



Maritime &  
Coastguard  
Agency

MERCHANT SHIPPING NOTICE

**MSN 1900(M)**

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## The Merchant Shipping (Fire Protection) Regulations 2023

Notice to all Shipowners and Operators, Recognised Organisations, Certifying Authorities, Shipbuilders, Ship Repairers, Masters and Officers, and Surveyors

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### Summary

This Merchant Shipping Notice forms an integral part of the Merchant Shipping (Fire Protection) Regulations 2023 (S.I. 2023/XXXX), which make provision generally for fire protection in the construction of ships and implement Chapter II-2 of the Annex to the International Convention for the Safety of Life at Sea, 1974 (fire protection, fire detection and fire extinction). This Notice is made mandatory by way of reference to it in those Regulations.

Sections 3 to 10 of this Notice contain the technical requirements referred to in Part 2 and Part 6 of the Merchant Shipping (Fire Protection) Regulations 2023 with respect to ships constructed before 1st July 2002 of Classes I, II, VII, VII(A), VII(T), VIII, VIII(T), IX, IX(A) and IX(A)(T) engaged on international voyages, and to ships of Classes II(A), VII(A), VIII(A), VIII(A)(T), IX, IX(A), IX(A)(T) engaged on non-international voyages. It also applies to ships of Classes XI and XII of all construction dates and engaged on either international or non-international voyages.

Chapter II-2 applies to ships constructed on or after 1st July 2012, but some provisions in Chapter II-2 also apply to ships constructed before 1st July 2012. Except for ships of Classes XI and XII, a ship constructed before 1st July 2012 must still comply with a provision of Parts B, C, D, E and G of Chapter II-2 that applies to it.

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### **SECTION 1**

#### **INTRODUCTION AND DEFINITIONS**

#### **1 Introduction and definitions**

- 1.1 In this Notice—

- 1.1.1 Unless a term is defined in paragraph 1.2, it has the meaning given in regulation 2 of the 2023 Regulations (interpretation);
- 1.1.2 A reference to a numbered paragraph is, unless otherwise stated, a reference to a numbered paragraph in this Notice;
- 1.1.3 A reference to a numbered section is, unless otherwise stated, a reference to the relevant section in this Notice;
- 1.1.4 A reference to “the 2023 Regulations” means a reference to the Merchant Shipping (Fire Protection) Regulations 2023 (SI 2023/###).
- 1.2 Sections 3 to 10 of this Notice contain the technical requirements for ships **constructed before 1st July 2002 and for ships of Classes XI and XII**, to which the 2023 Regulations apply. These are the requirements referred to in Part 2 and Part 6 of the 2023 Regulations.
- 1.2.1 The general application provision in the 2023 Regulations means that this Notice applies to both UK and non-UK ships. It does **not** apply to the following ships:
- (a) passenger ships of Class II(A) under 21.34 metres in length;
  - (b) passenger ships of Classes III, IV, V, VI and VI(A);
  - (c) cargo ships of Classes VII, VII(A), VII(T), VIII, VIII(A), VIII(T), VIII(A)(T), IX, IX(A), IX(A)(T) and XI under 500 tons;
  - (d) pleasure vessels of Class XII under 500 tons;
  - (e) ships of war and naval auxiliaries;
  - (f) ships owned or operated by a State and engaged only on governmental non-commercial service;
  - (g) fishing vessels;
  - (h) ships solely navigating the Great Lakes of North America and the River St Lawrence as far east as a straight line drawn from Cap des Rosiers to West Point, Anticosti Island and, on the north side of Anticosti Island, the 63rd meridian;
  - (i) non-United Kingdom ships which are pleasure vessels of any size.
  - (j) any passenger ship to which the Merchant Shipping (Passenger Ships) (Safety Code for UK Categorised Waters) Regulations 2010 apply;
  - (k) high-speed craft to which the Merchant Shipping (High Speed Craft) Regulations 2004 apply.
- 1.2.2 The requirements for ships of Classes I, II, VII, VII(A), VII(T), VIII, VIII(T), IX engaged on **international voyages** are the requirements of Chapter II-2 of SOLAS as it applied when it was amended by IMO Resolution MSC.57(67), together with the requirements for ships constructed before 1st July 2002 contained in IMO Resolutions MSC.1(XLV), MSC.6(48), MSC.13(57), MSC.22(59), MSC.24(60), MSC.27(61), MSC.31(63), MSC.57(67), MSC.99(73), MSC.134(76), MSC.194(80), MSC.201(81), MSC.216(82), MSC.256(84), MSC.269(85) and MSC.291(87). These requirements were implemented in the Merchant Shipping (Fire Protection: Large Ships) Regulations 1998 (“the 1998 Regulations”), which are revoked by the 2023 Regulations, and this Notice replicates the content of those Regulations in relation to those requirements.
- 1.2.3 Merchant Shipping Notices 1665, 1666, 1667, 1668, 1669 and 1670, which were referred to

in the 1998 Regulations, are still applicable but have been updated to reflect the changes made by Merchant Shipping Notice 1773 and to replace the references to the 1998 Regulations in those Notices with the relevant provisions in this Notice. These Merchant Shipping Notices are made mandatory by reference to them in the 2023 Regulations.

- 1.2.4 The requirements for ships of Classes II(A), VII(A), VIII(A), VIII(A)(T), IX, IX(A), IX(A)(T) engaged on **non-international voyages** are the requirements that were contained in the 1998 Regulations and this Notice also replicates the content of those Regulations in relation to those requirements.
- 1.2.5 This Notice also replicates the requirements for ships of Classes XI and XII that were contained in the 1998 Regulations.
- 1.2.6 The current version of Chapter II-2 of SOLAS applies to ships constructed on or after 1st July 2012 (to which this Notice does not apply) but some provisions in Chapter II-2 also apply to ships constructed before 1st July 2012, and some, specifically, to ships constructed before 1st July 2002. Therefore, a ship to which this Notice applies (that is, ships constructed before 1st July 2002), and **engaged on international voyages**, must comply with the provisions of Chapter II-2 listed in paragraph 1.2.7 below and any provision of Parts B, C, D, E and G of Chapter II-2 that applies to **all ships** (see regulation 13(3) in the 2023 Regulations). This requirement does **not** apply to ships engaged on non-international voyages or ships of Classes XI and XII.
- 1.2.7 The provisions in the **current** version of Chapter II-2 referred to in paragraph 1.2.6 are:
- (a) paragraph 3 in regulation 1 (repairs, alterations, modifications and outfitting), as appropriate – this is implemented and prescribed by regulation 7 in the 2023 Regulations;
  - (b) paragraph 6.5 in regulation 1 (combination carriers to not carry cargoes other than oil unless all cargo spaces are empty of oil and gas-freed etc), as appropriate – see paragraph 5.7 in this Notice;
  - (c) paragraph 6.7 in regulation 1 (tankers – system of continuous monitoring of the concentration of hydrocarbon gases), as appropriate – see paragraphs 5.28 and 5.29 in this Notice;
  - (d) regulations 13.3.4.2 to 13.3.4.5 (emergency escape breathing devices – all ships in accommodation spaces, all passenger ships in main vertical zones, with modification for stairwells), 13.4.3 (emergency escape breathing devices) - see paragraphs 3.49 – 3.53, 4.29 – 4.32, 5.35 – 5.38 in this Notice and part E (operational requirements) - see paragraphs 6.50 – 6.62 in this Notice **except** regulations 16.3.2.2 and 16.3.2.3 (procedures for cargo tank purging and/or gas freeing), see paragraph 5.24 in this Notice.
  - (e) regulations 10.4.1.3 (fire-extinguishing systems using Halon 1211, 1301, and 2402 and per-fluorocarbons are prohibited) (see paragraph 6.23 in this Notice) and 10.6.4 (deep-fat cooking equipment) for new installations only (see paragraph 6.42 in this Notice);
  - (f) regulation 10.5.6 (fixed local application fire-extinguishing systems) not later than 1 October 2005 for passenger ships of 2,000 gross tonnage and above (see paragraph 3.28 – 3.31 in this Notice);

- (g) regulations 5.3.1.3 (linings, ceilings and partial bulkheads or decks used to screen or to separate adjacent cabin balconies shall be of non-combustible materials) and 5.3.4 (on passenger ships, furniture and furnishings on cabin balconies shall comply with regulations 3.40.1, 3.40.2, 3.40.3, 3.40.6 and 3.40.7 unless such balconies are protected by a fixed pressure water-spraying and fixed fire detection and fire alarm systems complying with regulations 7.10 and 10.6.1.3. to passenger ships not later than the date of the first survey after 1 July 2008) (see paragraphs 7.55(a)(v) and 7.55(b)(i) in this Notice);
- (h) regulation 4.5.7.1 (tankers shall be equipped with at least one portable instrument for measuring oxygen and one for measuring flammable vapour concentrations, together with a sufficient set of spares. Suitable means shall be provided for the calibration of such instruments) (see paragraph 5.32 in this Notice);
- (i) regulation 10.10.1.2 (self-contained compressed air breathing apparatus of fire-fighter's outfits to comply with paragraph 2.1.2.2 of chapter 3 of the Fire Safety Systems Code) (see paragraphs 6.34 – 6.35 in this Notice);
- (j) paragraph 5 of regulation 20-1 (Requirement for vehicle carriers to carry two portable gas detectors in relation to the carriage of vehicles with compressed hydrogen or compressed natural gas in their tanks for their own propulsion);
- (k) regulation 16.3.3 except 16.3.3.3 (operation of inert gas system) (see paragraph 5.2 in this notice);
- (l) regulation 10.5.1.2.2 (boiler room or at an entrance outside of the boiler room at least one portable foam applicator unit complying with the provisions of the Fire Safety Systems Code) (see paragraph 3.26(b) in this notice);
- (m) regulation 20.3.1.2.4 (operation of ventilation system);
- (n) regulation 20.6.1.5 (provision of means to prevent the blockage of drainage for closed vehicles and ro-ro spaces and special category spaces where fixed pressure water-spraying systems are fitted).

1.3 The following **definitions** are used in this Notice:

““A” Class division” means a bulkhead or part of a deck which is—

- (a) constructed of steel or other equivalent material;
- (b) suitably stiffened;
- (c) so constructed as to be capable of preventing the passage of smoke and flame to the end of the 60 minute standard fire test; and
- (d) so insulated where necessary with suitable non-combustible materials that if the division is exposed to a standard fire test the average temperature on the unexposed side of the division must not increase more than [140°C] above the initial temperature nor must the temperature at any one point, including any joint, rise more than 180°C above the initial temperature within the time listed below—

“A-60” standard, 60 minutes;



“A-30” standard, 30 minutes;

“A-15” standard, 15 minutes;

“A-0” standard, 0 minutes;

“accommodation spaces” means—

- (a) public spaces;
- (b) corridors and lobbies;
- (c) stairways;
- (d) lavatories;
- (e) cabins;
- (f) offices;
- (g) hospitals;
- (h) hairdressing salons;
- (i) pantries not containing cooking appliances;
- (j) lockers;
- (k) games and hobbies' rooms; and
- (l) spaces similar to any of the foregoing and trunks to such spaces allocated to passengers or crew;

“approved” means, in relation to any equipment or arrangement, approved under the Merchant Shipping (Marine Equipment) Regulations 2016;

““B” Class division” means a bulkhead, part of a deck, ceiling or lining which is—

- (a) so constructed as to be capable of preventing the passage of flame to the end of the first 30 minutes of the standard fire test;
- (b) so constructed as to provide an insulation standard such that, if the division is exposed to a standard fire test, the average temperature on the unexposed side of the division must not increase more than 140°C above the initial temperature, nor must the temperature at any one point, including any joint, rise more than 225°C above the initial temperature within the time listed below—

“B-15” standard, 15 minutes;

“B-0” standard, 0 minutes; and

- (c) constructed of suitable non-combustible materials and all materials whose use is necessary for or ancillary to its construction and erection must be non-combustible, with the exception that combustible veneers may be permitted provided that they meet the requirements of paragraph 7.54(b);

“bulkhead deck” means the uppermost deck up to which transverse watertight bulkheads are carried;

““C” Class division” means a bulkhead, ceiling or lining which is constructed of suitable non-combustible materials not being an “A” Class division or a “B” Class division;

“cargo area” means that part of the ship which contains—

- (a) the cargo tanks, slop tanks and cargo pump rooms; and
- (b) the following spaces when they are adjacent to the cargo tanks; namely, pump rooms other than cargo pump rooms, cofferdams, ballast spaces and void spaces;

and extends fore and aft between the forward end of the most forward of those tanks or other spaces and the after end of the aftermost of those tanks or other spaces and athwartships over the whole breadth of the ship; and the deck area over that part of the ship;

“cargo control station” means a space from which the loading, discharging or transferring of any cargo may be controlled;

“cargo pump room” means a room in which any pumps used for loading, discharging or transferring cargoes are located;

“cargo ship” means any ship which is not a passenger ship, pleasure vessel or fishing vessel;

“cargo spaces” are all spaces used for cargo including cargo oil tanks, slop tanks and trunks to such spaces;

“Category A tanker” and “Category A combination carrier” means a tanker, or as the case may be, a combination carrier constructed or adapted to carry crude oil and petroleum products having a closed flashpoint not exceeding 60°C the Reid vapour pressure of which is below that of atmospheric pressure, and liquids having a similar fire hazard and the keel of which—

- (a) was laid, or which was at a similar stage of construction, on or after 1st February 1975; or
- (b) was laid, or was at a similar stage of construction, before 1st February 1975 but was completed after 31st December 1978;

“central control station” means a control station in which the following control and indicator functions are centralised—

- (a) fixed fire detection and alarm system;
- (b) automatic sprinklers or water mist, fire detection and alarm system;
- (c) fire door indicator panel;
- (d) fire door closure;
- (e) watertight door indicator panel;
- (f) watertight door closure;
- (g) ventilation fans;
- (h) general/fire alarm;
- (i) communication systems including telephones; and
- (j) microphone to public address system;

“chemical tanker” means a tanker constructed or adapted and used for the carriage in bulk of any liquid product of a flammable nature listed in Chapter 17 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, as defined in SOLAS regulation VII/8.1;

“closed ro-ro cargo space” means a ro-ro cargo space which is not an open ro-ro space and not a weather deck;

“Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk” means the 1993 edition of the Code and has the meaning given to it in regulation 1 of Annex II of the International Convention for the Prevention of Pollution from Ships 1973 (MARPOL);

“Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk” means the 1983 edition of the Code and has the meaning given to it in IMO Resolution A.328(9) and supplemented by IMO Resolution A.329(9) as amended;

“Code of Safe Practice for Solid Bulk Cargoes” means the 1991 edition of the Code (IMO Resolution A.434(XI));

“combination carrier” means a tanker designed to carry oil or alternatively solid cargoes in bulk;

