3.5.

2. The fire integrity of all corridors, stairways, evacuation stations and escape routes shall be as prescribed in tables 1 and 2 of paragraph 3.5.

3.4.3 Existing ships

The fire integrity of 'A' category machinery spaces and galleys in existing passenger ships shall be as prescribed in tables 1 and 2 of paragraph 3.5.

3.5 Fire integrity of bulkheads and decks in ships carrying more than 36 passengers

1. The minimum fire integrity of bulkheads and decks shall be as prescribed in tables 1 and 2 of paragraph 3.5.

2. For the purpose of determining the appropriate fire integrity standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (11) below. The title of each category is intended to be typi-
cal rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in tables 1 and 2.

(1) Control stations  
Spaces containing emergency sources of power and lighting.  
Wheelhouse and chartroom.  
Spaces containing the ship’s radio equipment.  
Fire-extinguishing rooms and fire control rooms.  
Control room for propulsion machinery when located outside the propulsion machinery space.  
Spaces containing centralised fire alarm equipment.

(2) Corridors  
Passenger and crew corridors and lobbies.

(3) Accommodation spaces  
Accommodation spaces as given in paragraph 1.3 excluding corridors.

(4) Stairways  
Interior stairways, lifts, and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto.  
In this connection, a stairway which is enclosed at only one level shall be regarded as part of the space from which it is not separated by a fire door.

(5) Service spaces (minor fire risk)  
Lockers and storerooms having a deck area of less than 4 m², in which flammable liquids are not stowed, as well as drying rooms and laundries and pantries not containing cooking appliances.

(6) Category ‘A’ machinery spaces  
Machinery spaces of category ‘A’ as given in paragraph 1.3.

(7) Other machinery spaces  
Spaces as given in paragraph 1.3 excluding machinery spaces of category ‘A’.

(8) Cargo spaces  
All cargo spaces and trunks and casings to such spaces, excluding special category spaces.

(9) Service spaces (high fire risk)  
Galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 4 m² or more, spaces for the storage of flammable liquids and workshops other than those forming part of the machinery spaces.

(10) Open deck spaces  
Open deck spaces and enclosed promenades with no fire risk.  
Air spaces (the space outside superstructures and deckhouses).

(11) Special category spaces  
Special category spaces as given in paragraph 1.3.
3. Continuous ‘B’ class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing wholly or in part, to the required insulation and integrity of a division.

4. External boundaries that are required in paragraph 3.2 to be of steel or other equivalent material may be penetrated for the fitting of windows and sidescuttles provided that there is no requirement elsewhere in this Part for such boundaries to have ‘A’ class fire integrity. Similarly, in such boundaries, which are not required to have ‘A’ class integrity, doors may be of other material than steel or other equivalent material. In such cases they must be approved as prescribed in paragraph 1.6.

Table 1

Fire integrity of bulkheads separating adjacent spaces

<table>
<thead>
<tr>
<th>Spacers</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>(11)</th>
</tr>
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<tbody>
<tr>
<td>Control stations</td>
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<td>A-60</td>
<td>A-0</td>
<td>A-15</td>
<td>A-60</td>
<td>A-15</td>
<td>A-60</td>
<td></td>
<td></td>
<td>A-60</td>
</tr>
<tr>
<td>Corridors</td>
<td>(2)</td>
<td>C</td>
<td>B-0</td>
<td>A-0</td>
<td>B-0</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-15</td>
<td></td>
<td>A-15</td>
</tr>
<tr>
<td>Accommodation spaces</td>
<td>(3)</td>
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<td>A-0</td>
<td>B-0</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-15</td>
<td></td>
<td></td>
<td>A-30</td>
</tr>
<tr>
<td>Stairways</td>
<td>(4)</td>
<td>C</td>
<td>A-0</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-15</td>
<td></td>
<td></td>
<td></td>
<td>A-15</td>
</tr>
<tr>
<td>Service spaces (minor risk)</td>
<td>(5)</td>
<td>C</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A-0</td>
</tr>
<tr>
<td>Machinery spaces of category ‘A’</td>
<td>(6)</td>
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<td>A-0</td>
<td>A-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A-60</td>
</tr>
<tr>
<td>Other machinery spaces</td>
<td>(7)</td>
<td></td>
<td></td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A-0</td>
</tr>
<tr>
<td>Cargo spaces</td>
<td>(8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>A-0</td>
<td></td>
<td></td>
<td>A-0</td>
</tr>
<tr>
<td>Service spaces (high risk)</td>
<td>(9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A-0</td>
<td></td>
<td>*</td>
<td>A-30</td>
</tr>
<tr>
<td>Open deck spaces</td>
<td>(10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A-0</td>
</tr>
<tr>
<td>Special category spaces</td>
<td>(11)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### Table 2

**Fire integrity of decks separating adjacent spaces**

<table>
<thead>
<tr>
<th>Space above -&gt; and space below</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>(11)</th>
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<td>A-0</td>
<td>A-0</td>
<td>*</td>
<td>A-30</td>
</tr>
<tr>
<td>Corridors</td>
<td>(2)</td>
<td>A-0</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>*</td>
<td>A-0</td>
</tr>
<tr>
<td>Accommodation spaces</td>
<td>(3)</td>
<td>A-60</td>
<td>A-0</td>
<td>*</td>
<td>A-0</td>
<td>*</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>*</td>
<td>A-0</td>
</tr>
<tr>
<td>Stairways</td>
<td>(4)</td>
<td>A-0</td>
<td>A-0</td>
<td>*</td>
<td>A-0</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>*</td>
<td>A-0</td>
</tr>
<tr>
<td>Service spaces (minor risk)</td>
<td>(5)</td>
<td>A-15</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>*</td>
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<td>A-0</td>
</tr>
<tr>
<td>Other machinery spaces</td>
<td>(7)</td>
<td>A-15</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
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<td>A-0</td>
</tr>
<tr>
<td>Cargo spaces</td>
<td>(8)</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
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<tr>
<td>Service spaces (high risk)</td>
<td>(9)</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
<td>A-60</td>
<td>A-0</td>
<td>A-0</td>
<td>A-0</td>
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<td>A-30</td>
</tr>
<tr>
<td>Open deck spaces</td>
<td>(10)</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
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<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>A-0</td>
</tr>
</tbody>
</table>

**Notes to be applied to tables 1 and 2**

1) Where an asterisk (*) appears in the tables, the division shall be of steel of other equivalent material, but is not required to be of class ‘A’.

2) If life-saving appliances are stowed on the deck above, the deck is required to be of class ‘A-60’.

#### 3.6 Means of escape

##### 3.6.1 Means of escape from accommodation spaces, control stations and service spaces

1. Stairways and ladders, corridors and doors shall be arranged to provide ready means of escape to the lifeboat and life-raft embarkation deck from all passenger and crew spaces and from spaces in which the crew is normally employed. In particular, the following provisions shall be complied with:
.1 Below the bulkhead deck two means of escape, at least one of which shall be independent of watertight doors, shall be provided from each watertight compartment or similarly restricted space or group of spaces. Exceptionally one of the means of escape may be dispensed with, due regard being paid to the nature and location of spaces and to the number of persons who are normally employed there.

.2 Above the bulkhead deck there shall be at least two means of escape from each main vertical zone or similarly restricted space or group of spaces at least one of which shall give access to a stairway forming a vertical escape.

.3 If a radiotelegraph station has no direct access to the open deck, two means of escape from or access to such station shall be provided, one of which may be a porthole or window of sufficient size or another means of escape.

.4 In new ships, corridors exceeding 5 m in length and in existing ships corridors, lobbies or parts of corridors exceeding 13 m in length from which there is only one escape route are prohibited.

.5 In ships of 24 m in length and over, it shall generally be possible to exit the escape stairways to the survival craft embarkation deck on both sides of the ship.