“continuous “C” Class ceiling or lining” means a “C” Class division forming a ceiling or lining which terminates only at an “A” or “B” Class division;

“continuously manned central control station” means a central control station which is continuously manned by a responsible member of the crew;

“control room” means a room either within or outside a propulsion machinery space from which propulsion machinery and boilers may be controlled;

“control stations” means spaces in which radio or main navigating equipment, or the emergency source of power, or the central fire recording equipment, or fire control equipment, or fire-extinguishing installations are located or a control room located outside a propulsion machinery space;

“crude oil” means any oil occurring naturally in the earth whether or not treated to render it suitable for transportation and includes—

- (a) crude oil from which certain distillate fractions may have been removed; and
- (b) crude oil to which certain distillate fractions may have been added;

“dangerous goods” means dangerous goods defined as such in the Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997; and any reference to a particular class of dangerous goods is a reference to that class of dangerous goods as defined in those Regulations;

“deadweight” means the difference in tonnes between the displacement of a ship in water of a specific gravity of 1.025 at the load waterline corresponding to the assigned summer freeboard and the lightweight of the ship;

“emergency escape breathing device” means such a device which complies with the International Code for Fire Safety Systems contained in IMO Resolution MSC.98(73) of 5th December 2000;

“equivalent material” as used in the expression “steel or other equivalent material” means any non-combustible material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of an appropriate fire test;

“Fire Safety Systems Code” has the meaning given to it in regulation 3.22 of Chapter II-2 in the Annex to SOLAS;

“Fire Test Procedures Code” has the meaning given to it in regulation 3.23 of Chapter II-2 in the Annex to SOLAS;

“gas carrier” means a tanker constructed or adapted and used for the carriage in bulk of any liquefied gas or certain other substances of a flammable nature listed in Chapter 19 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk;

“gas safe space” is a space into which the entry of hydrocarbon gases or other gases of a flammable or toxic nature has been restricted;

“Guidelines for Inert Gas Systems” means the 1994 edition of the publication “Inert Gas Systems” published by the International Maritime Organization;

“IMO Resolution” means a Resolution of that description agreed in, or, where it is not mandatory, issued by, the International Maritime Organization;

“International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk” has the meaning given to it in regulation 8.1 of Chapter VII in the Annex to SOLAS (dangerous goods); ;

“International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk” has the meaning given to it in regulation 11.1 of Chapter VII in the Annex to SOLAS (dangerous goods);

“International Maritime Dangerous Goods Code” has the meaning given to it in regulation 1.1 of Chapter VII in the Annex to SOLAS (dangerous goods);

“length” in relation to a registered ship means registered length, and in relation to an unregistered ship means the length from the fore part of the stem to the aft side of the head of the stern post or, if no stern post is fitted to take the rudder, to the fore side of the rudder stock at the point where the rudder passes out of the hull;

“lightweight” means the displacement of a ship in tonnes without cargo, oil fuel, lubricating oil, ballast water, fresh water in tanks or stores and passengers and crew and their effects;

“low flame spread” means that the surface will adequately restrict the spread of flame, which is determined in accordance with the Fire Test Procedures Code;

“machinery space” means a space which contains 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 where the context so admits, any trunk to such a space;

“machinery spaces of category A” are those spaces and trunks to such spaces which contain—

- (a) internal combustion machinery used for main propulsion; or
- (b) 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 375kW; or
- (c) any oil-fired boiler or oil fuel unit;

“main vertical zones” means the main vertical zones into which the hull, superstructure and deck houses of a ship are subdivided by “A60” class divisions; except that in the case of ships constructed on or after 1st October 1994, main vertical zones are taken to be those sections into which the hull, superstructure and deck houses are divided by “A” Class divisions, the mean length and width of which on any deck does not in general exceed 40m;

“Merchant Shipping Notice” means a notice described as such and issued by the Maritime and Coastguard Agency (an executive agency of the Department for Transport) and includes a reference to any document amending or replacing that notice which is considered by the Secretary of State to be relevant from time to time and is specified in a Merchant Shipping Notice;

“non-combustible material” means 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 Fire Test Procedures Code. Any other material is a combustible material;

“oil-fired boiler” means any boiler wholly or partly fired by liquid fuel;

“oil-fuel unit” means 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 pressure pumps, filters and heaters dealing with oil at a pressure more than 1.8 kPa;

“open ro-ro cargo spaces” means ro-ro cargo spaces which are open at both ends, or open at one end and provided with adequate natural ventilation effective over the entire length through permanent openings in the side plating or deck head;

“open ship” means a ship in which all the passenger accommodation is completely open to the elements and is not fitted with a weathertight or watertight deck or structure above the waterline;

“passenger” is a person other than—

- (a) the master and the members of the crew or other persons employed or engaged in any capacity on board a ship on the business of that ship; or
- (b) a child under 1 year of age;

“passenger ship” means a ship carrying more than 12 passengers;

“pleasure vessel” means—

- (a) any vessel which at the time it is being used is—
  - (i) in the case of a vessel wholly owned by-
    - (aa) an individual or individuals used only for the sport or pleasure of the owner or the immediate family or friends of the owner; or
    - (bb) a body corporate, used only for sport or pleasure and on which the persons are employees or officers of the body corporate, or their immediate family or friends; and
  - (ii) on a voyage or excursion which is one for which the owner does not receive money for or in connection with operating the vessel or carrying any person, other than as a contribution to the direct expenses of the operation of the vessel incurred during the voyage or excursion; or
- (b) any vessel wholly owned by or on behalf of a members' club formed for the purpose of sport or pleasure which, at the time it is being used, is used only for the sport or pleasure of members of that club or their immediate family, and for the use of which any charges levied are paid into club funds and applied for the general use of the club,

where, in the case of any vessel referred to in paragraphs (a) or (b), no other payments are made by or on behalf of users of the vessel, other than by the owner; and in this definition

“immediate family” means in relation to an individual, the spouse or civil partner of the individual, and a relative of the individual or the individual’s spouse or civil partner; and “relative” means brother, sister, ancestor or lineal descendant;

“public spaces” includes halls, dining rooms, bars, smoke rooms, lounges, recreation rooms, nurseries, libraries, cinemas, sale shops and similar permanently enclosed spaces allocated to passengers or crew;

“Reid vapour pressure” means the vapour pressure of a liquid as determined by laboratory testing in a standard manner in the Reid apparatus;

“relevant standard of a member State other than the United Kingdom”, in relation to a reference to an International Standard or a British Standard, means—

- (a) a relevant standard or code of practice of a national standards body or equivalent body of a member State other than the United Kingdom; or
- (b) a relevant international standard recognised for use in a member State other than the United Kingdom; or
- (c) a relevant specification acknowledged for use as a standard by a public authority of a member State other than the United Kingdom;

being a standard, code of practice or specification which provides, in use, levels of safety, suitability and fitness for purpose equivalent to those provided by the International Standard or the British Standard;

“relevant standard of a member State”, in relation to a reference to an International Standard or a British Standard, means—

- (a) a relevant standard or code of practice of a national standards body or equivalent body of a member State;
- (b) a relevant international standard recognised for use in a member State; or
- (c) a relevant specification acknowledged for use as a standard by a public authority of a member State, being a standard, code of practice or specification which provides, in use, levels of safety, suitability and fitness for purpose equivalent to those provided by the International Standard or the British Standard;

“rooms containing furniture and furnishings of restricted fire risk” means rooms in which—

- (a) all case furniture such as desks, wardrobes, dressing tables, bureaux, and dressers, are constructed entirely of approved non-combustible materials, except that a combustible veneer not exceeding 2 millimetres may be used on the finished surface of such furniture;
- (b) all free-standing furniture such as chairs, sofas and tables are constructed with frames of non-combustible materials;
- (c) bedding components have qualities of resistance to the ignition and propagation of flame, determined in accordance with the Fire Test Procedures Code;
- (d) in the case of ships constructed before 1st July 1998:
  - (i) all draperies, curtains and other suspended textile materials have qualities of resistance to the propagation of flame in accordance with the requirement of Type B performance of British Standard 5867: Part 2: 1980;
  - (ii) all surface floor coverings have qualities of resistance to the propagation of flame to the satisfaction of the Secretary of State; and

(iii) the upholstered parts of furniture have qualities of resistance to the ignition and propagation of flame to the satisfaction of the Secretary of State;

(e) in the case of ships constructed on or after 1st July 1998:

(i) all draperies, curtains and other suspended textile materials have qualities of resistance to the propagation of flame not inferior to those of wool of mass 0.8 kg/m<sup>2</sup>, this being determined in accordance with the Fire Test Procedures Code;

(ii) all surface floor coverings have low flame spread; and

(iii) the upholstered parts of furniture have qualities of resistance to the ignition and propagation of flame, determined in accordance with the Fire Test Procedures Code;

“ro-ro cargo spaces” means spaces not normally subdivided in any way and extending to either a substantial length or the entire length of the ship in which goods (packaged or in bulk), in or on rail or road cars, vehicles (including road or rail tankers), trailers, containers, pallets, demountable tanks or in or on similar stowage units or other receptacles can be loaded and unloaded normally in a horizontal direction;

“ro-ro passenger ship” means a passenger ship with ro-ro cargo spaces or special category spaces;

“sailing ship” means a ship provided with sufficient sail area for navigation under sails alone, whether or not fitted with mechanical means of propulsion;

“service spaces” include galleys, pantries containing cooking appliances, laundries, drying rooms, lockers and store rooms, paint rooms, baggage rooms, mail and specie rooms, workshops (other than those forming part of machinery spaces) and similar spaces and trunks to such spaces;

“similar stage of construction” means the stage at which construction identifiable with a specific ship begins; and assembly of that ship has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material, whichever is less;

“SOLAS” means the International Convention for the Safety of Life at Sea, 1974;

“special category space” means any enclosed space above or below the bulkhead deck intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, into and from which such vehicles can be driven and to which passengers have access;

“standard fire test” is one in which a specimen of the relevant bulkhead or deck is exposed in a test furnace to temperatures corresponding approximately to a standard time-temperature curve in accordance with the Fire Test Procedures Code;

“suitable” in relation to material means approved by the Secretary of State as suitable for the purpose for which it is used;

“tanker” means a cargo ship constructed or adapted for the carriage in bulk of liquid cargoes of a flammable nature;

“tons” means gross tons and a reference to tons—

(a) in relation to a ship having alternative gross tonnages under paragraph 13 of Schedule 5 of the Merchant Shipping (Tonnage) Regulations 1982, permitted to be used pursuant to regulation 12(1) of the Merchant Shipping (Tonnage) Regulations 1997, is a reference to the larger of those tonnages; and

(b) in relation to a ship having its tonnage determined both under Part II and regulation 12(2) of the 1997 Regulations is a reference to its gross tonnage as determined under regulation 12(2);

“weather deck” means a deck completely exposed to the weather from above and at least two sides.

“Cabin balcony” is an open deck space which is provided for the exclusive use of the occupants of a single cabin and has direct access from such a cabin.

1.4 In this Notice—

1.4.1 A reference to a ship constructed on or after a specified date is a reference to a ship the keel of which is laid or which is at a similar stage of construction on or after that date.

1.4.2 A reference to a ship constructed before a specified date is a reference to a ship the keel of which is laid or which is at a similar stage of construction before that date.

1.4.3 Where the reference to a ship so constructed is to be understood as being or including a reference to a passenger ship, the reference includes a reference to a ship which satisfies both the following requirements, that is to say—

(i) that the keel of the ship was laid or that the ship was at a similar stage of construction before the specified date; and

(ii) that the ship, not being a passenger ship before that date, is converted to a passenger ship, such conversion commencing on or after that date.

## SECTION 2

### CLASSIFICATION OF SHIPS

2.1 For the purposes of this Notice and the associated UK Regulations, ships are arranged in Classes as follows:

2.2 Passenger Ships:

Class I: ships engaged on voyages any of which are long international voyages;

Class II: ships engaged only on short international voyages;

Class II(A): ships engaged on voyages of any kind other than international voyages, which are not:

(i) ships of Classes III to VI(A) as defined in this paragraph;

(ii) ships of Classes A, B, C or D as defined in the Merchant Shipping (Passenger Ships on Domestic Voyages) Regulations 2000 and engaged on domestic voyages for the purposes of those Regulations;



- Class III: ships engaged only on voyages in the course of which they are at no time more than 70 miles by sea from their point of departure and not more than 18 miles from the coast of the United Kingdom, and which are at sea only in favourable weather and during restricted periods;
- Class IV: ships engaged only on voyages in Category A, B, C or D waters;
- Class V: ships engaged only on voyages in Category A, B, or C waters;
- Class VI: ships engaged only on voyages with not more than 250 passengers on board, to sea, or in Category A, B, C or D waters, in all cases in favourable weather and during restricted periods, in the course of which the ships are at no time more than 15 miles, exclusive of any Category A, B, C or D waters, from their point of departure nor more than 3 miles from land;
- Class VI(A): ships carrying not more than 50 passengers for a distance of not more than 6 miles on voyages to or from isolated communities on the islands or coast of the United Kingdom and which do not proceed for a distance of more than 3 miles from land;

### 2.3 Ships other than Passenger Ships:

- Class VII: ships (other than ships of Classes I, VII(A), VII(T), XI and XII engaged on voyages any of which are long international voyages;
- Class VII(A): ships employed as fish processing or canning factory ships, and ships engaged in the carriage of persons employed in the fish processing or canning industries;
- Class VII(T): tankers engaged on voyages any of which are long international voyages;
- Class VIII: ships other than ships of Classes II, VIII(T), IX, XI and XII engaged only on short international voyages;
- Class VIII(A): ships, other than ships of Classes II(A) to VI(A) inclusive, VIII(A)(T), IX, IX(A), IX(A)(T), XI and XII, engaged only on voyages which are not international voyages;
- Class VIII(T): tankers engaged on voyages any of which are short international voyages;
- Class VIII(A)(T): tankers engaged only on voyages which are not international voyages;
- Class IX: tugs and tenders, other than ships of Classes II, II(A), III, VI and VI(A), which proceed to sea but are not engaged on long international voyages;
- Class IX(A): ships, other than ships of Classes IV to VI inclusive, which do not proceed to sea;

- Class IX(A)(T): tankers which do not proceed to sea;
- Class XI: sailing ships, other than fishing vessels and ships of Class XII, which proceed to sea; and
- Class XII: pleasure vessels of 13.7 metres in length or over

2.4 In the definitions of classes of ship in paragraph 2.2:

“long international voyage” means a voyage which is not a short international voyage;

“restricted period” means a period falling wholly within the following limits—

- (a) from 1st April to 31st October, both dates inclusive; and
- (b) between one hour before sunrise and one hour after sunset in the case of ships fitted with navigation lights conforming to the regulations for the prevention of collisions and between sunrise and sunset in the case of any other ships;

“sea” does not include any waters of Category A, B, C or D;

“short international voyage” means an international voyage—

- (a) in the course of which a ship is not more than 200 miles from a port or place in which the passengers and crew could be placed in safety; and
- (b) which does not exceed 600 nautical miles in distance between the last port of call in the country in which the voyage begins and the final port of destination,

and, for the purposes of paragraph (b), the final port of destination is the last port of call in the scheduled voyage at which the ship commences its return voyage to the country in which the voyage began; ;

“voyage” includes an excursion.

- 2.5 References to waters of Category A, B, C or D are references to waters categorised as such in Merchant Shipping Notice MSN 1837(M) (Amendment 2).

## **REQUIREMENTS FOR SHIPS**

### **SECTION 3**

#### **FIRE PREVENTION AND FIRE APPLIANCES ON PASSENGER SHIPS**

##### **Fire pumps, fire main, water service pipes, hydrants, hoses and nozzles**

- 3.1 Every ship of Class I must be provided with appliances whereby at least two jets of water can reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty.
- 3.2 Every ship of Class I of 4,000 tons or over must be provided with at least three fire pumps operated by power and every such ship of under 4,000 tons must be provided with at least

two such pumps. Each pump must be capable of delivering at least one jet of water simultaneously from each of any two hydrants, hoses and nozzles provided in the ship and must comply with the requirements of paragraphs 6.7 - 6.11.

3.3 In every ship of Class I —

- (a) of 1,000 tons or over, the arrangement of the sea connections, pumps and the sources of power for operating them must be such as will ensure that a fire in any one compartment will not put all the fire pumps out of action;
- (b) of less than 1,000 tons, if a fire in any one compartment could put all the fire pumps out of action, there must be provided, in a position outside the machinery spaces, an independently driven power-operated emergency fire pump and its source of power and sea connection. The pump must be capable of producing at least one jet of water simultaneously from each of any two hydrants and hoses through nozzles which comply with the requirements of paragraph 6.20(b) while simultaneously maintaining a pressure of at least 210 kPa at any hydrant in the ship.

3.4 Every ship of Class I must be provided with a fire main, water service pipes, hydrants, hoses and nozzles which must be so arranged that they comply with the requirements of paragraphs 6.12 – 6.20 when all watertight doors and all doors in main vertical zone bulkheads are closed.

3.5 Every ship of Class I must be provided with at least one fire hose for every hydrant fitted in compliance with this Notice. Such hoses must be used only for the purpose of extinguishing fires or for testing the fire-extinguishing appliances at fire drills and surveys.

3.6 In every ship of Class I where in any machinery space of Category A, access is provided at a low level from an adjacent shaft tunnel, two hydrants fitted with hoses and nozzles must be provided external to, but near the entrance to, that machinery space. Where such access is not provided from a tunnel but is provided from another space or spaces there must be provided in one of those spaces two hydrants fitted with hoses and nozzles near the entrance to the machinery space of Category A. Such provisions need not be made when the tunnel or adjacent spaces are not part of an escape route.

3.7 In every ship of Class I carrying more than 36 passengers, water from the fire main must, as far as practicable, be kept immediately available by maintaining the pressure in the fire main or by providing an easily operable and readily accessible remote control for the fire pumps.

3.8 In every ship of Class I carrying more than 36 passengers, all hose nozzles must be of an approved dual-purpose type capable of producing a water-spray and a plain jet of water and must incorporate a shut-off facility.

3.9 In every ship of Class I at least three water-fog applicators in addition to the nozzles required by this Notice must be provided in special category spaces.

3.10 In every ship of Class I hydrants in machinery spaces must be fitted with hoses having dual-purpose nozzles. Additionally, in respect of ships carrying more than 36 passengers, each machinery space of Category A must be provided with at least two suitable water-fog applicators.

*Additional requirements for ships constructed on or after 25th May 1980*

- 3.11 Notwithstanding paragraph 3.7 above, in every ship of Class I of 1,000 tons or over, the arrangement of fire pumps, fire mains and hydrants must be such that at least one jet of water is immediately available from any one hydrant in an interior location. Arrangements must also be made to ensure the continuation of the output of water by the automatic starting of a fire pump required by this Notice.
- 3.12 In every ship of Class I in every special category space and ro-ro cargo space the number of hydrants with hoses must be so arranged that at least two jets of water each from a single length of hose, not emanating from the same hydrant, may reach any part of the space. Such hydrants must be positioned near the accesses to the protected spaces.

### **Portable fire extinguishers in accommodation, cargo and service spaces**

- 3.13 Every ship of Class I must be provided with, on each deck below the bulkhead deck, a sufficient number of portable fire extinguishers so that at least two are readily available for use in every accommodation space, service space and control station between main vertical zones. In enclosed accommodation spaces, service spaces and control stations above the bulkhead deck at least one such extinguisher must be provided for use on each side of the ship in such spaces. The number of such extinguishers in such spaces must not be less than five in a ship of 1,000 tons or over. In addition, at least one portable fire extinguisher and a fire blanket must be provided in every galley; provided that where the deck area of any galley exceeds 45 square metres, at least two such extinguishers and two such blankets must be provided.
- 3.14 In every ship of Class I at least one portable fire extinguisher must be provided for use in each control station.
- 3.15 One of the portable fire extinguishers intended for use in any space must be available near the entrance to that space.
- 3.16 Every ship of Class I, each special category space and cargo space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, must be provided with—
- (a) at least two portable extinguishers, suitable for extinguishing oil fires, for every 40 metres length of deck space, so arranged that at least one extinguisher is available on each side of the space and at least one extinguisher is available at each access to the space;
  - (b) one portable foam-applicator unit complying with the requirements of Schedule 6 in Merchant Shipping Notice MSN 1665; not less than two such applicators must be available in the ship for use in any such space.

### **Fixed fire-extinguishing systems in cargo spaces**

- 3.17 Every ship of Class I of 1,000 tons or over must be provided with a fixed gas fire-extinguishing system complying with the requirements of Schedule 4 in Merchant Shipping Notice MSN 1666 which must be so arranged as to protect every cargo space.

*Additional requirements for ships constructed on or after 25th May 1980*

- 3.18 Every ship of Class I constructed on or after 25th May 1980 and engaged in the carriage of dangerous goods must be provided with a fixed gas fire-extinguishing system complying with the requirements of Schedule 4 in Merchant Shipping Notice MSN 1666 to protect every cargo space, or with a fire-extinguishing system which can be shown to provide equivalent protection for the cargoes carried (other than special category spaces and spaces where a fixed pressure water-spraying system is fitted in accordance with paragraphs 3.19 and 3.20).
- 3.19 Every ship of Class I constructed on or after 25th May 1980, must be provided, in each special category space, with a fixed pressure water-spraying system complying with the requirements of Schedule 3 in Merchant Shipping Notice MSN 1666.
- 3.20 Every ship of Class I constructed on or after 25th May 1980 must be provided, in each cargo space (other than a special category space) intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, with a fixed pressure water-spraying system complying with the requirements of Schedule 3, or a fixed gas fire-extinguishing system complying with the requirements of Schedule 4 in Merchant Shipping Notice MSN 1666.
- 3.21 Every ship of Class I constructed on or after 25th May 1980, must be provided, in each open ro-ro cargo space having a deck over and in each space deemed to be a closed ro-ro cargo space not capable of being sealed, with a fixed pressure water-spraying system complying with Schedule 3 in Merchant Shipping Notice MSN 1666.

### **Special requirements for cargo space ventilation**

#### *Requirements for ships constructed on or after 1st September 1984*

- 3.22 Every ship of Class I must be provided—
- (a) in each special category space, with an effective power-ventilation system sufficient to give at least 10 air changes per hour, except where a vehicle is being loaded or unloaded, when the number of air changes per hour is subject to the approval of the Secretary of State in accordance with the 2023 Regulations.
  - (b) in each cargo space, other than a special category space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, with an effective power-ventilation system sufficient to give at least 10 air changes per hour for ships carrying more than 36 passengers and 6 air changes per hour for ships carrying not more than 36 passengers.
- 3.23 The power-ventilation systems referred to in paragraph 3.22 must be entirely separate from other ventilation systems and must be operated at all times when vehicles are in such spaces. Ventilation ducts serving such spaces capable of being effectively sealed must be separated for each such space. The system must be capable of being controlled from a position outside such spaces. In addition—
- (a) the ventilation must be such as to prevent air stratification and the formation of air pockets;
  - (b) means must be provided to indicate on the navigating bridge any loss or reduction of the required ventilating capacity;
  - (c) arrangements must be provided to permit a rapid shut-down and effective closure of the ventilation system in case of fire, taking into account the weather and sea conditions.

### Machinery spaces of Category A

- 3.24 Every ship of Class I, must be provided, for the protection of any machinery space of Category A, with at least one of the following fixed fire-extinguishing systems—
- (a) a fixed pressure water-spraying system complying with the requirements of Schedule 2 in Merchant Shipping Notice MSN 1666;
  - (b) a fixed gas fire-extinguishing system complying with the requirements of Schedule 4 in Merchant Shipping Notice MSN 1666; or
  - (c) a fixed high-expansion foam fire-extinguishing system complying with the requirements of Schedule 8 in Merchant Shipping Notice MSN 1666.
- 3.25 If the engine and boiler rooms are not entirely separated from each other by a bulkhead or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms must, for the purpose of this requirement, be regarded as a single space.
- 3.26 In addition to the requirements of paragraph 3.24 there must be provided—
- (a) in each boiler room one or more foam fire extinguishers each of at least 135 litres capacity or carbon dioxide fire extinguishers each of at least 45 kilogrammes capacity placed in such positions as to be readily accessible in the event of fire and sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room and spaces containing any part of the oil fuel installation;
  - (b) in each boiler room at least one portable foam-applicator unit complying with Schedule 6 in Merchant Shipping Notice MSN 1665;
  - (c) in each firing space and in each space which contains any part of any oil fuel installation at least two portable fire extinguishers suitable for extinguishing oil fires;
  - (d) in each firing space a receptacle containing at least 0.3 cubic metre of sand or other dry material suitable for extinguishing oil fires together with a scoop for its distribution or, alternatively, an additional portable fire extinguisher suitable for extinguishing oil fires.
- 3.27 In addition to the requirements of paragraph 3.24, there must be provided in any space containing internal combustion type machinery—
- (a) one or more foam fire extinguishers of at least 45 litres or carbon dioxide extinguishers of at least 16 kilogrammes capacity; the extinguishers must be sited so as to be readily accessible in the event of fire and they must be sufficient in number to enable foam or carbon dioxide to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other areas of high fire risk;
  - (b) at least one portable foam-applicator unit complying with the requirements of Schedule 6 in Merchant Shipping Notice MSN 1665;
  - (c) portable fire extinguishers suitable for extinguishing oil fires sufficient in number to ensure that at least one extinguisher is not more than 10 metres walking distance from any position within the space: provided that there must be not less than two such extinguishers; and
  - (d) in passenger ships carrying more than 36 passengers each machinery space of Category A must be provided with at least two suitable water-fog applicators.

- 3.28 Where a ship of Class I of 2000 gross tonnage and above has one or more machinery spaces of Category A which are above 500 cubic metres in volume, each such machinery space must, in addition to the fixed fire-extinguishing system required by paragraph 3.24, be protected by an approved type of fixed water-based or equivalent local application fire-fighting system, in accordance with the International Maritime Organization guidelines contained in MSC Circular 913 of 4th June 1999.
- 3.29 Where the machinery space protected by the fixed fire-fighting system required by paragraph 3.28 is periodically unattended, that fire-fighting system must have both automatic and manual release capabilities.
- 3.30 Where the machinery space protected by the fixed fire-fighting system required by paragraph 3.28 is continually manned, that fire-fighting system must have a manual release capability.
- 3.31 A fixed fire-fighting system required by paragraph 3.28 must protect the following areas without the necessity of engine shut-down, personnel evacuation or sealing of the spaces:
- (a) the fire hazard portions of internal combustion machinery used for the ship's main propulsion and power generation,
  - (b) boiler fronts,
  - (c) the fire hazard portions of incinerators, and
  - (d) purifiers for heated fuel oil.
- 3.32 In addition to the detection and fire alarm systems required elsewhere in this Notice, a fixed fire-fighting system required by paragraph 3.28 must, when activated, give a visual and distinct audible alarm, in the protected space and at continuously manned stations, indicating the specific system activated.

### **Machinery spaces containing steam turbines or enclosed steam engines**

- 3.33 Every ship of Class I must be provided, in spaces containing steam turbines or enclosed pressure-lubricated steam engines used either for main propulsion, or having in the aggregate a total power of not less than 375 kW for auxiliary purposes, with—
- (a) foam fire extinguishers each of at least 45 litres capacity or carbon dioxide fire extinguishers each of at least 16 kilogrammes capacity lubrication system and on to any part of the casings enclosing pressure lubricated parts of the turbine, engines or associated gearing and any other areas of high fire risk; provided that such extinguishers are not required if equivalent protection is provided in such spaces by a fixed fire-extinguishing system fitted in compliance with paragraph 3.24;
  - (b) portable fire extinguishers suitable for extinguishing oil fires sufficient in number to ensure that at least one extinguisher is not more than 10 metres walking distance from any position within the space: provided that there are not less than two such extinguishers.

*Additional requirements for ships constructed on or after 1st September 1984*

(c) in addition, for ships constructed on or after 1st September 1984, where such spaces are to be periodically unattended, a fire-extinguishing system, specified in paragraph 3.24 must be fitted.

### **Fire-extinguishing appliances in other machinery spaces**

#### *Requirements for ships constructed on or after 25th May 1980*

3.34 In every ship of Class I constructed on or after 25th May 1980, where a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing are required by paragraphs 3.24 to 3.33, there must be provided in or adjacent to that space a sufficient number of portable fire extinguishers to ensure that at least one extinguisher is not more than 10 metres walking distance from any position within that space unless equivalent means of fire extinction are provided.

### **Paint lockers etc**

3.35 In every ship of Class I, every paint locker and flammable liquid locker must be protected by an approved fire-extinguishing system.

### **Fire patrol, detection and alarm systems**

3.36

(a) In every ship of Class I an efficient patrol system must be maintained so that any outbreak of fire may be promptly detected.

(b) In every such ship, manually-operated call points complying with the requirements of Schedule 5 of Merchant Shipping Notice MSN 1666 must be fitted throughout the accommodation, service and special category spaces which will enable the fire patrol to give an alarm immediately to the navigating bridge or fire control station. The manually-operated call point must be positioned adjacent to each exit from every special category space.

(c) Each member of the fire patrol must be trained to be familiar with the arrangements of the ship as well as the location and operation of any equipment he may be called upon to use.

(d) In every such ship carrying more than 36 passengers, each member of the fire patrol must be provided with a two-way portable radio telephone apparatus.