.6 The Finnish Transport Safety Agency may permit only one escape route from an accommodation space, on the condition that it provides safe escape to the survival craft embarkation deck, taking into consideration the nature, size and location of the space.

3.6.2 Width of escape routes

1. Stairways shall not be less than 700 mm in clear width and fitted with at least one handrail if they are to be used by no more than 50 persons. Stairways shall not be less than 800 mm in clear width and fitted with handrails on both sides if they are to be used by more than 50 persons. In new ships, the minimum clear width of stairways shall be increased by 10 mm for every one person provided for in excess of 90 people. The maximum clear width between handrails where stairways are wider than 900 mm shall be 1 800 mm.

2. The total number of persons to be evacuated by such stairways shall be assumed to be two-thirds of the crew and the total number of passengers in the areas served by such stairways.

3. All stairways sized for more than 100 people shall be aligned before and after.

4. Doorways and corridors and intermediate landings included in means of escape shall be sized in the same manner as stairways.

5. In accommodation spaces, stairways shall not exceed 3.5 m in vertical rise without the provision of a landing and shall not have an angle of inclination greater than 45°. In machinery and service spaces the angle of inclination of stairways may not exceed 45°. However, in ships of less than 45 m in length, the angle of inclination may be a maximum of 60°, if the stairways are intended solely for the use of the crew.

3.6.3 Means of escape from cargo spaces and machinery spaces

1. In special category spaces and ro-ro cargo spaces, the safety of access to the embarkation deck shall be at least equivalent to that required under paragraphs 3.6.1.1.1 and 3.6.1.1.2.
2. The parking arrangements for the vehicles shall be arranged in such a manner that passengers are able to get out of their vehicles. The walkways shall be maintained clear at all times.

3. In special category spaces and ro-ro cargo spaces no point may be more than 20 m from the closest escape route.

4. Hoistable drive-up/down ramps must not be capable of blocking approved the escape routes.

5. Two means of escape shall be provided from each machinery space. In particular, the following provisions shall be complied with:

   .1 Where the space is below the bulkhead deck the two means of escape shall consist of either:
      .1 two sets of steel ladders as widely separated as possible, leading to doors in the upper part of the space similarly separated and from which there is access to the appropriate survival craft embarkation decks. In new ships, one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space; or
      .2 one steel ladder leading to a door from which access is provided to the embarkation deck and additionally, in the lower part of the space and in a position well separated from the ladder referred to, a steel door capable of being operated from each side and which provides access to a safe escape route from the lower part of the space to the embarkation deck.

   .2 Where the space is above the bulkhead deck, the two means of escape shall be as widely separated as possible and the doors leading from such means of escape shall be at a position from which access is provided to the appropriate survival craft embarkation decks. Where such means of escape require the use of ladders, these shall be of steel.

   .3 In ships of less than 24 m in length, one escape route, which leads to the survival craft embarkation deck is sufficient.

   .4 In ships of 24 m in length and over, there may be only one escape route from the machinery space on condition that either a door or a steel ladder provides a safe escape route to the survival craft embarkation deck, due regard being paid to the nature, size and location of the space and whether persons are normally employed in that space.

   .5 In machinery spaces where crew members are normally employed, at least one escape route shall be independent of special category spaces.
6. New ships of 1 000 gross tonnage and upwards

.1 From machinery control rooms there shall be at least two means of escape, one of which shall be independent of the machinery space and give access to the survival craft embarkation deck; and

.2 The underside of stairs inside machinery spaces shall be shielded.

7. Lifts shall not be considered as forming a required escape route.

3.7 Penetrations and openings in ‘A’ and ‘B’ class divisions

1. All openings in ‘A’ and ‘B’ class divisions shall be provided with permanently attached means of closing which shall be as effective for resisting fires as the division in which they are fitted.

2. The construction of all doors and door frames in divisions, with the means of securing them when closed, shall provide resistance to fire as well as to the passage of smoke and flame, equivalent to that of the bulkheads in which the doors are situated.

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

4. The construction of all doors and door frames in ‘A’ class divisions, with the means of securing them when closed, shall provide resistance to fire as well as to the passage of smoke and flame, as far as practicable, equivalent to that of the bulkheads in which the doors are situated. Such doors and door frames shall be constructed of steel or other equivalent material. Watertight doors need not be insulated.

5. Doors and door frames in ‘B’ class divisions and the means of securing them shall provide a method of closure which shall have resistance to fire equivalent to that of the divisions. Ventilation openings are, however, permitted in the lower portion of such doors. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05 m². Such openings shall be fitted with a grill made of non-combustible material. Doors shall be non-combustible.

6. For reasons of noise reduction, doors with built-in ventilation sound-locks with openings at the bottom on one side of the door and at the top on the other side are approved, provided that the following provisions have been complied with:

.1 The upper opening shall always face towards the corridor and shall be provided with a grating of non-combustible material and an automatically operating fire damper, which is activated at a temperature of about 70 °C.

.2 The lower opening shall be provided with a grating made of non-combustible material.
3.8 Protection of stairways and lifts in accommodation and service spaces

1. All stairways shall be of steel frame construction and shall be within enclosures formed of ‘A’ class divisions, with positive means of closure of all openings except that:

   .1 a stairway connecting only two decks need not be enclosed, provided the integrity of the deck is maintained by proper bulkheads and doors in one between-deck space. When a stairway is closed in one between-deck space, the stairway enclosure shall be protected in accordance with the tables for decks in paragraph 3.5;

   .2 stairways may be fitted in the open in a public space, provided they lie wholly within such public space.

2. Stairway enclosures shall have direct access to the corridors and be of a sufficient area to prevent congestion, having in view the number of persons likely to use them in an emergency.

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

3.9 Ventilation systems

3.9.1 New ships

1. Ventilation ducts shall be of non-combustible material.

2. Where the ventilation ducts with a free-sectional area exceeding 0.02 m² pass through class ‘A’ bulkheads or decks, the openings shall be lined with a steel sheet sleeve unless the ducts passing through the bulkheads or decks are of steel in the vicinity of passage through the deck or bulkhead. The ducts and sleeves shall in this part comply with the following:

   .1 The sleeves shall have a thickness of at least 3 mm and a length of at least 900 mm. When passing through bulkheads, this length shall be divided preferably into 450 mm on each side of the bulkhead. These ducts, or sleeves lining such ducts, shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes.

   .2 Ducts with a free cross-sectional area exceeding 0.075 m² shall be fitted with fire dampers in addition to the requirements of the previous paragraph. The fire damper shall operate automatically but shall also be capable of being closed and opened manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by ‘A’ class divisions, without serving those spaces, provided those ducts have the same fire integrity as the divisions which they pierce.

3. Ducts provided for the ventilation of machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces shall not pass through accommodation spaces, service spaces or control stations unless they comply with the following conditions:
the ducts are constructed of steel having a thickness of at least 3 mm and 5 mm for ducts the widths or diameters of which are up to and including 300 mm and 760 mm and over respectively and, in the case of ducts, the widths or diameters of which are between 300 mm and 760 mm having a thickness to be obtained by interpolation;

the ducts are suitably supported and stiffened;

the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and

the ducts are insulated to ‘A-60’ standard from the machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces to a point at least 5 m beyond each fire damper;

or

the ducts are constructed of steel in accordance with paragraphs 3.9.1.3.1 and 3.9.1.3.2; and

the ducts are insulated to ‘A-60’ standard throughout the accommodation spaces, service spaces and control stations.

Penetrations of main vertical zone divisions shall, however, also comply with the requirements of paragraph 3.7.