3.37 In every ship of Class I there must be provided, in any part of the ship which is not reasonably accessible to the fire patrol, and in each cargo space (other than special category spaces) containing motor vehicles with fuel in their tanks for their own propulsion, a fixed fire detection and fire alarm system of an approved type complying with Schedule 5 of Merchant Shipping Notice MSN 1666 or a sample extraction smoke detection system complying with the requirements of Schedule 6 of Merchant Shipping Notice MSN 1666.

3.38 Every ship of Class I must 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.



- 3.39 In every ship of Class I a special alarm, operated from the navigating bridge or fire control station, must be fitted to summon the crew. This alarm may be part of the ship's general alarm system but it must be capable of being sounded independently of the alarm to the passenger spaces.
- 3.40 A general emergency alarm must be provided in every Class I ship carrying more than 36 passengers. The alarm must be audible throughout all the accommodation and normal crew working spaces and open decks, and its sound pressure level must comply with the requirements of the Code on Alarms and Indicators adopted by IMO by Resolution A.1021(26). The alarm must continue to function after it has been triggered until it is manually turned off or is temporarily interrupted by a message on the public address system.
- 3.41 In every ship of Class I a public address system or other effective means of communication must be available throughout the accommodation, service space and control stations, and the system must also be audible on the open deck.

*Additional requirements for ships constructed on or after 25th May 1980*

- 3.42 In every ship of Class I constructed on or after 25th May 1980—
- (a) in any machinery space where the main propulsion and associated machinery including sources of main electrical supply are provided with automatic or remote control which are under continuously manned supervision from a control room, there must be provided a fixed fire detection and fire alarm system of an approved type complying with Schedule 5 of Merchant Shipping Notice MSN 1666;
- (b) in special category spaces in which the patrol is not maintained by a continuous fire watch at all times during the voyage there must be provided in that space a fixed fire detection and fire alarm system of an approved type complying with Schedule 5 in Merchant Shipping Notice MSN 1666.

*Additional requirement for ships constructed on or after 1st January 1994*

- 3.44 In every ship of Class I constructed on or after 1st January 1994, where a public space spans three or more decks by means of permanent openings and contains combustibles (such as furniture) and enclosed spaces (such as shops, offices and restaurants), the entire main vertical zone containing that space must be protected throughout with a smoke detection system complying with the requirements (other than of paragraph (1)(i)) of Schedule 5 of Merchant Shipping Notice MSN 1666.

*Additional requirement for ships constructed on or after 1st October 1994*

- 3.45 Every ship of Class I constructed on or after 1st October 1994 carrying more than 36 passengers—
- (a) must have the detection alarms for the systems required by paragraph 7.58 centralised in a continuously manned central control station;
- (b) in addition, controls for remote closing of the fire doors and shutting down the ventilation fans must be centralised in the same location. The ventilation fans must be capable of reactivation by the crew at the continuously manned control station; and
- (c) the control panels in the central control station must be—
- (i) capable of indicating open or closed positions of fire doors and on or off status of the detectors, alarms and fans;

- (ii) continuously powered and have an automatic change-over to standby power supply in case of loss of normal supply;
- (iii) powered from the main source of electric power and, where necessary, from the emergency source of electrical power.;
- (iv) designed on the fail-safe principle; occurrence of a fault condition must initiate a visual and audible fault-signal at the control panel.

### **Firemen's outfits**

- 3.46 Every ship of Class I must be provided with—
- (a) two firemen's outfits and, in addition, two firemen's outfits for every 80 metres (or part thereof) of the aggregate of the lengths of all passenger spaces and service spaces on the deck which carries such spaces or, if there is more than one such deck, on the deck which has the largest aggregate of such lengths; and
  - (b) every such outfit must comply with the requirements of paragraphs 6.34 – 6.35; each outfit must include breathing apparatus complying with Schedule 5 in Merchant Shipping Notice MSN 1665; such breathing apparatus must be the self-contained type.
- 3.47 Two such firemen's outfits must be available at any one storage position.
- 3.48 In every ship of Class I carrying more than 36 passengers—
- (a) for each pair of breathing apparatus there must be provided one water-fog applicator which must be stored adjacent to such apparatus;
  - (b) at least two spare charges for each breathing apparatus must be provided, and all air cylinders for breathing apparatus must be interchangeable;
  - (c) two additional firemen's outfits must be provided for each main vertical zone provided that, for stairway enclosures which constitute entire main vertical zones and for main vertical zones in the fore or aft end of a ship which do not contain spaces classified in accordance with Schedule 1 of MSN 1667 (M) as 6, 7, 8 or 12, no additional fireman's outfits are required;
  - (d) at least two firemen's outfits must be stored in each main vertical zone.

### **Emergency escape breathing devices**

- 3.49 Every ship of Class I carrying more than 36 passengers must be provided with at least four emergency escape breathing devices in each main vertical zone.
- 3.50 Every other ship of Class I must be provided with at least two emergency escape breathing devices in each main vertical zone.
- 3.51 For the purposes of paragraphs 3.49 and 3.50, "main vertical zone" does not include:
- (a) stairway enclosures which constitute individual main vertical zones, or
  - (b) main vertical zones in the fore or aft end of a ship which do not contain spaces of categories (6), (7), (8) or (12) set out in paragraph 1 of Schedule 1 of Merchant Shipping Notice MSN 1667.

- 3.52 Every ship of Class I must be provided with emergency escape breathing devices situated ready for use within the machinery spaces at easily visible places which can be reached quickly and easily at any time in the event of fire, taking into account the layout of the machinery space and the number of persons normally working in the spaces in accordance with International Maritime Organization guidelines for the performance, location, use and care of emergency escape breathing devices contained in MSC Circular 849 of 8th June 1998, as amended.
- 3.52 The number and location of the devices provided in accordance with paragraph 3.52 must be indicated in the fire control plan required by paragraphs 6.43 – 6.48.
- 3.53 Training in the use of emergency escape breathing devices must be included in the on-board training of each crew member as soon as possible, or in any event not more than two weeks, after the crew member first joins the ship.

#### **International shore connection**

- 3.54 Every ship of Class I of 500 tons or over must be provided with at least one international shore connection which must comply with the requirements of Schedule 1 in Merchant Shipping Notice MSN 1665 to enable water to be supplied from another ship or from the shore to the fire main. Fixed provision must be made to enable such a connection to be used on the port side and on the starboard side of the ship.

#### **Ships of Class II**

- 3.55 Paragraphs 3.1 to 3.54 inclusive apply to ships of Class II as they apply to ships of Class I.

#### **Ships of Class II(A) of 21.34 Metres in Length or over**

- 3.56 Paragraphs 3.1 to 3.54 inclusive apply to ships of Class II(A) of 21.34 metres in length or over as they apply to ships of Class I.

### **SECTION 4**

#### **FIRE PREVENTION AND FIRE APPLIANCES ON SHIPS OTHER THAN PASSENGER SHIPS AND TANKERS**

##### **Fire pumps, fire mains, water service pipes, hydrants, hoses and nozzles**

This section applies to ships other than passenger ships and tankers.

- 4.1 Every ship of Class VII of 500 tons or over must be provided with appliances whereby at least two jets of water can reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated, and any store room and any part of any cargo space when empty.

4.2

- (a) Every ship of Class VII of 1,000 tons or over must be provided with at least two fire pumps operated by power. Each such pump must be capable of delivering at least one jet of water simultaneously from each of any two fire hydrants, hoses and nozzles provided in the ship and must comply with the requirements of paragraphs 6.7 – 6.11.
- (b) Every ship of Class VII of 500 tons or over but under 1,000 tons must be provided with at least one fire pump operated by power, which must be capable of delivering at least one jet of water simultaneously from each of any two fire hydrants, hoses and nozzles provided in the ship and must comply with the requirements of paragraphs 6.7 – 6.11, provided that the capacity of the fire pump must not be less than 25 cubic metres per hour.
- (c) In every ship of Class VII of 500 tons or over, one of the other pumps fitted in the machinery space such as general service, bilge and ballast pumps capable of providing water to the fire main at the required capacity and the pressure of the fire pumps, may be regarded as one of the fire pumps required in subparagraph (a), provided that the safe operation of the ship is not impaired.

#### 4.3

- (a) If in any ship of Class VII of 500 tons or over a fire in any one compartment could put all the fire pumps out of action there must be provided, in a position outside the machinery spaces, an independently driven power-operated emergency fire pump and its source of power and sea connection.
- (b) In every ship of Class VII of 500 tons or over but under 2,000 tons, the emergency fire pump must be capable of delivering at least one jet of water simultaneously from each of any two hydrants and hoses through nozzles which comply with the requirements of paragraph 6.20(b) whilst maintaining a pressure of at least 210 kPa at any hydrant in the ship provided that for such ships of 1,000 tons or over, the pressure at any hydrant must not be less than 250 kPa.

#### 4.4

- (a) In every ship of Class VII of 500 tons or over there must be provided a fire main, water service pipes, hydrants, hoses and nozzles which must comply with the requirements of paragraphs 6.12 – 6.20.
- (b)
  - (i) Every such ship of 1,000 tons or over must, in addition to any fire hoses provided in the machinery spaces, be provided with at least one firehose for each 30 metres (or part thereof) length of the ship but in no case less than five hoses and such hoses must have a total length of at least 60 per cent of the length of the ship. In addition to such hoses there must be provided one spare fire hose.
  - (ii) In every such ship of 500 tons or over there must be provided in ro-ro cargo spaces at least three water-fog applicators in addition to the nozzles required by this Notice.
  - (iii) In every such ship of 500 tons or over in every ro-ro cargo space the number of hydrants with hoses must be so arranged that at least two jets of water each from a single length of hose not emanating from the same hydrant may reach any part of the space. Such hydrants must be positioned near the accesses to the protected space.

(iv) Every such ship of 500 tons or over but under 1,000 tons must, in addition to any fire hoses provided in the machinery spaces, be provided with at least two fire hoses having a total length of at least 60 per cent of the length of the ship and one spare fire hose.

(c) In every such ship of 500 tons or over fitted with oil-fire boilers or internal combustion type propelling machinery, there must be provided in each space containing such boilers or machinery at least two fire hydrants, one on the port side and one on the starboard side, and in addition where there is access to the machinery space of any such ship by way of a shaft tunnel, a fire hydrant must be provided in the tunnel at the end adjacent to that space. A fire hose and nozzle must be provided at every such fire hydrant.

#### **Additional requirements for ships constructed on or after 1st September 1984**

- (d) In every ship of Class VII of 2,000 tons or over the emergency fire pump must—
- (i) be capable of delivering at least one jet of water simultaneously from each of any two hydrants and hoses through nozzles which must comply with the requirements of paragraph 6.20(b); and
  - (ii) meet the requirements of paragraph 6.11.

#### **Portable fire extinguishers**

4.5 Every ship of Class VII of 500 tons or over must be provided with a sufficient number of portable fire extinguishers to ensure that at least one such extinguisher will be readily available for use in any part of the accommodation spaces, service spaces and control stations. The number of such extinguishers must not be less than five in a ship of 1,000 tons or over and not less than three in a ship of 500 tons or over but under 1,000 tons.

#### **Additional requirements for ships constructed on or after 25th May 1980**

4.6 In every such ship there must be provided in each ro-ro cargo space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion—

- (a) at least two portable extinguishers suitable for extinguishing oil fires for every 40 metres length of deck space so arranged that at least one extinguisher is available on each side of the space and at least one extinguisher is available at each access to the space; and
- (b) one foam-applicator unit complying with the requirements of Schedule 6 in Merchant Shipping Notice MSN 1665. Not less than two such applicators must be available in the ship for use in any such space.

#### **Fixed fire-extinguishing arrangements in cargo spaces**

4.7 In every ship of Class VII of 2,000 tons or over, other than ships to which paragraph 4.9 applies, a fixed fire-smothering gas installation complying with the requirements of Schedule 4 in Merchant Shipping Notice MSN 1666 must be provided and which must be so arranged as to protect every cargo space.

4.8 If an exemption from the requirements of paragraph 4.7 is granted to a ship, the Exemption Certificate must list all the cargoes the ship is permitted to carry.

**Additional requirements for ships constructed on or after 25th May 1980**

4.9 In every ship of Class VII engaged in the carriage of dangerous goods there must be provided—

- (a) a fixed gas fire-extinguishing system complying with the requirements of Schedule 4 in Merchant Shipping Notice MSN 1666 for every cargo space (other than ro-ro cargo spaces not capable of being sealed); and
- (b) a fixed pressure water-spraying system complying with the requirements of Schedule 3 in Merchant Shipping Notice MSN 1666 for every ro-ro cargo space not capable of being sealed.

4.10 In every ship of Class VII of 2,000 tons or over there must be provided in each open ro-ro cargo space having a deck cover and each space which is a closed ro-ro cargo space but not capable of being sealed, a fixed pressure water-spraying system complying with Schedule 3 in Merchant Shipping Notice MSN 1666. Due consideration must be given to bilge pumping arrangements and drainage facilities.

**Additional requirements for ships constructed on or after 1st September 1984**

4.11 In every ship of Class VII of 500 tons or over there must be provided for every ro-ro cargo space not capable of being sealed a fixed pressure water-spraying system complying with Schedule 3 in Merchant Shipping Notice MSN 1666.

4.12 In every ship of Class VII of 500 tons or over there must be provided for every ro-ro cargo space capable of being sealed and for every cargo space (other than a ro-ro cargo space) intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion a fixed pressure water-spraying system complying with Schedule 3, or a fixed gas fire-extinguishing system complying with Schedule 4, in Merchant Shipping Notice MSN 1666.

**Additional requirement for ships constructed on or after 1st July 1998**

4.13 Permanent openings for ventilation in the side plating, the ends or deckhead of ro-ro cargo spaces must be so situated that a fire in the cargo space is not likely to endanger stowage areas or embarkation stations for survival craft or accommodation spaces, service spaces and control stations in superstructures and deckhouses above the special category spaces or ro-ro cargo spaces.

**Special requirements for cargo space ventilation**

**Requirements for ships constructed on or after 1st September 1984**

4.14 In every ship of Class VII of 500 tons or over there must be provided in each closed ro-ro cargo space and each cargo space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, an effective power-ventilation system to provide at least six air changes per hour based on an empty hold. Ventilation fans must where practicable be run continuously whenever vehicles are on board. Where this is impracticable, they must be operated for a limited period daily as weather permits and in any case for a reasonable period prior to discharge, after which period such spaces must be proved gas-free. One or more portable

combustible gas detecting instruments must be carried for this purpose. The system must be entirely separate from other ventilating systems. Ventilation ducts serving such spaces capable of being effectively sealed must be separated for each cargo space. Where a vehicle is being loaded or unloaded, the number of air changes per hour is subject to the approval of the Secretary of State in accordance with the 2023 Regulations. The system must be capable of being controlled from a position outside such spaces. In addition—

- (a) the ventilation must be so arranged as to prevent air stratification and the formation of air pockets;
- (b) means must be provided to indicate any loss of the required ventilating capacity on the navigating bridge;
- (c) arrangements must be provided to permit a rapid shut-down and effective closure of the ventilating system in case of fire, taking into account the weather and sea conditions.

### **Machinery spaces of Category A**

4.15 (i) In every ship of Class VII of 500 tons or over there must be provided for the protection of any machinery space of Category A at least one of the following fire-extinguishing installations—

- (b) a fixed pressure water-spraying system complying with the requirements of Schedule 2 in Merchant Shipping Notice MSN 1666;
- (c) a fixed gas fire-extinguishing system complying with the requirements of Schedule 4 in Merchant Shipping Notice MSN 1666; or
- (d) a fixed high-expansion foam system complying with the requirements of Schedule 8 in Merchant Shipping Notice MSN 1666.

(ii) If the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler rooms must for the purpose of this paragraph be regarded as a single space.

4.16 In addition to the requirements of paragraph 4.15 there must be provided—

- (a) in each boiler room one or more foam fire extinguishers each of at least 135 litres capacity or carbon dioxide fire extinguishers of at least 45 kilogrammes capacity. The extinguishers must be sited so as to be readily accessible in the event of fire and they must be sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room and spaces containing any part of the oil fuel installation;
- (b) in each boiler room at least one portable foam-applicator unit complying with the requirements of Schedule 6 in Merchant Shipping Notice MSN 1665;
- (c) in each firing space and in each space which contains any part of any oil fuel installation, at least two portable fire extinguishers suitable for extinguishing oil fires, in addition to any which may be carried in compliance with the preceding sub-paragraph;
- (d) in each firing space a receptacle containing 0.3 cubic metre of sand or other dry material suitable for extinguishing oil fires, together with a scoop for its distribution or alternatively an additional portable fire extinguisher suitable for extinguishing oil fires.

4.17 In addition to the requirements of paragraph 4.15 there must be provided in any such spaces containing internal combustion type machinery—

- (a) one or more foam fire extinguishers of at least 45 litres capacity or carbon dioxide fire extinguishers of at least 16 kilogrammes capacity sufficient in number to enable foam or carbon dioxide to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other areas of high fire risk;
- (b) at least one portable foam-applicator unit complying with the requirements of Schedule 6 in Merchant Shipping Notice MSN 1665;
- (c) portable fire extinguishers suitable for extinguishing oil fires sufficient in number to ensure that at least one extinguisher is not more than 10 metres walking distance from any position within the space: provided that there must be not less than two extinguishers.

#### **Machinery spaces containing steam turbines or enclosed steam engines**

4.18 In every ship of Class VII of 500 tons or over there must be provided in spaces containing steam turbines or enclosed pressure-lubricated steam engines used either for main propulsion, or having in the aggregate power of not less than 375 kW for auxiliary purposes—

- (a) foam fire extinguishers each of at least 45 litres capacity or carbon dioxide fire extinguishers each of at least 16 kilogrammes capacity sufficient in number to enable foam or carbon dioxide to be directed on to any part of the pressure-lubrication system and on to any part of the casings enclosing pressure-lubricated parts of the turbines, engines or associated gearing and any other areas of high fire risk: except that such extinguishers are required if equivalent protection is provided in such spaces by a fixed fire-extinguishing system fitted in compliance with paragraph 4.15;
- (b) portable fire extinguishers suitable for extinguishing oil fires sufficient in number to ensure that at least one extinguisher is not more than 10 metres walking distance from any position within the space: provided that there must be not less than two extinguishers; and

#### **Additional requirement for ships constructed after 1st September 1984**

- (c) where such spaces are to be periodically unattended there must be provided additionally either a fixed pressure water-spraying system complying with the requirements of Schedule 2, or a fixed gas fire-extinguishing system complying with the requirements of Schedule 4, in Merchant Shipping Notice MSN 1666.

#### **Fire-extinguishing appliances in other machinery spaces**

##### **Requirements for ships constructed on or after 25th May 1980**

- 4.19 Where a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing are made in paragraphs 4.15 - 4.18 there must be provided in, or adjacent to that space sufficient number of portable fire extinguishers to ensure that at least one extinguisher is not more than 10 metres walking distance from any position within that space unless equivalent means of fire extinction are provided.



### **Paint lockers etc**

4.20 In every ship of Class VII of 500 tons or over, every paint locker and flammable liquid locker must be protected by an approved fire-extinguishing system.

### **Fire detection and fire alarm systems and sample extraction smoke detection systems**

4.21 Every ship of Class VII of 500 tons or over must be provided with a fixed fire detection and fire alarm system of an approved type complying with the requirements of Schedule 5 in Merchant Shipping Notice MSN 1666 in any machinery space where the installation of automatic and remote control systems and equipment has been approved in lieu of continuous manning of the space.

*Additional requirements for ships constructed on or after 25th May 1980*

4.22 In every ship of Class VII of 500 tons or over there must be provided in each cargo space (other than ro-ro cargo spaces) intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion either a fixed fire detection and fire alarm system of an approved type complying with Schedule 5, or a sample extraction smoke detection system complying with Schedule 6, in Merchant Shipping Notice MSN 1666.

*Additional requirements for ships constructed on or after 1st September 1984*

4.23 In every ship of Class VII of 500 tons or over, in any machinery spaces where the main propulsion and associated machinery including sources of main electrical supply are provided with automatic or remote control under continuous manned supervision from a control room, there must be provided a fixed fire detection and alarm system of an approved type complying with Schedule 5 in Merchant Shipping Notice MSN 1666.

4.24 In every Class VII ship of 500 tons or over there must be provided in each ro-ro cargo space a fixed fire detection and fire alarm system of an approved type complying with Schedule 5 in Merchant Shipping Notice MSN 1666.

### **Firemen's outfits**

4.25 Every ship of Class VII of 500 tons or over must carry two firemen's outfits complying with the requirements of paragraphs 6.34 – 6.35.

4.26 Each outfit referred to in paragraph 4.25 must include breathing apparatus, which must be the self-contained type.

*Requirements for ships constructed on or after 25th May 1980*

4.27 Every ship of Class VII of 500 tons or over must carry two firemen's outfits which must comply with the requirements of paragraphs 6.34 – 6.35.

- 4.28 Each outfit referred to in paragraph 4.27 must include breathing apparatus in accordance with Schedule 5 of Merchant Shipping Notice MSN 1665; such breathing apparatus can be either the self-contained type, or the smoke helmet/smoke mask type.

### **Emergency escape breathing devices**

- 4.29 Every ship of Class VII of 500 tons or over must be provided with at least two emergency escape breathing devices in accommodation spaces.
- 4.30 Every such ship must be provided with emergency escape breathing devices situated ready for use within the machinery spaces at easily visible places which can be reached quickly and easily at any time in the event of fire, taking into account the layout of the machinery space and the number of persons normally working in the spaces in accordance with International Maritime Organisation guidelines for the performance, location, use and care of emergency escape breathing devices contained in MSC Circular 849 of 8th June 1998.
- 4.31 Training in the use of emergency escape breathing devices must be included in the on-board training of each crew member as soon as possible, or in any event not more than two weeks, after he first joins the ship.
- 4.32 The number and location of the devices provided in accordance with paragraph (2) must be indicated in the fire control plan required by paragraphs 6.43 – 6.48.

### **International shore connection**

- 4.33 Every ship of Class VII of 500 tons or over must be provided with at least one international shore connection which must comply with the requirements of Schedule 1 in Merchant Shipping Notice MSN 1665 to enable water to be supplied from another ship, or from the shore, to the fire main. Fixed provision must be made to enable such a connection to be used on the port side and on the starboard side of the ship.

### **Ships of Class VII(A)**

- 4.34 Paragraphs 4.1 to 4.33 of Section 4 apply to every ship of Class VII(A) of 500 tons or over as they apply to ships of Class VII of 500 tons or over.

**Ships of Class VIII**  
**Ships of Class VIII(A), IX and IX(A)**  
**Ships of Class XI**  
**Ships of Class XII**

### **Requirements for ships of 1,000 tons or over constructed before 25th May 1980**

#### **SHIPS OF CLASS VIII**

4.35 Paragraphs 4.1-4.6 and 4.15-4.33 inclusive apply to every ship of Class VIII of 1,000 tons or over as they apply to ships of Class VII of 500 tons or over.

**Requirements for ships of 500 tons or over but under 1,000 tons constructed before 25th May 1980**

4.36 Paragraphs 4.1-4.6, 4.15-4.20 and 4.25-4.32 apply to ships of Class VIII of 500 tons or over but under 1,000 tons as they apply to ships of Class VII of 500 tons or over but under 1,000 tons, provided that where at least two hydrants are required by paragraph 4.4(c) to be provided in each space containing oil fired boilers or internal combustion type propulsion machinery there must be provided at least one fire hydrant.

**Requirements for ships of 500 tons or over constructed on or after 25th May 1980**

4.37 Paragraphs 4.1-4.33 inclusive apply to ships of Class VIII of 500 tons or over as they apply to ships of Class VII of 500 tons or over.

**SHIPS OF CLASS VIII(A), IX AND IX(A)**

**Requirements for ships of 1,000 tons or over constructed before 25th May 1980**

4.38 Paragraphs 4.1-4.6 and 4.15-4.33 inclusive apply to ships of Classes VIII(A), IX and IX(A) of 1,000 tons or over as they apply to ships of Class VII of 500 tons or over.

**Requirements for ships of 500 tons or over but under 1,000 tons constructed before 25th May 1980**

4.39 Paragraphs 4.1-4.6, 4.15-4.20 and 4.29-4.32 apply to ships of Classes VIII(A), IX and IX(A) of 500 tons or over but under 1,000 tons as they apply to ships of Class VII of 500 tons or over, provided that where at least two hydrants are required by paragraph 4.4(c) to be provided in each space containing oil fired boilers or internal combustion type propulsion machinery there must be provided at least one fire hydrant.

**Requirements for ships of 500 tons or over constructed on or after 25th May 1980**

4.40 Paragraphs 4.1-4.33 inclusive apply to ships of Classes VIII(A), IX and IX(A) of 500 tons or over as they apply to ships of Class VII of 500 tons or over.

**SHIPS OF CLASS XI**

**Requirements for ships of 1,000 tons or over constructed before 25th May 1980**

4.41 Paragraphs 4.1-4.6 and 4.15-4.33 apply to ships of Class XI of 1,000 tons or over as they apply to ships of Class VII of 500 tons.

**Requirements for ships of 500 tons or over but under 1,000 tons constructed before 25th May 1980**

4.42 Paragraphs 4.1-4.6, 4.15-4.20, 4.25-4.32 apply to ships of Class XI of 500 tons or over but under 1,000 tons as they apply to ships of Class VII of 500 tons or over, provided that where at least two hydrants are required by paragraph 4.4(c) to be provided in each space containing oil fired boilers or internal combustion type propulsion machinery there must be provided in each space containing such machinery at least one fire hydrant.

**Requirements for ships of 500 tons or over constructed on or after 25th May 1980**

4.43 Paragraphs 4.1-4.33 inclusive apply to ships of Class XI of 500 tons or over as they apply to ships of Class VII of 500 tons or over.

**SHIPS OF CLASS XII****Requirements for ships of 1,000 tons or over constructed before 25th May 1980**

4.44 Paragraphs 4.1-4.6 and 4.15-4.33 apply to ships of Class XII of 1,000 tons or over as they apply to ships of Class VII of 500 tons.

**Requirements for ships of 500 tons or over but under 1,000 tons constructed before 25th May 1980**

4.45 Paragraphs 4.1-4.6, 4.15-4.20, 4.25-4.32 apply to ships of Class XII of 500 tons or over but under 1,000 tons as they apply to ships of Class VII of 500 tons or over, provided that where at least two hydrants are required by paragraph 4.4(c) to be provided in each space containing oil fired boilers or internal combustion type propulsion machinery there must be provided at least one fire hydrant.

**Requirements for ships of 500 tons or over constructed on or after 25th May 1980**

4.46 Paragraphs 4.1-4.33 inclusive apply to ships of Class XII of 500 tons or over as they apply to ships of Class VII of 500 tons or over.

**SECTION 5****Fire Prevention and Fire Appliances*****Tankers of Class VII(T) of 500 Tons or over*****General requirements**

5.1 Paragraphs 4.1-4.5, paragraphs 4.15 to 4.21 inclusive and paragraphs 4.33 apply to every tanker of Class VII(T) of 500 tons or over as they apply to ships of Class VII of 500 tons or over.

**Cargo tank protection****Inert gas systems**

5.2 Every tanker of Class VII(T) of 20,000 tonnes deadweight or over constructed or adapted and used to carry crude oil and petroleum products having a closed flashpoint not exceeding 60°C, and Reid vapour pressure below atmospheric pressure, and other liquids having a similar fire hazard, must be provided with an inert gas system complying with the standard requirements contained in Schedule 9 in Merchant Shipping Notice MSN 1666.

5.3 A tanker referred to in paragraph 5.2 need not be provided with the standard requirements for an inert gas system if—

- (a) being a chemical tanker carrying as cargo any substance mentioned in paragraph 5.2, it is provided with an inert gas system complying with the alternative requirements for chemical tankers contained in Schedule 10 in Merchant Shipping Notice MSN 1666;

- (b) being a chemical tanker constructed before 1st July 1986 and carrying crude oil or petroleum products, it is provided with an inert gas system complying with the alternative requirements for chemical tankers applicable to it contained in Schedule 10 in Merchant Shipping Notice MSN 1666;
- (c) being a gas carrier carrying as cargo a substance mentioned in paragraph 5.2, it is provided with cargo tank inerting arrangements equivalent to those specified in sub-paragraph (a) or (b);
- (d) being a chemical tanker or gas carrier constructed before 1st July 1986, it is carrying a flammable cargo other than crude oil or petroleum products; or
- (e) being a chemical tanker or gas carrier constructed on or after 1st July 1986 and carrying a flammable cargo other than crude oil or petroleum products, it complies with the following requirements, that is to say—
  - (i) that the capacity of each tank used for carriage of that cargo does not exceed 3,000 cubic metres;
  - (ii) that the capacity of each nozzle of a tank washing machine does not exceed 17.5 cubic metres per hour; and
  - (iii) that the total combined throughput from all such machines in use in a cargo tank at any time does not exceed 110 cubic metres per hour.

In sub-paragraphs (d) and (e), the references to a flammable cargo other than crude oil or petroleum products includes (without prejudice to the generality of those references) references to any of the cargoes listed in Chapters 17 and 18 of the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk.