Ducts provided for ventilation to accommodation spaces, service spaces or control stations shall not pass through machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces unless they comply with the following conditions:

the ducts where they pass through a machinery space, galley, car deck space, ro-ro cargo space or special category spaces are constructed of steel in accordance with paragraphs 3.9.1.3.1–3.9.1.3.2;

automatic fire dampers are fitted close to the boundaries penetrated; and

the fire integrity of the machinery space, galley, car deck space, ro-ro cargo space or special category space boundaries is maintained at the penetrations;

or

the ducts where they pass through a machinery space, galley, car deck space, ro-ro cargo space or special category space are constructed of steel in accordance with paragraphs 3.9.1.3.1 and 3.9.1.3.2; and

the ducts are insulated to ‘A-60’ standard throughout the machinery space, galley, car deck space, ro-ro cargo space or special category space.

Ventilation ducts with a free-sectional area exceeding 0.02 m² passing through class ‘B’ bulkheads shall be lined with steel sheet sleeves of 900 mm in length divided preferably into 450 mm on each side of the bulkheads unless the duct is of steel for this length.
7. Such measures as are practicable shall be taken in respect of control stations outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and equipment contained therein continue to function effectively.

8. Exhaust ducts from galley ranges:

   .1 Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of ‘A’ class divisions.

   .2 Each exhaust duct shall be fitted with:

      .1 a grease trap readily removable for cleaning;
      .2 a fire damper located in the lower end of the duct;
      .3 arrangements, operable from within the galley, for shutting off the exhaust fans; and
      .4 on ships of 500 gross tonnage and upwards, fixed means for extinguishing a fire within the duct.

9. Where it is necessary that a ventilation duct passes through a main vertical zone division, a fail-safe automatic closing fire damper shall be fitted adjacent to the division. The damper shall also be capable of being manually closed and opened from each side of the division. The operating position shall be readily accessible and be marked in red light-reflecting colour. The duct between the division and the damper shall be of steel or other equivalent material, and it is to be insulated to the same standard as the division. The damper shall be fitted on at least one side of the division with a visible indicator showing whether the damper is in the open position.

10. The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated.

11. Power ventilation of accommodation spaces, service spaces, cargo spaces, control stations and machinery spaces shall be capable of being stopped from an easily accessible position outside the space being served. This position should not be readily cut off in the event of a fire in the spaces served. The means provided for stopping the power ventilation of the machinery spaces shall be entirely separate from the means provided for stopping ventilation of other spaces.

3.9.2 Existing ships

1. Ventilation ducts shall be of non-combustible material.

2. Ducts provided for the ventilation of machinery spaces and galleys shall not pass through accommodation spaces, service spaces or control stations unless they comply with the following conditions:

   .1 the ducts are constructed of steel having a thickness of at least 3 mm;
   .2 the ducts are suitably supported and stiffened;
   .3 the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and
.4 the ducts are insulated to the same standard as the division;

or

.5 the ducts are constructed of non-combustible material other than steel (for example aluminium);
.6 the ducts are suitably supported and stiffened;
.7 the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and
.8 the ducts are insulated to the same standard as the division throughout the accommodation spaces, service spaces and control stations.

3. Ducts provided for the ventilation of accommodation spaces, service spaces and control stations shall not pass through machinery spaces, galleys or special category spaces.

4. Where the exhaust duct from the galley passes through other spaces, the exhaust duct shall be fitted with:
   .1 a grease trap readily removable for cleaning;
   .2 a fire damper located in the lower end of the duct; and
   .3 arrangements, operable from within the galley, for shutting off the exhaust fans.

5. The inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated.

6. Power ventilation of accommodation spaces, service spaces, cargo spaces, control stations and machinery spaces shall be capable of being stopped from an easily accessible position outside the space being served. This position should not be readily cut off in the event of a fire in the spaces served. The means provided for stopping the power ventilation of machinery spaces shall be entirely separate from the means provided for stopping ventilation of other spaces.

7. Ventilation ducts with a free-sectional area exceeding 0.02 m² shall be insulated for a distance of 450 mm from the machinery space or galley range to the same standard as the division. If the other side of the division is an accommodation or service space or a control station, the ducts shall be insulated to the same standard on this side as well.

3.10 Restricted use of combustible material

3.10.1 New ships carrying more than 36 passengers

1. Except in cargo spaces, mail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, flooring, draught stops, ceilings, and insulation shall be of non-combustible material. Partial bulkheads or decks used to subdivide a space for utility or artistic treatment shall also be of non-combustible material.

2. Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke and toxic products.
3.10.2 New and existing ships carrying more than 36 passengers

1. Furniture in stairway enclosures shall be limited to seating. It shall be fixed, limited to six seats on each deck in each stairway enclosure, be of restricted fire risk, and shall not restrict the passenger escape route. There may be additional seating in the main reception area within a stairway enclosure if it is fixed, non-combustible and does not restrict the passenger escape route. Furniture is not permitted in passenger and crew corridors forming escape routes in cabin areas. In addition to the above, lockers of non-combustible material, providing storage for safety equipment required by Finnish Transport Safety Agency regulations, may be permitted.

2. The total mass of combustible furniture in different spaces on board a ship must not exceed the following values:

<table>
<thead>
<tr>
<th>Space</th>
<th>Mass Limit (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stairways and corridors</td>
<td>5</td>
</tr>
<tr>
<td>Control stations</td>
<td>5</td>
</tr>
<tr>
<td>Accommodation spaces</td>
<td>35</td>
</tr>
<tr>
<td>Service or accommodation spaces that are surrounded by ‘A’ class divisions</td>
<td>45</td>
</tr>
</tbody>
</table>

- The total mass of combustible materials is calculated using the formula:

\[
TMCM = \frac{M_{TMCM}}{A}
\]

where:
- \( TMCM \) = Total mass of combustible material per surface area of the space (kg/m²)
- \( M_{TMCM} \) = Total mass of combustible material in the space (kg)
- \( A \) = Deck area of the space (m²)

- The following combustible materials are calculated in the total mass of combustible material:

.1 material in fittings such as cable insulation, plastic pipes, surface coverings, and other combustible material permitted in structures;

.2 equipment installed during construction or equipment acquired by the shipping company or crew including furniture, bedding, and electrical devices.

3.10.2.1 Fire protection of interior decoration materials

1. Upholstered furniture, curtains and floor coverings in accommodation spaces shall be of a material having low flame-spread characteristics, class SL 1, or equivalent.

2. Meeting the requirements set out in paragraphs 3.10.2.1 and 3.10.2.2 can be replaced by an automatic sprinkler, fire detection, and fire alarm system approved as prescribed in paragraph 1.6.
3.11 Details of construction

1. In accommodation and service spaces, control stations, corridors and stairways:

   .1 air spaces enclosed behind ceilings, panelling or linings shall be suitably divided by close-fitting draught stops made of non-combustible material not more than 14 m apart;

   .2 in the vertical direction, such enclosed air spaces, including those behind linings of stairways, trunks, etc. shall be closed at each deck using non-combustible material.

3.12 Fixed fire detection and fire alarm systems and automatic sprinkler, fire detection and fire alarm system

3.12.1 Periodically unattended machinery spaces in ships of 15 m in length and over

1. In periodically unattended machinery spaces a fixed fire detection and fire alarm system of an approved type, in accordance with the provisions of paragraph 2.7, shall be installed.

2. This fire detection system shall be so designed and the detectors so positioned as to detect rapidly the onset of fire in any part of those spaces and under any normal conditions of operation of the machinery and variations of ventilation as required by the possible range of ambient temperatures. Except in spaces of restricted height and where their use is especially appropriate, detection systems using only thermal detectors are not permitted. The detection system shall initiate audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire, in sufficient places to ensure that the alarms are heard and observed on the navigating bridge and by a responsible engineer officer. When the navigating bridge is unmanned the alarm shall sound in a place where a responsible member of the crew is on duty. After installation the system shall be tested under varying conditions of engine operation and ventilation.

3.12.2 Accommodation and service spaces and control stations in ships of 24 m in length and over

1. In ships there shall be installed in all accommodation and service spaces and in control stations, except spaces which afford no substantial fire risk such as void spaces, sanitary spaces, etc., either:

   .1 a fixed fire detection and fire alarm system complying with the requirements of paragraph 2.7 so installed and arranged as to provide smoke detection in such spaces. Heat detectors may be installed in galleys in stead of smoke detectors. Smoke detectors connected to the smoke detection and alarm system shall be fitted above ceilings in stairways and corridors if combustible materials have been used in the ceilings; or

   .2 an automatic sprinkler, fire detection and fire alarm system approved as prescribed in paragraph 1.6.

2. Objects of high fire risk, such as deep-fat cooking equipment, shall be fitted with a fixed local application extinguishing system, approved as prescribed in paragraph 1.6.
3.12.3 Ships of less than 24 m in length

In accommodation spaces, stairways and escape routes in ships with overnight accommodation, smoke activated fire alarms shall be installed. In ships where a fixed fire detection and fire alarm system is required in machinery spaces, the accommodation space alarms shall be linked to the said system.

3.13 Protection of special category spaces

3.13.1 Requirements applicable to special category spaces whether above or below the bulkhead deck

3.13.1.1 General

1. The basic principle underlying the provisions of this paragraph is that as normal main vertical zoning may not be practicable in special category spaces, equivalent protection must be obtained in such spaces on the basis of a horizontal zone concept and by the provision of an efficient fixed fire-extinguishing system. Under this concept a horizontal zone for the purpose of this paragraph may include special category spaces on more than one deck provided that the total overall clear height for vehicles does not exceed 10 m.

2. The requirements for maintaining the integrity of vertical zones shall be applied equally to decks and bulkheads forming the boundaries separating horizontal zones from each other and from the remainder of the ship.

3.13.1.2 Structural protection

1. Divisions in special category spaces shall comply with the requirements of paragraph 3.3.

2. Indicators shall be provided on the navigating bridge which shall indicate when any fire door leading to or from the special category spaces is closed. Doors to special category spaces shall be of such a construction that they cannot be kept open permanently and shall be kept closed during the voyage.

3.13.1.3 Fixed fire-extinguishing system

1. Each special category space shall be fitted with an approved fixed water-based fire-fighting system which shall protect all parts of any deck and vehicle platform in such space.

2. Fire-extinguishing systems on new ships shall have:

   .1 a pressure gauge on the valve manifold;
   .2 clear marking on each manifold valve indicating the spaces served;
   .3 instructions for maintenance and operation in the valve room; and
   .4 a sufficient number of drainage valves.

3. In both new and existing ships it is, however, permitted to use any other fixed fire-extinguishing system that has been shown by full-scale test in conditions simulating a flow-
ing petrol fire in a special category space to be not less effective in controlling fires likely to occur in such a space. Such fixed pressure water-spraying system or other equivalent water-based fire-fighting system shall comply with the provisions of IMO Resolution A.123 (V) and IMO Circular MSC/Circ.1272 ‘Guidelines when approving alternative water-based fire-fighting systems for use in special category spaces’, as appropriate, or be a fire-extinguishing system approved as prescribed in paragraph 1.6 and ensuring an equivalent safety standard.

3.13.1.4 Patrols and detection

1. An efficient patrol system shall be maintained in special category spaces. In any such space in which the patrol is not maintained by a continuous fire watch at all times during the voyage there shall be provided a fixed fire detection and fire alarm system of an approved type complying with the requirements of paragraph 2.7. The fixed fire detection system shall be capable of rapidly detecting the onset of fire. The type and the spacing and location of detectors shall be determined taking into account the effects of ventilation and other relevant factors. In new ships the system shall be tested after installation under normal ventilation conditions.

2. Manually operated call points shall be provided as necessary throughout the special category spaces and one call point shall be placed close to each exit from such spaces. In new ships the call points shall be spaced so that no part of the space is more than 20 m from a call point.

3.13.1.5 Portable fire-extinguishing equipment

1. Portable fire-extinguishers with a capacity classification of at least 34A and 183B shall be provided at each deck level in each hold or compartment where vehicles are carried, spaced not more than 20 m apart on both sides of the space. At least one portable fire-extinguisher shall be located at each access to such space.

2. One portable foam applicator unit shall be provided in the special category spaces in ships of 24 m in length and over.

3.13.1.6 Ventilation system

1. Special category spaces shall be provided with an effective power ventilation system sufficient to give at least 10 air changes per hour. The system for such spaces shall be entirely separated from other ventilation systems and shall be operating at all times when vehicles are in such spaces. In new ships, the number of air changes shall be increased at least to 20 during loading and unloading of vehicles. Ventilation ducts serving special category spaces capable of being effectively sealed shall be separated for each such space. The system shall be capable of being controlled from a position outside such spaces.

2. The ventilation shall be such as to prevent air stratification and the formation of air pockets.

3. In new ships, means shall be provided to indicate on the navigating bridge any loss or reduction of the required ventilating capacity.
4. Arrangements shall be provided to permit a rapid shutdown and effective closure of the ventilation system in case of fire, taking into account the weather and sea conditions.

5. Ventilation ducts, including dampers, shall be made of steel and their arrangement shall be approved as prescribed in paragraph 1.6.

6. In new ships, ventilation ducts that pass through horizontal zones or machinery spaces shall be ‘A-60’ class steel ducts constructed in accordance with the requirements of paragraphs 3.9.1.3–3.9.1.5.

3.13.2 Additional requirements applicable only to special category spaces above the bulkhead deck

3.13.2.1 Scuppers

1. In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or decks consequent on the operation of the fixed pressure water-spraying system, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard.

.1 Discharge valves for scuppers, fitted with positive means of closing operable from a position above the bulkhead deck in accordance with the requirements of the International Convention on Load Lines in force, shall be kept open while the ship is at sea.

3.13.2.2 Precautions against ignition of flammable vapours

1. Equipment which may constitute a source of ignition of flammable vapours and, in particular, electrical equipment and wiring, shall be installed at least 450 mm above the deck or vehicle platform, if fitted, on which vehicles are carried and on which explosive vapours might be expected to accumulate, except on vehicle platforms with openings of sufficient size to permit the downward flow of petrol vapour.

2. Electrical equipment installed more than 450 mm above the deck or vehicle platform shall be of a type so enclosed and protected (new ships: IP 55 casing) as to prevent the escape of sparks. However, if the installation of electrical equipment and wiring less than 450 mm above the deck or platform is necessary for the safe operation of the ship, such electrical equipment and wiring may be installed provided that it is of a certified safe type approved for use in an explosive petrol and air mixture (Gas group IIA T3).

3. Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures (Gas group IIA T3) and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.
3.13.3 Additional requirements applicable only to special category spaces below the bulkhead deck

3.13.3.1 Bilge pumping and drainage

1. In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or tank top consequent on the operation of the fixed pressure water-spraying system, sufficient pumping and drainage facilities shall be provided.

2. In new ships, the drainage system shall in such case be sized to remove not less than 125% of the combined capacity of both the water spraying system pumps and the required number of fire hose nozzles. The drainage system valves shall be operable from outside the protected space at a position in the vicinity of the extinguishing system controls. Bilge wells shall be of sufficient holding capacity and shall be arranged at the side shell of the ship in each watertight compartment.

3.13.3.2 Precautions against ignition of flammable vapours

1. Electrical equipment and wiring, if fitted, shall be of a type suitable for use in explosive petrol and air mixtures (Gas group IIA T3). Other equipment which may constitute a source of ignition of flammable vapours shall not be permitted.

2. Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures (Gas group IIA T3) and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

3.13.4 Permanent openings

Permanent openings in the shell plating, ends or deckhead of special category spaces shall be so situated that a fire in a special category space does not endanger stowage areas and embarkation stations for survival craft and accommodation spaces, service spaces and control stations in superstructures and deckhouses above the special category spaces.