#### 5.4

- (a) Every inert gas system provided in accordance with paragraphs 5.2 and 5.3 must be designed, constructed and tested to the satisfaction of the Secretary of State. It must be designed and operated so as to render and keep the atmosphere of the cargo tanks including the slop tanks non-flammable at all times, except where such tanks are to be gas free.
- (b) In the event that the inert gas system is unable to meet the operational requirement set out above and it has been assessed that it is impractical to effect a repair, then cargo discharge, deballasting and necessary tank cleaning may only be resumed when the emergency procedures laid down in the Guidelines for Inert Gas Systems are complied with.
- (c) Where inert gas is being supplied by a system referred to in paragraphs 5.2 and 5.3, and the oxygen content of the inert gas in the inert gas supply main exceeds 8 per cent by volume, it is the duty of the master to ensure that:
  - (i) immediate action is taken to improve the gas quality;
  - (ii) if the quality of the gas does not improve, all operations in those tanks to which the inert gas is being supplied are suspended so as to avoid air being drawn into those tanks;
  - (iii) the deck isolation valve (not being the water-seal device) is closed; and
  - (iv) sub-standard gas is vented to the atmosphere.

#### 5.5

(a) Every tanker of Class VII(T) of less than 20,000 tonnes deadweight operating with a tank cleaning procedure using crude oil washing, must be fitted with an inert gas system complying with the standard requirements contained in Schedule 9 in Merchant Shipping Notice MSN 1666.

(b) Every tanker of Class VII(T) operating with a tank cleaning procedure using crude oil washing must be provided with fixed tank washing machines only.

5.6 Every tanker of Class VII(T) fitted with a fixed inert gas system must be provided with a closed ullage system.

5.7 Combination carriers must not carry solid cargoes unless all cargo tanks are empty of crude oil and other petroleum products having a closed flash point not exceeding 60°C and other liquids having a similar fire hazard and are gas freed or unless the arrangements provided in each case are in accordance with the relevant operational requirements contained in the Guidelines for Inert Gas Systems.

5.8 Tankers constructed before 25th May 1980 of less than 40,000 tonnes deadweight carrying oil other than crude oil or other liquids having a similar fire hazard which are not fitted with tank washing machines having an individual throughput greater than 60 cubic metres are not required to be fitted with an inert gas system.

#### **Deck foam systems**

5.9 Every Category A tanker of Class VII(T) of 100,000 tonnes deadweight or over and every Category A combination carrier of Class VII(T) of 50,000 tonnes deadweight or over must be provided with a fixed deck foam system complying with Schedule 7 in Merchant Shipping Notice MSN 1666.

5.10 Every tanker referred to in paragraph 5.2, constructed before 25th May 1980—

(a) for which the building contract was placed after 1st June 1979; or

(b) in the absence of a building contract, constructed after 1st January 1980; or

(c) which was delivered after 1st June 1982; or

(d) which undergoes an alteration or modification of a major character—

(i) for which a contract was placed after 1st June 1979; or

(ii) in the absence of a contract, the construction work of which was begun after 1st January 1980; or

(iii) which was completed after 1st June 1982;

must be fitted with a fixed deck foam system complying with Schedule 7 in Merchant Shipping Notice MSN 1666.

5.11 Every tanker of Class VII(T) of 2,000 tons or over not fitted with an inert gas system complying with the standard requirements contained in Schedule 9 in Merchant Shipping Notice MSN 1666 must be provided with a fixed foam fire-extinguishing installation complying with paragraph 5.12 or with a fixed smothering gas or steam installation complying with Schedule 4 in Merchant Shipping Notice MSN 1666, providing protection for all cargo spaces.

5.12 Every fixed foam fire-extinguishing installation fitted to meet the requirements of paragraph 5.11 must be capable of distributing on the decks over such tanks through fixed discharge outlets in not more than 15 minutes a quantity of foam sufficient to cover to a depth of at least 50 millimetres the whole of the tank deck area. Such an installation must be capable of generating foam suitable for extinguishing oil fires and must include means for the effective distribution of the foam through a permanent system of piping and control valves or cocks to discharge outlets. There must be sufficient mobile foam sprayers capable of being connected to the installation whereby foam can be directed into any tank. For the purpose of this paragraph "tank deck area" means an area equivalent to the extreme length of the cargo tanks multiplied by the breadth of the ship.

5.13 Every tanker of Class VII(T) of 2,000 tons or over not fitted with a fixed deck foam system complying with Schedule 7 in Merchant Shipping Notice MSN 1666, or a fixed foam fire-extinguishing installation complying with paragraph 5.12 must be provided with a mobile foam fire-fighting unit having a capacity of at least 100 litres of foam concentrate or alternatively two portable foam-applicators each having not less than 50 litres of foam concentrate readily available. Such units or appliances, when connected to the appropriate deck fire hydrants, must be capable by a simple and a rapid means of operation of discharging foam on to the area of the cargo piping manifold.

5.14 Every tanker of Class VII(T) of under 2,000 tons not provided with any of the deck foam arrangements of foam appliances referred to in paragraph 5.13 must be provided with at least one mobile foam appliance whereby foam is immediately available, by a simple and a rapid means of operation, for discharge in the area of the cargo piping manifolds.

***Requirements for ships constructed between 25th May 1980 and 1st September 1984***

5.15 Every tanker of Class VII(T) of 2,000 tons or over must be provided with a fixed deck foam system complying with the requirements of Schedule 7 in Merchant Shipping Notice MSN 1666 except that this requirement does not apply to chemical tankers.

5.16 Every tanker of Class VII(T) of under 2,000 tons must be provided with at least one mobile foam appliance whereby foam is immediately available, by a simple and a rapid means of operation, for discharge in the area of the cargo manifold.

***Requirements for ships constructed on or after 1st September 1984***

5.17 Every tanker of Class VII(T) of 500 tons or over must be provided with a fixed deck foam system complying with the requirements of Schedule 7 in Merchant Shipping Notice MSN 1666, except that this requirement must not apply to chemical tankers or gas carriers. For these vessels alternative arrangements must be provided to the satisfaction of the Secretary of State.

5.18 Where a liquid cargo (other than one referred to in paragraph 5.2) presenting a particular fire hazard is to be carried, a means or system of fire-extinguishing appropriate for dealing with this hazard must be provided to the satisfaction of the Secretary of State.

**Equivalence**

5.19

- (a) Other fixed fire-extinguishing systems may be provided if they are deemed to be equivalent in the manner set out in paragraph (b) or, as the case may be, (c) of this paragraph.
- (b) A system provided in place of the inert gas system referred to in this Notice at paragraph 5.2 must be deemed to be equivalent to that system if it is—

- (i) capable of preventing dangerous accumulation of explosive mixtures in intact cargo tanks during normal service throughout the ballast voyage and necessary in-tank operations; and
  - (ii) so designed as to minimise the risk of ignition from the generation of static electricity by the system itself.
- (c) An installation provided in place of the fixed deck foam system referred to in this Notice at paragraph 5.9 must be deemed to be equivalent to that system if it is—
- (i) capable of extinguishing spill fires and precludes ignition of spilled oil not yet ignited; and
  - (ii) capable of combating fires in ruptured tanks.

5.20 Where a tanker of Class VII(T) of 500 tons or over which is used to carry crude oil and petroleum products having a closed flashpoint not exceeding 60°C, and Reid vapour pressure below atmospheric pressure, and other liquids having a similar fire hazard, is provided with an inert gas system, the cargo tanks must first be purged in accordance with the provisions of paragraph 12 of Part IV of the Guidelines for Inert Gas Systems until the concentration of hydrocarbon vapours in the cargo tanks has been reduced to less than two per cent by volume.

5.21 Gas-freeing may take place at the cargo tank deck level:

- (a) after cargo tanks have been purged in accordance with paragraph 5.2, or
- (b) if the flammable vapour concentration at the outlet has been reduced to 30 per cent of the lower flammable limit.

### **Cargo tank purging and/or gas freeing**

#### **Requirements for ships constructed on or after 1st September 1984**

5.22 In every tanker of Class VII(T) of 500 tons or over arrangements for purging and gas freeing must be such as to minimise the hazards due to the dispersal of flammable vapours in the atmosphere and to flammable mixtures in a cargo tank.

5.23 When the ship is provided with an inert gas system the cargo tanks must first be purged—

- (a) in accordance with the provisions of the Guidelines for Inert Gas Systems; or
- (b) if the ship does not need to be provided with an inert gas system complying with the requirements of paragraph 5.2 but is a ship mentioned in paragraph 5.3(a), (b) or (c) in accordance with the provisions of paragraph 12 of Part IV of the Guidelines on Inert Gas Systems or,

until the concentration of hydrocarbon vapours in the cargo tanks has been reduced to less than 2 per cent by volume. Thereafter, gas-freeing may take place at the cargo tank deck level.

5.24 When the ship is not provided with an inert gas system, the operation must be such that the flammable vapour is discharged—

- (a) through the vent outlets as specified in regulation 23 of the Merchant Shipping (Cargo Ship Construction) Regulations 1997; or



(b) if the ship is one constructed on or after 1st February 1992, through outlets at least 2 metres above the cargo tank deck level with a vertical efflux velocity of at least 30 metres per second during the gas-freeing operation; or

(c) through outlets at least 2 metres above the cargo tank deck level with a vertical efflux velocity of at least 20 metres per second and through devices (other than flame screens) complying with Schedule 1 in the Merchant Shipping Notice MSN 1671 so as to prevent the passage of flame into the cargo tanks,

until the flammable vapour concentration in the outlet has been reduced to 30 per cent of the lower flammable limit. Thereafter, gas-freeing may be continued at the cargo tank deck level.

## **Cargo pump rooms**

### ***Fixed fire-extinguishing arrangements in cargo pump rooms***

5.25 In every category A tanker of Class VII(T) of 500 tons or over and in every Category A combination carrier of Class VII(T) of 500 tons or over, each cargo pump room must be provided with a fixed fire-extinguishing system operated from a readily accessible position outside the pump room. The system must use water or other medium approved by the Secretary of State.

### ***Requirements for ships constructed on or after 25th May 1980***

5.26 Except as otherwise provided in paragraph (3), in every tanker of Class VII(T) of 500 tons or over, each cargo pump room and each pump room having a similar hazard must be provided with at least one of the fixed fire-extinguishing systems required by paragraph 4.15 and which must be operated from a readily accessible position outside the pump room, provided that where the fixed extinguishing system is a gas system—

- (a) every alarm referred to in Schedule 4 in Merchant Shipping Notice MSN 1666 must be safe for use in a flammable cargo vapour/air mixture;
- (b) a notice must be exhibited at the controls stating that due to the electrostatic ignition hazard, the system is to be used only for fire-extinguishing and not for hazard purposes; and
- (c) where the extinguishing medium used in the cargo pump room system is also used in systems serving other spaces, the quantity of medium provided or its delivery rate need not be more than the maximum required for the largest space.

5.27 In chemical tankers where the fixed fire-extinguishing system referred to in paragraph 5.2 is a gas system, the concentration must be as specified in the Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk.

## **Gas monitoring and ignition protection systems for tankers and combination carriers**

5.28 Every tanker of Class VII(T) of 500 tons or over which is used to carry crude oil and petroleum products having a closed flashpoint not exceeding 60°C, and Reid vapour pressure below atmospheric pressure, and other liquids having a similar fire hazard, must comply with paragraphs 5.29 to 5.31.

5.29 The tanker must have fitted a system for continuous monitoring within cargo pump rooms of the concentration of hydrocarbon gases which complies with the following requirements:

- (a) sampling points or detector heads must be located in suitable positions in order that potentially dangerous leakages are readily detected, and
- (b) in order to alert personnel to the potential hazard, a continuous audible and visual alarm signal must be automatically effected in the pump-room and cargo control room when the hydrocarbon gas concentration reaches a pre-set level which:
  - (i) if the monitoring system was fitted before 1st July 2002, must not be higher than 30 per cent of the lower flammable limit, and
  - (ii) in all other cases must not be higher than ten per cent of the lower flammable limit.

5.30 Cargo pumps, ballast pumps and stripping pumps installed in cargo pump-rooms and driven by shafts passing through pump-room bulkheads must be fitted with temperature sensing devices for bulkhead shaft glands, bearings and pump casings. A continuous audible and visual alarm signal must be automatically effected in the cargo control room or the pump control station.

5.31 All pump rooms must be provided with bilge level monitoring devices together with appropriately located alarms.

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

### **Fire main isolating valves**

#### **Requirements for ships constructed on or after 1st September 1984**

5.33 In every tanker of Class VII(T) of 500 tons or over isolation valves must be fitted in the fire main at poop front in a protected position and on the tank deck at intervals of not more than 40 metres to preserve the integrity of the fire main system in case of fire or explosion.

### **Firemen's outfits**

5.34 In every ship of Class VII(T) of 500 tons or over there must be provided not less than four firemen's outfits complying with the requirements of paragraphs 5.73 - 5.74. Each outfit must include breathing apparatus in accordance with Schedule 5 of Merchant Shipping Notice MSN 1665; such breathing apparatus shall be the self-contained type.

### **Emergency escape breathing devices**

5.35 Every ship of Class VII(T) of 500 tons or over must be provided with at least two emergency escape breathing devices in accommodation spaces.

5.36 Every such ship must be provided with emergency escape breathing devices situated ready for use within the machinery spaces at easily visible places which can be reached quickly and easily at any time in the event of fire, taking into account the layout of the machinery space and the number of persons normally working in the spaces in accordance with International

Maritime Organization guidelines for the performance, location, use and care of emergency escape breathing devices contained in MSC Circular 849 of 8th June 1998.

5.37 Training in the use of emergency escape breathing devices must be included in the on-board training of each crew member as soon as possible, or in any event not more than two weeks, after he first joins the ship.

5.38 The number and location of the devices provided in accordance with paragraph 5.35 must be indicated in the fire control plan required by paragraphs 6.43 – 6.48.

#### ***Tankers of Class VIII(T)***

5.39 Paragraphs 5.1 to 5.38 inclusive apply to tankers of Class VIII(T) of 500 tons or over as they apply to tankers of Class VII(T) of 500 tons or over.

#### ***Tankers of Classes VIII(A)(T) and IX(A)(T)***

5.40

a) Paragraph 4.28 applies to tankers of Classes VIII(A)(T) and IX(A)(T) of 500 tons or over as it applies to ships of Class VII of 500 tons or over.

(b) Paragraphs 5.1 to 5.33 and paragraphs 5.35-5.38 apply to tankers of Classes VIII(A)(T) and IX(A)(T) of 500 tons or over as they apply to tankers of Class VII(T) of 500 tons or over; provided that tankers of Classes VIII(A)(T) and IX(A)(T) of less than 2,000 tons may, instead of complying with paragraph 5.17, comply with the requirements of paragraph 5.16 as if they were constructed before 1st September 1984.