3.14 Patrols and public address systems

1. All ships shall at all times when at sea, or in port (except when out of service), be so manned and equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew.

2. A public address system powered by the emergency power supply or other effective means of communication shall be available throughout the accommodation and service spaces, control stations and open decks.

3.15 Carriage of dangerous goods

The requirements of SOLAS Regulation II-2/19 shall apply, as appropriate, to passenger ships carrying dangerous goods, having regard to the date of construction of the ship.
3.16 Fire control plans, instructions and fire drills

1. Passenger ships of 15 m in length and over shall have fire control plans in accordance with paragraph 2.10.1.

2. Passenger ships shall have instructions for maintenance and operation in accordance with paragraph 2.10.2 and fire drills shall be conducted in accordance with paragraph 2.10.3.

4 FIRE SAFETY MEASURES FOR NON-STEEL PASSENGER SHIPS ENGAGED IN DOMESTIC TRADE

4.1 Application

Passenger ships constructed in a material other than steel shall meet the requirements of Part 4 and, in addition, the requirements of Part 2 regarding fire pumps, fire mains, hydrants, fire hoses, nozzles and portable fire extinguishers, and regarding the number and quality of other fire-extinguishing appliances, if applicable. Additionally, non-steel passenger ships shall also meet the requirements of paragraph 3.2 in relation to fire detection and fire alarm systems.

4.2 New passenger ships

New non-steel passenger ships shall meet a safety standard equivalent to the safety standard required in this Regulation of equivalent new passenger ships, constructed in steel or other equivalent material.

4.3 Existing passenger ships

Accommodation spaces in existing non-steel passenger ships shall, to the extent possible, be separated from other parts of the ship with boundaries constructed in materials which are acceptable with regard to fire protection. Corridors, stairways and other means of escape from accommodation and service spaces to the weather deck shall be surrounded by similar boundaries, except when they only link a deck located directly below the weather deck with the weather deck.

Deck, bulkhead and deckhead coverings and insulations shall, to the extent possible, be of non-combustible material or material difficult to ignite, class SL 1 or the equivalent. Paint, varnish or other such surface finishing material which contains nitrocellulose or other combustible substances must not be used on board.

Machinery space boundaries and casings shall be isolated by non-combustible mineral wool with a thickness of not less than 50 mm and a density of not less than 100 kg/m³ or by other non-combustible material which meets the requirements of class ‘A 60’ when tested with steel in a standard fire test, when the spaces concerned are adjacent to control stations, accommodation spaces, stairways, cargo spaces or high fire-risk service spaces.

Where life-saving appliances are stowed on the deck above, the deck shall be of class ‘A 60’.

Machinery spaces shall be fitted with a fixed fire-extinguishing system.
5 FIRE SAFETY MEASURES FOR CABLE FERRIES

5.1 Structure

1. Category A machinery space divisions shall be at least of fire class ‘A-0’.

2. In cable ferries constructed on or after 1 July 2015 category A machinery space boundaries against the wheelhouse, survival equipment stores, flammable liquid stores and ro-ro cargo spaces shall be insulated to fire class ‘A-30’.

3. Exhaust pipes from machinery and heating boilers shall be insulated to fire class ‘A-30’.

4. There shall be at least two escape routes from all machinery and service spaces below the ro-ro cargo spaces. One route is sufficient for small spaces and spaces in which no-one normally stays during the voyage. Doors or hatchways shall be capable of being opened by one person from either side of the space.

5. Access doors below the ro-ro cargo spaces are to be kept closed when at sea and an indicator showing whether they are open or closed shall be provided in the wheelhouse.

6. A space in which there is an oil-fired boiler, bulkheads and decks which are adjacent to the wheelhouse, survival equipment store or ro-ro cargo space shall be insulated to fire class ‘A-30’.

7. Where electric radiators are used, they must be fixed and their construction must be such that the risk of fire is reduced to a minimum. Electric radiators shall not contain elements the heat of which could scorch or ignite clothes, curtains or other similar materials.

8. All waste receptacles shall be constructed of non-combustible material with no openings in the sides or bottom, and in machinery spaces they shall be lidded.

9. Paint and other flammable liquids shall be stored in a dedicated closed space. If such a space has a deck area exceeding 1 m², it shall be protected by an approved fire-extinguishing arrangement which the ship’s crew can use to extinguish the fire without entering the protected space.

10. The deck between the ro-ro cargo space and the wheelhouse and accommodation spaces above shall be insulated to fire class ‘A-60’.

11. The bulkhead and ceiling coverings of the wheelhouse and accommodation spaces shall be of low flame-spread material.

5.2 Fire pumps, hydrants, hoses and nozzles

1. Cable ferries shall be provided with a fixed fire pump with a capacity of at least 15 m³/h at a pressure of 4 bar.

2. In cable ferries constructed before 1 July 2015, a petrol powered portable fire pump may be approved. The pump shall be supplied with water directly from the bilge well or alternatively, during the open water period, from a floating suction hose. The portable fire pump shall be stowed in a heated space on the ro-ro cargo deck from where it can easily be removed and used irrespective of the loading condition. The petrol, which is permitted on board to a maximum of 20 L, shall be stowed on open deck in a well ventilated location with no unauthorised access.
3. Cable ferries shall be provided with at least two hydrants. If a portable fire pump is used, the piping system may be replaced by a portable manifold.

4. Cable ferries shall be provided with at least two fire hoses with a minimum length of 10 m and a maximum length of 15 m and two dual-purpose nozzles with a nominal diameter of 12 mm or more.

5.3 Fire alarm system

1. Cable ferries shall have a fixed fire detection and fire alarm system, approved for use on ships, in the machinery space and service spaces or lounges, if any. Detectors shall be smoke detectors and they shall be located so as to enable optimum performance.

2. The system shall be self-monitoring and automatically give a visible and audible fault indication in the wheelhouse.

5.4 Fire-extinguishing arrangements

1. Cable ferries shall be provided with at least three portable fire extinguishers of appropriate types. Depending on their intended use, the fire extinguishers shall have a capacity classification of at least 34A and 183B. The extinguishers shall be situated at least as follows:

   .1 One fire extinguisher shall be situated near the entrance to each machinery space (door or access hatch).

   .2 In the ro-ro cargo space, extinguishers shall be so situated that no point in the space is more than 10 m walking distance from an extinguisher. At least two fire extinguishers shall be provided. If there is direct access to the machinery space from the ro-ro cargo space, a fire extinguisher shall be situated on deck next to the entrance to the machinery space. The extinguisher may be regarded as serving both the machinery space and the ro-ro cargo space.

   .3 One fire extinguisher shall be stowed in the wheelhouse.

2. In cable ferries constructed on or after 1 July 2015, the engine room shall be provided with a fixed fire-extinguishing system, approved as prescribed in paragraph 1.6.

5.5 Special arrangements in machinery spaces

1. Ventilation openings in machinery spaces of cable ferries shall be capable of being closed from outside the machinery space by an integral damper in the air duct. Ventilation openings and closing devices shall be made of non-combustible material.

2. When the fire alarm goes off, it shall switch off the power ventilation automatically. The power ventilation shall be capable of being switched off from outside the machinery space.

3. The fuel feed to engines and heating appliances shall be capable of being closed from outside the space in question. The fuel tank valves (quick shut-off valves) above the double bottom shall be capable of being closed from outside the space.

4. Emergency lighting shall be provided in the ship's wheelhouse, ro-ro cargo space, machinery spaces and service spaces. The batteries for the emergency lighting shall be located outside the machinery spaces.
5. The battery arrangements shall comply with the Finnish Transport Safety Agency’s Regulations on electrical installations in ships.

5.6 Loudspeakers

Cable ferries shall be fitted with a fixed public address system in their ro-ro cargo spaces operating on emergency power supply.

5.7 Operational readiness of fire safety equipment

1. The master shall ensure that fire-fighting appliances and alarms are functional and that the ship’s crew is familiar with their use.

2. A fire drill shall be conducted on board at least once a month. Entries of fire drills held shall be made in the ship’s log.

6 FIRE SAFETY MEASURES FOR CARGO SHIPS OF LESS THAN 500 GROSS TONNAGE ENGAGED ON INTERNATIONAL VOYAGES AND CARGO SHIPS ENGAGED IN DOMESTIC TRADE

6.1 Structure

The hull, superstructures, structural bulkheads, decks and deckhouses shall be designed and constructed so as to ensure the greatest possible degree of fire safety.

6.1.1 New ships of 50 gross tonnage and upwards

1. The hull, superstructures, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material. For steel or other equivalent material, as given in paragraph 1.3, the applicable fire exposure shall be in accordance with the integrity and insulation values given in tables 3 and 4 of paragraph 6.2. For example, where divisions such as decks or sides and ends of deckhouses are permitted to have ’B-0’ fire integrity, the applicable fire exposure shall be half an hour.

2. However, if some part of the structure is of aluminium alloy the following requirements apply:

   .1 The insulation of aluminium alloy components of ‘A’ or ‘B’ class divisions, except for structures that are non-load-bearing, shall be such that the temperature of the structural core does not rise more than 200 °C above the ambient temperature at any time during the applicable fire exposure to the standard fire test.

   .2 Special attention shall be given to the insulation of aluminium alloy components of columns, beams and other structural members required to support survival craft stowage, launching and embarkation areas, and supports for ‘A’ and ‘B’ class divisions to ensure that:

   .1 for such members supporting survival craft areas and ‘A class divisions, the temperature rise limit specified in paragraph 6.1.1.2.1 shall apply during one hour; and
.2 For such members required to support ‘B’ class divisions, the temperature rise limit specified in paragraph 6.1.1.2.1 shall apply during half an hour.

.3 Decks and casings above machinery spaces shall be constructed of steel and adequately insulated and openings therein, if any, shall be suitably arranged and protected to prevent the spread of fire.

6.1.2 New ships of less than 50 gross tonnage and existing ships

Machinery space boundaries and casings shall be insulated by at least 50 mm thick non-combustible mineral wool with a density of at least 100 kg/m\(^3\) or corresponding material which will guarantee an equivalent standard of safety when the spaces concerned are adjacent to control stations, accommodation spaces, stairways, cargo spaces and high fire-risk service spaces. When life-saving appliances are stowed on the deck above, the fire integrity of the deck shall be of class ‘A-60’.

6.2 Fire integrity of bulkheads and decks

6.2.1 New ships of 50 gross tonnage and upwards

1. In addition to complying with the specific regulations for fire integrity of bulkheads and decks mentioned below in this paragraph (6.2.1), the minimum fire integrity of all bulkheads and decks shall be as given in tables 3 and 4.

2. The tables shall apply as follows:

   .1 Table 3 applies to bulkheads;
   .2 Table 4 applies to decks.

3. For the purpose of determining the appropriate fire integrity standards applicable to boundaries between adjacent spaces, such spaces are classified according to their fire risk in categories (1) to (11) as specified below. Where the contents and use of a space are such that there is a doubt as to its classification in accordance with this paragraph, it shall be treated as a space within the relevant category having the most stringent boundary requirements. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in the tables.

   (1) Control stations
       Spaces containing emergency sources of power and lighting.
       Wheelhouse and chartroom.
       Spaces containing the ship’s radio equipment.
       Fire-extinguishing rooms and fire control rooms.
       Control room for propulsion machinery when located outside the propulsion machinery space.
       Spaces containing centralised fire alarm equipment.

   (2) Corridors
       Corridors in accommodation spaces.
(3) Accommodation spaces
   Spaces as defined in paragraph 1.3 excluding corridors.

(4) Stairways
   Interior stairways, lifts and escalators (other than those wholly contained within machinery spaces) and associated enclosures.
   In this context a stairway which is enclosed at only one level shall be regarded as part of the space from which it is not separated by a fire door.

(5) Service spaces (minor fire risk)
   Lockers and storeroms not used for the storage of flammable liquids and with a deck area of less than 4 m², as well as drying rooms and laundries.

(6) Machinery spaces of category A
   Spaces defined in paragraph 1.3

(7) Other machinery spaces
   Spaces defined in paragraph 1.3 excluding machinery spaces of category A

(8) Cargo spaces
   Spaces defined in paragraph 1.3

(9) Service spaces (high fire risk)
   Galley, pantries with cooking facilities, paint stores, lockers and storage spaces with a surface area of 4 m² or more, flammable liquid storage spaces and repair shops other than those that form part of machinery spaces.

(10) Open decks
   Open deck spaces and enclosed promenades with no fire risk
   Air spaces (the space outside superstructures and deckhouses)

(11) Ro-ro cargo spaces
   Spaces defined in paragraph 1.3
   Spaces intended for the carriage of motor vehicles with fuel in their tanks for their own needs.

4. Continuous ‘B’ class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and fire integrity of a division.
Table 3

Fire integrity of bulkheads separating adjacent spaces

<table>
<thead>
<tr>
<th>Spaces</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
<th>(11)</th>
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<td></td>
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<td>B-0</td>
<td>A-60</td>
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<td>*</td>
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<td>Accommodation spaces</td>
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<td></td>
</tr>
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<td>Service spaces (high risk)</td>
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<td></td>
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Table 4

Fire integrity of decks separating adjacent spaces

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<tr>
<th>Spaces below</th>
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<th>(1)</th>
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<th>(3)</th>
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<th>(5)</th>
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<tr>
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</tr>
<tr>
<td>Service spaces (high risk)</td>
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<td>A-0</td>
<td>A-30</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Notes to be applied to tables 3 and 4

1) Bulkheads separating the wheelhouse, chartroom and radio room from each other may be of class ‘B-0’.
2) Class ‘A-0’ is sufficient if dangerous goods are not carried closer than 3 m horizontal distance from the bulkhead.
3) Where an asterisk (*) appears in the tables, the bulkhead or deck shall be of steel or other equivalent material, but is not required to be of class ‘A’.
4) If life-saving appliances are stowed on the deck above, the deck is required to be of class ‘A-60’.

6.3 Means of escape

1. Stairways and ladders shall be so arranged as to provide ready means of escape to the lifeboat and life-raft embarkation deck from passenger and crew spaces and from spaces in which the crew is normally employed. For this purpose, the following requirements shall be met:

2. Below the bulkhead deck, two means of escape, at least one of which shall be independent of watertight doors, shall be provided from each watertight compartment or similarly restricted space or group of spaces. Exceptionally, one of the means of escape may be dispensed with, due regard being paid to the nature and location of spaces and to the number of persons who might be normally employed there.
3. In new ships, corridors exceeding 5 m in length, lobbies and parts of corridors from which there is only one route of escape are prohibited.

4. The number of escape routes and their location in cargo spaces both above and below the bulkhead deck shall be approved as prescribed in paragraph 1.6. In addition, it shall be possible to access the embarkation deck safely.

6.4 Penetrations and openings in ‘A’ and ‘B’ class divisions

6.4.1 New ships of 50 gross tonnage and upwards

1. All openings in ‘A’ class divisions shall be provided with permanently attached means of closing which shall be as effective for resisting fires as the divisions in which they are fitted.

2. The construction of all doors and door frames in ‘A’ class divisions, with the means of securing them when closed, shall provide resistance to fire as well as to the passage of smoke and flame, as far as practicable, equivalent to that of the bulkheads in which the doors are situated. Such doors and doorframes shall be constructed of steel or other equivalent material. Watertight doors need not be insulated.