### **SECTION 6**

#### **FIRE PREVENTION AND APPLIANCES - GENERAL**

##### **Requirements for ships provided with helicopter decks with or without fuelling facilities**

##### ***Requirements for ships constructed before 1st July 1998***

6.1 On any helicopter deck there must be provided and stored adjacent to the means of access to that deck—

- (a) dry powder extinguishers of total capacity not less than 45 kilogrammes; and
- (b) a suitable foam-applicator system consisting of monitors or foam-making branch pipes capable of delivering foam solution at a rate of not less than 6 litres per minute per square metre of the area contained within a circle of diameter D metres for not less than five minutes. For the purpose of this requirement, D is the distance across the main rotor and tail rotor in the fore and aft line of a helicopter with a single main rotor and across both rotors for a tandem rotor helicopter; and

(c) carbon dioxide extinguishers of total capacity of not less than 16 kilogrammes, which must be so equipped as to enable the medium to be applied to the engine area of any helicopter using the deck.

6.2 The arrangement of water service pipes, hydrants, hoses and nozzles must be such that at least two jets of water can reach any part of the helicopter deck and, where helicopter refuelling facilities are provided, any part of the fuel storage tanks and associated pumps and piping.

6.3 All such nozzles provided in accordance with paragraph 6.2 must be of dual-purpose type.

6.4 In every ship provided with helicopter refuelling facilities, at least two portable extinguishers suitable for fighting oil fires must be provided adjacent to the fuel storage tanks and associated pumps and piping in addition to any portable extinguishers required by this Notice.

***Requirements for ships constructed on or after 1st July 1998***

6.5.1 In such ships helicopter decks must comply with the requirements specified in “Standards for on-board helicopter facilities” adopted by IMO Resolution A.855(20).

**Helicopter deck operations manual**

Additional requirements for ships constructed after 1st February 1992

6.6 If a ship mentioned in paragraphs 6.43 – 6.48(1) or (3)—

- (a) is a ship constructed on or after 1st February 1992; and
- (b) has a helicopter deck;

the ship must carry an operations manual, which must include a description and a checklist of safety precautions, procedures, and equipment requirements for this helicopter deck.

**Fire pumps**

6.7 In every passenger ship which is required to be provided with fire pumps operated by power, such fire pumps (other than any emergency fire pump) must together be capable of delivering for fire-fighting purposes a quantity of water, under the conditions and at the pressure specified in paragraphs 6.12-6.15 of not less than two thirds of the quantity required to be dealt with by the bilge pumps provided in the ship.

6.8 In every ship, other than a passenger ship, which is required to be provided with fire pumps operated by power, such fire pumps (other than any emergency fire pump) must together be capable of delivering for fire-fighting purposes a quantity of water, under the conditions and at the pressure specified in Schedule 7 in Merchant Shipping Notice MSN 1665.

6.9 In every ship which is required to be provided with more than one fire pump operated by power (other than any emergency pump) every such fire pump must have a capacity of not less than 80 per cent of the total capacity of the fire pumps required by paragraph 6.7 divided by the number of fire pumps required to be provided in the ship, provided that each pump has a capacity of not less than 25 cubic metres per hour. When more fire pumps operated by power than are required by this Notice are provided in any ship, the capacity of any such additional fire pumps may be less than 80 per cent.

6.10 In every ship of Class I, II, or II(A) any emergency fire pump must be situated in a position aft of the ship's collision bulkhead.

***Additional requirement for ships constructed on or after 1st September 1984***

6.11 For every ship of 2,000 tons or over, other than a passenger ship, the arrangement of the emergency fire pump must be in accordance with the requirements set out in Schedule 7 in Merchant Shipping Notice MSN 1665.

**Fire main, water service pipes and hydrants**

6.12 In every ship which is required to be provided with fire pumps operated by power, the diameter of the fire main and of the water service pipes connecting the hydrants thereto must be sufficient for the effective distribution of the maximum discharge required by this Notice from—

- (a) where only one pump is required, that pump, or
- (b) where two such pumps are so required, both pumps operating simultaneously, or
- (c) where more than two such pumps are so required, the two largest of such pumps operating simultaneously,

provided that in any ship other than a passenger ship the diameter of the fire main and of the water service pipes must be sufficient only for the discharge of 140 cubic metres of water per hour.

6.13 Any fire pump required to be provided by this Notice must, when discharging the quantity of water required by paragraph 6.7 through adjacent fire hydrants in any part of the ship from nozzles of sizes specified in paragraphs 6.16 – 6.20, be capable of maintaining the pressures at any hydrant specified in Schedule 7 in Merchant Shipping Notice MSN 1665.

6.14

(a) Where any ship is required to be provided with appliances capable of producing two jets of water under the conditions required by this Notice, hydrants sufficient in number must be so positioned as to enable at least two jets of water, not emanating from the same hydrant, one of which must be from a single length of hose, to reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated, and to any store room and any part of any cargo space when empty except that in any special category space or ro-ro cargo space two jets must reach any part of the space, each from a single length of hose. Such hydrants must be positioned near the accesses to the protected spaces.

(b) Where any ship is required to be provided with appliances capable of producing one jet of water under the conditions required by this Notice, hydrants sufficient in number must be so positioned as to enable one jet of water from a single length of hose to reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty.

6.15 Any fire main required to be provided by this Notice must comply with the requirements set out in Schedule 7, paragraph 10, in Merchant Shipping Notice MSN 1665.

**Fire hoses, nozzles, etc**

6.16 Fire hoses provided in compliance with this Notice must not exceed 18 metres in length except that in ships having a moulded breadth of 27 metres or more, the length of fire hoses for exterior locations and for cargo spaces may exceed 18 metres but must not exceed 27 metres in length. In a ship constructed before 1st February 1992 every such hose forming part of the ship's equipment before that date must be made of closely woven flax, canvas or other suitable material; and every other such hose must be made of non-perishable material. In a ship constructed on or after 1st February 1992 every such hose must be made of non-perishable material.

6.17 Every such hose must be provided with couplings, branch pipes other necessary fittings and nozzles, as required by this Notice.

6.18 Every fire hose provided in compliance with this Notice together with the tools and fittings necessary for its use, must be kept in a conspicuous position near the hydrants or connections with which it is intended to be used. In interior locations in passenger ships, fire hoses must be connected to the hydrants at all times. Hose diameters must be not less than 64 millimetres if unlined or 45 millimetres if lined except that smaller diameter hoses may be permitted in small ships.

6.19 In ships of Class XII, fire hoses provided in compliance with this Notice must not be used for any purpose other than for fire-fighting or testing the fire appliances.

6.20

(a) Every ship which is required to be provided with fire pumps operated by power must be provided with nozzles of 12 millimetres, 16 millimetres, 19 millimetres in diameter or as near thereto in diameter as possible. Nozzles larger in diameter may be provided if the requirements relating to the provision of water for fire-fighting purposes are otherwise complied with.

(b) For machinery spaces and exterior locations the diameter of the nozzles must be such as to obtain the maximum possible discharge from the minimum number of jets of water and at the pressure required by this Notice from the smallest fire pump permitted by paragraph 6.9 provided that the diameter of the nozzles must not be required to be greater than 19 millimetres.

(c) For accommodation and service spaces the diameter of the nozzles must not be required to be greater than 12 millimetres.

(d) Every nozzle provided in compliance with this Notice must be capable of producing a water-spray and a plain water jet and must incorporate a shut-off facility.

## **Special requirements for fixed fire-extinguishing systems**

### ***Requirements for ships constructed on or after 1st September 1984***

6.21 Where halogenated hydrocarbon is used as an extinguishing medium in fixed fire-extinguishing systems its use must be permitted only in machinery spaces, pump rooms and in cargo spaces intended solely for the carriage of vehicles which are not carrying any cargo.

6.22 Where a fixed pressure water-spraying system is used for the protection of special category spaces, cargo spaces where permitted by this Notice or ro-ro cargo spaces, special consideration must be given to the bilge pumping and drainage arrangements where such spaces are below the bulkhead deck and to the scupper arrangements where such spaces are above the bulkhead deck.

6.23 Fire-extinguishing systems using Halon 1211, 1301, and 2402 and perfluorocarbons are prohibited.

6.24 fixed carbon dioxide fire-extinguishing systems for the protection of machinery spaces and cargo pump-rooms shall comply with the provisions of paragraph 2.2.2 of chapter 5 of the Fire Safety Systems Code.

### **Fixed low-expansion foam fire-extinguishing systems in machinery spaces**

6.24 Where in any machinery space a fixed low-expansion foam fire-extinguishing system is fitted in addition to the requirements of this Notice, such a system must be capable of discharging through fixed discharge outlets in not more than 5 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 must be capable of generating foam suitable for extinguishing oil fires. Means must be provided for the 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 other main fire hazards in the protected space. The expansion ratio of the foam must not exceed 12 to 1.

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

### **Fixed fire-extinguishing systems not required by this Notice**

#### ***Requirements for ships constructed on or after 25th May 1980***

6.26 In every ship where a fixed extinguishing system not required by this Notice is provided, such a system must be to the satisfaction of the Secretary of State.

### **Fire extinguishers**

6.27 Non-portable foam, carbon dioxide and dry powder fire extinguishers provided in compliance with this Notice must be of approved types and designs and must meet the requirements of Schedules 2, 3 and 4 in Merchant Shipping Notice MSN 1665 respectively.

6.28 Portable fire extinguishers provided in compliance with this Notice must be of approved types and designs and must meet the requirements of Schedule 8 in Merchant Shipping Notice MSN 1665.

6.29 Fire extinguishers provided for use in any ship must not contain any extinguishing medium which has not been approved by the Secretary of State.

6.30 Every fire extinguisher provided in compliance with this Notice must be kept fully charged at all times.

6.31 Spare charges must be provided to the extent of at least 50 per cent of each type of fire extinguisher provided in compliance with this Notice, except that for each fire extinguisher which cannot readily be recharged while the ship is at sea, an additional portable fire extinguisher of the same type, or its equivalent, must be provided in lieu of a spare charge.

### **Fire buckets**

6.32 Every fire bucket provided in compliance with this Notice must be painted red and must be clearly and permanently marked with the word "FIRE". Except in open ships, every such fire bucket must be kept filled with sand or water.

6.33 Except in open ships, fire buckets provided in compliance with this Notice must not be used for any purpose other than extinguishing a fire.

### **Firemen's outfits**

6.34 Every fireman's outfit carried in compliance with this Notice must consist of—

- (a) a breathing apparatus complying with the requirements specified in Merchant Shipping Notice MSN (M+F) 1874 (Amendment 4); and
- (b) personal equipment comprising—
  - (i) a portable self-contained electric battery-operated safety lamp of an approved type capable of functioning efficiently for a period of at least three hours;
  - (ii) a fireman's axe;
  - (iii) protective clothing of material capable of protecting the skin from the heat radiating from the fire and from burns and scalding by steam; the outer surface must be water resistant;
  - (iv) boots and gloves of rubber or other electrically non-conducting material; and
  - (v) a rigid helmet providing effective protection against impact.

6.35 Firemen's outfits must be stored in readily accessible positions which are not likely to be cut off in the event of fire and, except as provided for by paragraph 3.47 where more than one such outfit is provided, they must be stored in widely separated positions.

### **Means for stopping machinery, shutting off oil fuel suction pipes and closing of openings**

6.36 In every ship there must be provided—

- (a) means for stopping ventilating fans serving machinery, accommodation and cargo spaces;
- (b) means for closing all skylights, doorways, ventilators, annular spaces around funnels and other openings to such spaces; and
- (c) means to permit the release of smoke from machinery spaces.

Such means must be capable of being operated from positions outside the said spaces and which would not be made inaccessible by a fire within such spaces.

6.37 Machinery driving forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps must be fitted with remote controls situated outside the



spaces in which such machinery or pumps are situated and which would not be made inaccessible by a fire within such spaces. The controls must be capable of stopping such machinery, or pumps in the event of fire in such spaces. For machinery spaces in passenger ships constructed on or after 25th May 1980 carrying more than 36 passengers such controls together with the controls required in paragraph 6.36 must be situated at one control position or grouped in as few positions as possible. For ships built on or after 1st September 1984, such controls must have safe access from the open deck.

6.38 Subject to paragraph 6.39 every pipe connected to any oil fuel or lubricating oil storage, settling, or daily service tank, not being a double bottom tank, which if damaged would permit discharge of the contents so as to cause a fire hazard, must be fitted with a valve or cock which must be secured to the tank to which it is connected and which must be capable of being closed from a readily accessible position outside the space in which the tank is situated, provided that in the case of any inlet pipe to such a tank, a non-return valve secured to the tank may be substituted. In the case of an oil fuel or lubricating oil deep tank situated in or adjacent to a shaft or pipe tunnel or similar space, a valve or valves (additional to the valve required to be fitted on the tank) may be fitted on the pipe line or lines outside the tunnel or tunnels or similar space to enable control to be exercised in the event of fire. Such a valve if fitted in the machinery space must be operated from a position outside the space.

6.39 The valve or cock required by paragraph 6.38 may be dispensed with in the case of a pipe connected to a lubricating oil tank fitted in a space other than a machinery space of Category A provided that the safety of the ship is not impaired.

6.40

(a) All external high-pressure fuel delivery lines between the high-pressure fuel pumps and fuel injectors must be protected with a jacketed piping system capable of containing fuel from a high-pressure line failure. A jacketed pipe incorporates an outer pipe into which the high-pressure fuel pipe is placed forming a permanent assembly. The jacketed piping system must include a means for collection of leakages and arrangements must be provided for an alarm to be given of a fuel line failure,

(b) All surfaces with temperatures above 220°C which may be impinged as a result of a fuel system failure must be properly insulated.

(c) Oil fuel lines must be screened or otherwise suitably protected to avoid as far as practicable oil spray or oil leakages onto hot surfaces, into machinery air intakes, or other sources of ignition. The number of joints in such piping systems must be kept to a minimum.

(d) Ships constructed before 1 July 1998 shall comply with the requirements of paragraphs 6.40 (a) to 6.40 (c) not later than 1 July 2003, except that a suitable enclosure on engines having an output of 375 kW or less having fuel injection pumps serving more than one injector may be used as an alternative to the jacketed piping system in paragraph 6.40 (a).

## **Gaseous fuel for domestic purposes**

### ***Requirements for ships constructed on or after 1st September 1984***

6.41 Where gaseous fuel is used for domestic purposes the arrangements for storage, distribution and utilisation of the fuel must be in accordance with BS EN ISO 10239:2017 - Small craft. Liquefied petroleum gas (LPG) systems.