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

4. Cable and pipe penetrations shall be arranged appropriately and they shall provide resistance to fire as well as to the passage of smoke and flame equivalent to that of the bulkheads in which they are situated.

6.4.2 New ships of less than 50 gross tonnage and existing ships

Doors, openings, and cable and pipe penetrations shall be arranged appropriately and they shall provide resistance to fire as well as to the passage of smoke and flame equivalent to that of the divisions in which they are situated.

6.5 Protection of stairways and lifts in accommodation and service spaces

6.5.1 New ships of 50 gross tonnage and upwards

1. All stairways shall be of steel frame construction and shall be within enclosures formed of ‘A-0’ class divisions, with positive means of closure of all openings except that:

   .1 a stairway connecting only two decks need not be enclosed. When a stairway is closed in one between-deck space, the stairway enclosure shall be protected in accordance with the tables for decks in paragraph 6.2;

   .2 in ships with cabins for a maximum of 12 persons, the stairway passes through a number of decks and there are at least two routes of escape from each cabin deck, the stairway may be constructed in accordance with ‘B-0’ requirements.
6.5.2 New ships of less than 50 gross tonnage and existing ships

In existing ships, the arrangements for stairways and lift trunks shall be approved as prescribed in paragraph 1.6. In addition, resistance to the passage of smoke and flame shall be as effective as in ‘B-0’ class structures.

6.6 Ventilation systems

6.6.1 New ships of 50 gross tonnage and upwards and existing ships of 500 gross tonnage and upwards

1. Ventilation ducts shall be made of non-combustible material. However, short lengths of duct, not generally exceeding 2 m in length and with a cross-section not exceeding 0.02 m², need not be non-combustible, subject to the following conditions:

   .1 these ducts shall be of a material which has a low fire risk;
   .2 they may only be used at the end of the ventilation device; and
   .3 they shall not be situated less than 600 mm, measured along the duct, from an opening in an ‘A’ or ‘B’ class division, including continuous ‘B’ class ceilings.

2. Where the ventilation ducts with a free-sectional area exceeding 0.02 m² pass through ‘A’ class bulkheads or decks, the openings shall be lined with a steel sheet sleeve. If the ducts passing through the bulkheads or decks are not made of steel in the vicinity of a passage through the deck or bulkhead both the ducts and the sleeves shall comply with the following requirements:

   .1 The sleeves shall have a thickness of at least 3 mm and a length of at least 900 mm. When passing through bulkheads, this length shall be divided preferably into 450 mm on each side of the bulkhead. These ducts, or sleeves lining such ducts, shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes.

   .2 Ducts with a free cross-sectional area exceeding 0.075 m² shall be fitted with fire dampers in addition to the requirements of the previous paragraph. The fire damper shall operate automatically, but shall also be capable of being closed and opened manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by ‘A’ class divisions, without serving those spaces, provided those ducts have the same fire integrity as the divisions which they penetrate.

3. Ducts provided for the ventilation of machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces shall not pass through accommodation spaces, service spaces or control stations unless they comply with the following conditions:

   .1 The ducts are constructed of steel having a thickness of at least 3 mm and 5 mm for ducts the widths or diameters of which are up to and including 300 mm and 760 mm and over respectively. If the widths or diameters of such ducts are between 300 mm and 760 mm, their thickness is to be obtained by interpolation.

   .2 The ducts are suitably supported and stiffened.
The ducts are fitted with automatic fire dampers close to the boundaries penetrated.

The ducts are insulated to ‘A-60’ standard from the machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces to a point at least 5 m beyond each fire damper.

or

The ducts are constructed of steel in accordance with paragraphs 6.6.1.3.1 and 6.6.1.3.2.

The ducts are insulated to ‘A-60’ standard throughout the accommodation spaces, service spaces and control stations.

4. Ducts provided for ventilation to accommodation spaces, service spaces and control stations shall not pass through machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces unless they comply with the following conditions:

The ducts where they pass through a machinery space, galley, car deck space, ro-ro cargo space or special category space are constructed of steel in accordance with paragraphs 6.6.1.3.1 and 6.6.1.3.2.

Automatic fire dampers are fitted close to the boundaries penetrated.

The integrity of the machinery space, galley, car deck space, ro-ro cargo space or special category space boundaries is maintained at the penetrations; or

The ducts where they pass throughout the machinery space, galley, car deck space, ro-ro cargo space or special category space are constructed of steel in accordance with paragraphs 6.6.1.3.1 and 6.6.1.3.2.

The ducts are insulated to ‘A-60’ standard throughout the machinery space, galley, car deck space, ro-ro cargo space or special category space.

5. Ventilation ducts with a free-sectional area exceeding 0.02 m² passing through class ‘B’ bulkheads shall be lined with steel sheet sleeves of 900 mm in length divided preferably into 450 mm on each side of the bulkheads unless the duct is of steel for this length.

6. Such measures as are practicable shall be taken in respect of control stations outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and equipment contained therein may be supervised and continue to function effectively. Alternative and separate means of air supply shall be provided; air inlets of the two sources of supply shall be so disposed that the risk of both inlets drawing in smoke simultaneously is minimised. Such requirements need not apply to control stations situated on, and opening on to, an open deck, or where local closing arrangements would be equally effective.
7. Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of ‘A’ class divisions. Each exhaust duct shall be fitted with:

   .1 a grease trap readily removable for cleaning;
   .2 a fire damper located in the lower end of the duct;
   .3 arrangements, operable from within the galley, for shutting off the exhaust fans; and
   .4 in ships of 500 gross tonnage and upwards, approved means for extinguishing a fire within the duct.

6.6.2 New ships and existing ships
The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated.

6.7 Restricted use of combustible material

6.7.1 New ships of 50 gross tonnage and upwards

1. All linings in corridors and stairways in accommodation spaces and in lockers in corridors shall be of material difficult to ignite. Partial bulkheads or decks used to subdivide a space for utility or artistic treatment shall also be of material difficult to ignite.

2. If primary deck coverings are used within accommodation and service spaces and control stations, they shall be of approved material which has qualities of resistance to the propagation of flame in accordance with the IMO Fire Test Procedures.

6.8 Details of construction

6.8.1 New ships of 50 gross tonnage and upwards

1. In accommodation and service spaces, control stations, corridors and stairways:
   
   .1 air spaces enclosed behind ceilings, panelling or linings shall be suitably divided by close-fitting draught stops not more than 14 m apart;
   .2 in the vertical direction, such enclosed air spaces, including those behind linings of stairways, trunks, etc. shall be closed at each deck.

6.9 Arrangements for the use of gaseous fuels

The storage of fuels with a flashpoint below 43 °C (closed cup test) in ships is permitted only in appropriate storage tanks. Such tanks shall be stored in external spaces or in spaces which open directly to an open deck from the same deck. In the event of fire, the tanks shall be capable of being removed from the ship easily.
6.10 Fire protection arrangements in cargo spaces

1. The requirements of the SOLAS Convention apply to the cargo spaces of cargo ships of 2,000 gross tonnage and upwards in accordance with their date of construction.

2. The SOLAS Convention applies to ro-ro cargo spaces in so far as the Finnish Transport Safety Agency deems reasonable and practicable.

6.11 Special requirements for ships carrying dangerous goods

The requirements of SOLAS Regulation II-2/19 shall apply to ships carrying dangerous goods.

6.12 Fire detection and fire alarm system

1. Fixed fire detection and fire alarm systems shall be installed in the following spaces:

   .1 periodically unattended machinery spaces of category A, if the machinery has in the aggregate a total power output of not less than 375 kW;

   .2 in corridors, stairways and escape routes within accommodation spaces in ships with overnight accommodation, smoke activated fire alarms shall be fitted. In ships where fixed fire detection and fire alarm systems are required in machinery spaces, the accommodation system alarms shall be linked to the system;

   .3 in ships of 500 gross tonnage and upwards, machinery spaces of category A shall be provided with smoke detectors.

2. Fixed fire detection and fire alarm systems and any automatic sprinkler, fire detection and fire alarm systems that may be installed shall be approved as prescribed in paragraph 1.6.

6.13 Fire control plans, instructions and fire drills

1. Cargo ships of 24 m in length and over shall have fire control plans in accordance with paragraph 2.10.1.

2. Cargo ships shall have operating and maintenance instructions in accordance with paragraphs 2.10.2.1 and 2.10.2.2, and fire drills shall be held on board in accordance with paragraph 2.10.3.

7 FIRE SAFETY MEASURES FOR TANKERS

1. Tanker means a cargo ship that has been constructed for, and is suitable for, the transport of flammable liquids in bulk. Flammable liquids are liquids with a flashpoint of no more than +60 °C (closed cup test), as determined by an approved flashpoint apparatus, and a Reid vapour pressure which is below the atmospheric pressure.

2. Tankers of less than 500 gross tonnage engaged in international trade and tankers engaged in domestic trade shall comply with the fire safety requirements of the SOLAS Convention for tankers corresponding to their date of construction.
8     FIRE SAFETY MEASURES FOR TUGS, BARGES, PUSHERS, INTEGRATED SYSTEMS FORMED BY A PUSHER AND A BARGE, AND DREDGERS

8.1     Structure

The construction requirements for cargo ships apply to tugs, barges and dredgers.

8.2     Equipment

1.    The equipment requirements for cargo ships apply to pushers, tugs and dredgers.

2.    Barges with an internal combustion engine shall be provided with at least two portable fire extinguishers suitable for extinguishing oil fires. Additionally, for every 736 kW or part thereof of machinery one more extinguisher is required. In spaces where there is a burner, there shall be at least one portable fire extinguisher suitable for extinguishing fuel oil fires. In addition, there shall be a sufficient number of portable fire extinguishers in such spaces and they shall be so located that no point in the space is more than 10 m walking distance from an extinguisher. Depending on their intended use, the required fire extinguishers shall have a capacity classification of at least 34A and 183B.

8.3     Integrated systems

Integrated systems formed by a tug or a pusher and a barge are regarded as one cargo ship with a gross tonnage equal to the combined gross tonnage of the tug or pusher and barge.

9     FIRE SAFETY REQUIREMENTS FOR NON-STEEL CARGO SHIPS

9.1     Application

Non-steel cargo ships constructed in a material other than steel shall meet the requirements of this Part and, in addition, the requirements of Part 2 regarding fire pumps, fire mains, hydrants, fire hoses, nozzles and portable fire extinguishers, and regarding the number and quality of other fire-extinguishing appliances, if applicable. Additionally, non-steel cargo ships shall meet the requirements of paragraph 3.12 in relation to fire detection and fire alarm systems.

9.2     New cargo ships

New non-steel cargo ships shall meet a safety standard equivalent to the safety standard required in this Regulation of equivalent new cargo ships, constructed in steel or other equivalent material.

9.3     Existing cargo ships

Accommodation spaces in existing non-steel cargo ships shall, to the extent possible, be separated from other parts of the ship with boundaries constructed in materials which are acceptable with regard to fire protection. Corridors, stairways and other means of escape shall be surrounded by similar boundaries, except when they only link a deck located directly below the weather deck with the weather deck.
Deck, bulkhead and deckhead coverings and insulations shall, to the extent possible, be of non-combustible material or material difficult to ignite, class SL 1 or the equivalent. Paint, varnish or other such surface finishing material which contains nitrocellulose or other combustible substances must not be used on board.

10 FIRE SAFETY REQUIREMENTS FOR NEW FISHING VESSELS OF LESS THAN 24 M IN LENGTH AND EXISTING FISHING VESSELS

10.1 Application

The requirements of Part 10 apply to new fishing vessels of less than 24 m in length and existing fishing vessels.

In this context, existing fishing vessels are existing fishing vessels as defined in the Fishing Vessel Directive.

The requirements of the Fishing Vessel Directive apply to fishing vessels of 24 m in length and over operating in trade area I, which according to the definition in the Fishing Vessel Directive are new vessels.

10.2 Means of escape

There shall be two escape routes from all spaces where people may be staying. There may, however, be only one escape route from spaces in which people are staying only occasionally and from spaces where the distance to the door does not exceed 5 m.

10.3 Structural integrity

1. Accommodation spaces should preferably be separated from other parts of the ship by boundaries of steel or other materials which are acceptable with regard to fire protection. Corridors, stairways and other means of escape leading from accommodation and service spaces to the weather deck and other escape routes shall be surrounded by similar boundaries, except when they link a deck located directly below the weather deck to the weather deck.

2. Deck, ceiling and deckhead coverings and insulation materials in accommodation spaces shall be, if possible, of non-combustible or low flame-spread materials. Paint, varnish or other such surface finishing material which contains nitrocellulose or other combustible material shall not be used in ships.

3. The machinery space shall be fire insulated from other spaces in the ship using non-combustible material to ‘A-30’ fire class or the equivalent.

10.4 Fixed fire-extinguishing system

In new and existing ships with a power output of 750 kW and more, there shall be a fixed fire-extinguishing system in the machinery space approved as prescribed in paragraph 1.6. The system shall be manually operated. The call points shall not be located in the machinery space.

10.5 Fire detection and fire alarm systems and smoke alarms

1. Fishing vessels of less than 24 m in length shall have smoke alarms in accommodation spaces and lounges.
2. Fishing vessels of 24 m in length and over shall have a fire detection and fire alarm system in accordance with paragraph 2.7 in the machinery space, stairways, corridors and service spaces. The system shall be approved as prescribed in paragraph 1.6.

10.6 Fire pump and hydrants

Fishing vessels of 15 m in length and over shall have a fire pump which is capable of supplying at least one water jet from any hydrant at a pressure of 2.1 bar with a 12 mm nozzle and which can be powered by the main engine. The ship shall have at least two hydrants with fire hoses.

The fire pump on fishing vessels of less than 24 m in length may be portable. In such case hydrants are not required.

10.7 Portable fire extinguishers

1. Fishing vessels of less than 15 m in length shall be fitted with at least two portable fire extinguishers of at least 6 kg capacity, class AB of which one shall be located near the machinery space.

2. Fishing vessels of 15 m in length and over shall have at least three portable fire extinguishers of at least 6 kg capacity, class AB. One portable fire extinguisher shall be so located that it is capable of being used in the machinery space.

10.8 Shutting down ventilation and fuel feed

In fishing vessels of 15 m in length and over the machinery space ventilators and ventilation openings and the fuel feed to the main engine shall be capable of being shut off from outside the machinery space.

10.9 Liquefied gas petroleum appliances

The ship shall carry a certificate of inspection for the installation of liquefied petroleum gas appliances issued by a gas installation company approved by the Finnish Safety and Chemicals Agency.

10.10 Fire control readiness

Fire-fighting appliances shall be in operational condition at all times, and the ship’s crew shall be familiar with their use.

11 ENTRY INTO FORCE

1. This Regulation enters into force on 1 July 2015.

2. This Regulation repeals the Finnish Transport Safety Agency Regulation on fire safety on board ships (20 Dec. 2012, TRAFI/18411/03.04.01.00/2012).

3. Existing ships that fall under the scope of application of this Regulation shall fulfil the requirements of this Regulation no later than 1 July 2016 or by the first renewal survey after this date. If an existing ship undergoes alterations, these alterations shall meet the requirements of this Regulation immediately to the extent implied by these alterations.
4. However, paragraphs 1.2.3 and 5.2.2 apply to existing ships as from the entry into force of this Regulation.

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NB: Unofficial translation; legally binding only in Finnish and Swedish