## **Deep-fat cooking equipment**

6.42 Deep fat cooking equipment installed after 1st July 2002 must be fitted with:

- (a) an automatic or manual extinguishing system which complies with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016,
- (b) a primary and back-up thermostat with an alarm to alert the operator in the event of failure of either thermostat,
- (c) arrangements for automatically shutting off the electrical power upon activation of the extinguishing system.
- (d) an alarm for indicating operation of the extinguishing system in the galley where the equipment is installed, and
- (e) controls for manual operation of the extinguishing system which are clearly labelled for ready use by the crew.

### **Fire control plans**

6.43 In every ship of Classes I and II and in every ship of Class II(A) of 21.34 metres in length or over there must be permanently exhibited by the owner of the ship for the guidance of the master and officers of the ship, general arrangement plans showing clearly for each deck the position of the control stations, the sections of the ship which are enclosed by "A" Class divisions and the sections of the ship which are enclosed by "B" Class divisions together with particulars of the fire alarms, fire detection systems, the sprinkler installations, the fixed and portable fire-extinguishing appliances and firemen's outfits, the means of access to the various compartments and decks in the ship, the ventilating system including particulars of the master fan controls, the position of dampers and identification numbers of the ventilating fans serving each section of the ship, the location of the international shore connection and the position of all means of control referred to in paragraph 6.36. Descriptions in such plans must be in English.

6.44 In every ship of Classes I and II and in every ship of Class II(A) of 21.34 metres in length or over, carrying more than 36 passengers, the general arrangement plans referred to in paragraph 6.43 must provide information regarding fire protection, fire detection and fire extinction set out in IMO Resolution A.756(18).

6.45 In every ship of 500 tons or over, other than a ship of Class I or II or a ship of Class II(A) of 21.34 metres in length or over, there must be permanently exhibited by the owner of the ship for the guidance of the master and officers of the ship general arrangement plans showing clearly in relation to the ship the information referred to in paragraph 5.82.

6.46 The general arrangement plans required by paragraph 6.43 must be kept up-to-date, any alterations to general arrangements being recorded thereon without delay.

6.47 A duplicate set of the general arrangement plans required by paragraph 6.43 must be permanently stored in a prominently marked weather-tight enclosure outside the deckhouse for the assistance of shore-side fire-fighting personnel.

6.48 Instructions concerning the maintenance and operation of all the equipment and installations on board for the fighting and containment of fire must be kept in one book, readily available in an accessible position.

## Availability of fire-fighting appliances

6.49 Fire appliances carried in any ship must be maintained in good order and must be kept available for immediate use at all times. All moveable fire appliances, other than firemen's outfits, carried in compliance with this Notice must be stowed where they will be readily accessible for the spaces in which they are intended to be used and, in particular, one of the portable fire extinguishers intended for use in any space must be stowed near the entrance to that space.

## Maintenance plan

6.50 Maintenance, testing and inspections of systems and appliances required in accordance with this Notice must be carried out based on the International Maritime Organisation guidelines on maintenance and inspection of fire protection systems and appliances contained in MSC Circular MSC.1/Circ.1432 of 31<sup>st</sup> May 2012.

6.51 A maintenance plan must be kept on board the ship and must be available for inspection by the Secretary of State.

6.52 The maintenance plan kept in accordance with paragraph 5.90 must include at least the following fire protection systems and fire-fighting systems and appliances, where installed:

- (a) fire mains, fire pumps and hydrants including hoses, nozzles and international shore connections,
- (b) fixed fire detection and fire alarm systems,
- (c) fixed fire-extinguishing systems and other fire extinguishing appliances,
- (d) automatic sprinkler or water mist, fire detection and fire alarm systems,
- (e) ventilation systems including fire and smoke dampers, fans and their controls,
- (f) emergency shut-down of fuel supply,
- (g) fire doors including their controls,
- (h) general emergency alarm systems,
- (i) emergency escape breathing devices,
- (j) portable fire extinguishers including spare charges, and
- (k) fire-fighter's outfits.

6.53 The maintenance plan for a ship carrying more than 36 passengers must also include:

- (a) low location lighting, and
- (b) public address systems.

6.54 The maintenance plan for a tanker must also include:

- (a) inert gas systems,
- (b) deck foam systems,
- (c) fire safety arrangements in cargo pump rooms, and

- (d) detectors for flammable gas.

### **Training manuals**

6.55 A training manual, which may comprise several volumes, must be provided in each crew mess room and recreation room or in each crew cabin.

6.56 The training manual must be written in the working language of the ship, and must contain the instructions and information in easily understood terms and illustrated wherever possible.

6.57 Any part of the information may be provided in the form of audio-visual aids in place of the manual.

6.58 The training manual must explain in detail:

- (a) general fire safety practice and precautions related to the dangers of smoking, electrical hazards, flammable liquids and similar common shipboard hazards,
- (b) general instructions on fire-fighting activities and fire-fighting procedures including procedures for notification of a fire and use of manually operated call points,
- (c) meanings of the ship's alarms,
- (d) operation and use of fire-fighting systems and appliances,
- (e) operation and use of fire doors,
- (f) operation and use of fire and smoke dampers, and
- (g) escape systems and appliances.

### **Fire safety operations booklet**

6.59 A fire safety operations booklet, which may be combined with the training manual required by paragraphs 6.55 – 6.58 must be provided in each crew mess room and recreation room or in each crew cabin.

6.60 The fire safety operations booklet must be written in the working language of the ship, and must contain the instructions and information in easily understood terms and illustrated wherever possible.

6.61 The fire safety operations booklet must include:

- (a) the necessary information and instructions for the safe operation of the ship and of cargo handling operations in relation to fire safety;
- (b) information concerning the crew's responsibilities for the general fire safety of the ship while loading and unloading and discharging cargo and while underway;
- (c) an explanation of the necessary fire safety precautions for handling general cargoes;
- (d) where the ship is carrying dangerous goods or inflammable bulk cargoes, references to the relevant fire-fighting and emergency cargo-handling instructions contained in the Code of Safe Practice for Solid Bulk Cargoes, the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, the International Code for the

Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, and the International Maritime Dangerous Goods Code, as appropriate.

6.62 The fire safety operations booklet for a tanker must also include requirements for preventing fire spread to the cargo area due to ignition of flammable vapours and include procedures of cargo tank gas-purging and/or gas-freeing taking into account the requirements in paragraphs 5.20 – 5.21.

## **SECTION 7**

### **Structural Fire Protection**

#### **Passenger ships of Classes I, II, and II(A)**

##### **Application**

7.1 This Section applies to passenger ships of Classes I, II, and II(A). Except where otherwise provided, paragraphs 7.3 – 7.76 inclusive apply to passenger ships of Classes I, II, and Class II(A) of 21.34 metres in length or over, constructed on or after 25th May 1980. Subject to paragraph 7.2, the provisions of Schedule 2 in Merchant Shipping Notice MSN 1670 Amendment 1 apply to such ships constructed before 25th May 1980.

7.2 Passenger ships (to which this Notice applies) carrying more than 36 passengers must comply with the requirements of paragraphs 7.3 – 7.76 inclusive (and not with Schedule 2 of Merchant Shipping Notice 1670 Amendment 1).

##### **Structure**

7.3 The hull, superstructure, structural bulkheads, decks and deckhouses must be constructed of steel or other equivalent material, except that the crowns and casings of machinery spaces of Category A must be constructed only of steel.

7.4 Where any part of the structure is of aluminium alloy, the following requirements must apply—

- (a) the insulation of aluminium alloy component of “A” Class divisions or “B” Class divisions, and supports of such divisions, must be such that the temperature of the structural core does not rise more than 200°C above the ambient temperature at any time during a standard fire test of 60 minutes duration in the case of an “A” Class division and 30 minutes duration in the case of a “B” Class division; and
- (b) the insulation of aluminium alloy components of columns, stanchions and other structural members required to support lifeboat and liferaft stowage, launching and embarkation areas, must be such that the temperature rise limitation specified in sub-paragraph (a) must apply for 60 minutes duration.

##### **Helicopter decks**

**Requirements for ships constructed on or after 1st February 1992 and before 1st July 1998**

7.5 Paragraphs 7.6 to 7.9 apply to a ship having a helicopter deck.

7.6 Subject to paragraph 6.8, the helicopter deck must be of steel or equivalent fire-resistant construction.

7.7 If the space below the helicopter deck is of a high fire risk, the insulation standard must be to the satisfaction of the Secretary of State.

7.8 The helicopter deck may be constructed of aluminium or other low melting metal construction that is not made equivalent to steel. If so constructed—

- (a) if the platform is cantilevered over the side of the ship, then, after the occurrence of a fire on the ship or on the platform, the platform must undergo a structural analysis to determine its suitability for further use; and
- (b) if the platform is located above the ship's deckhouse or similar structure—
  - (i) the deckhouse top and bulkheads under the platform must have no openings;
  - (ii) all windows under the platform must be provided with steel shutters;
  - (iii) after a fire on or in close proximity to the platform the platform must undergo a structural analysis to determine its suitability for further use.

7.9 In ships constructed on or after 1st July 1998 helicopter decks must comply with the requirements specified in “Standards for on-board helicopter facilities” adopted by IMO Resolution A.855(20).

**Main vertical zones and horizontal zones**

7.10 The hull, superstructure and deckhouses must be subdivided by bulkheads consisting of “A” Class divisions into main vertical zones except in respect of special category spaces or ro-ro cargo spaces to which paragraph 7.64 applies. The mean length of each zone on any one deck, above the bulkhead deck, must not normally exceed 40 metres. Steps and recesses must be kept to a minimum, but any which are necessary must consist of “A” Class divisions. These divisions must have insulation values in the case of—

- (a) ships carrying more than 36 passengers, in accordance with the Tables given in Schedule 1 in Merchant Shipping Notice MSN 1667; and
- (b) ships carrying 36 passengers or less, in accordance with the Tables given in Schedule 2 in Merchant Shipping Notice MSN 1667, except that where insulation values of “B-0” and “C” appear in Table 1 the value of “A-0” must be substituted.

7.11 Any portions of such divisions which extend above the bulkhead deck must, whenever possible, be in line with watertight subdivision bulkheads situated immediately below the bulkhead deck, and must extend from deck to deck and to the ship's shell and in the case of a deckhouse, to the external plating thereof.

7.12 Except in the case of a ship built on or after 1st October 1994 carrying more than 36 passengers a main vertical zone may, for the purpose of paragraph 7.58 – 7.63, be subdivided by

horizontal “A” Class divisions into two or more parts provided that such horizontal divisions must extend between adjacent main vertical zone bulkheads and to the shell or exterior boundaries of the ship and must have insulation and integrity values in the case of—

- (a) ships carrying more than 36 passengers, in accordance with Table 3 of Schedule 1 in Merchant Shipping Notice MSN 1667; and
- (b) ships carrying 36 passengers or less, in accordance with Table 2 of Schedule 2 in Merchant Shipping Notice MSN 1667.

7.13 In ships designed for special purposes such as train services, where the provision of main vertical zone bulkheads would conflict with the purpose for which the ship is intended, an equivalent means for controlling and limiting a fire may be substituted.

***Additional requirements for a ship constructed on or after 1st October 1994***

7.14 In the application of paragraph 7.10 to a ship constructed on or after 1st October 1994 carrying more than 36 passengers, the references to “A” Class divisions are references to those divisions insulated to “A-60” standard: provided that if open deck spaces, sanitary and similar spaces and tanks, voids and auxiliary machinery spaces having little or no fire risk, defined in Category 5, 9 and 10 of Schedule 1 in Merchant Shipping Notice MSN 1667 are on one side of the division, or fuel oil tanks are on both sides the standard may be reduced to “A-0”.

7.15 In the case of a ship constructed on or after 1st October 1994, the length and width of main vertical zones may be extended to a maximum of 48 metres in order to bring the ends of main vertical zones to coincide with watertight sub-division 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 metres<sup>2</sup> 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.

**Bulkheads within a main vertical zone**

7.16 Every bulkhead within the accommodation spaces or service spaces not being a bulkhead required to consist of an “A” Class division, must consist of a “B” Class division or “C” Class division as required in the case of—

- (a) ships carrying more than 36 passengers, by the Tables set out in Schedule 1 in Merchant Shipping Notice MSN 1667; and
- (b) ships carrying 36 passengers or less, by the Tables set out in Schedule 2 in Merchant Shipping Notice MSN 1667. All such divisions may be faced with combustible materials in accordance with paragraphs 7.53 – 7.55.

7.17 Except in the case of ships constructed on or after 1st October 1994 carrying more than 36 passengers, all corridor bulkheads where not required to be “A” Class divisions must be “B” Class divisions which must extend from deck to deck except that—

- (a) when continuous “B” Class ceilings and/or linings are fitted on both sides of the bulkhead, the portion of the bulkhead behind the continuous ceiling or lining must be of material which in thickness and composition meets the requirements of “B” Class divisions, but which is required to meet “B” Class fire integrity standards only so far as is reasonable and practicable; and

(b) in the case of a ship protected by an automatic sprinkler or water mist, fire detection and fire alarm system complying with the provisions of Schedule 1 in Merchant Shipping Notice MSN 1666 the corridor bulkheads of “B” Class materials may terminate at a ceiling in the corridor, provided that such a ceiling is of material which in thickness and composition meets the requirements of “B” Class divisions; notwithstanding the requirements for fire integrity of bulkheads in Merchant Shipping Notice MSN 1667 such bulkheads and ceilings must be required to meet “B” Class fire integrity standards only so far as is reasonable and practicable; all doors and their frames in such bulkheads must be of non-combustible materials and must be constructed and erected so as to provide substantial fire resistance.

7.18 Except as provided in paragraph 6.17, every bulkhead required to be a “B” Class division must extend from deck to deck and to the shell or other boundaries unless continuous “B” Class ceilings and/or linings fitted on both sides of the bulkhead are of at least the same fire resistance as the bulkhead in which case the bulkhead may terminate at the continuous ceiling or lining.

### **Fire Integrity of bulkheads and decks**

7.19 In addition to complying with the specific requirements for fire integrity of bulkheads and decks the minimum fire integrity and insulation standards of all bulkheads and decks must be as prescribed in the Tables given in Merchant Shipping Notice MSN 1667.

7.20 Where due to any structural arrangement there may be doubt in determining from the Tables the minimum fire integrity and insulation standard of any division, such standard must be determined to the satisfaction of the Secretary of State.

### **Protection of stairways and lifts in accommodation and service spaces**

7.21 All stairways must be of steel frame construction, except where the Secretary of State has given approval for the use of other equivalent material under the 2023 Regulations, and must be within enclosures formed of “A” Class divisions, except that—

- (a) an isolated stairway connecting only two decks need not be enclosed on both decks provided that the integrity of the deck is maintained by bulkheads or doors at one between-deck space; when a stairway is closed at one between-deck space, the stairway enclosure must have the same integrity standard as is required in the case of—
  - (i) a passenger ship carrying more than 36 passengers, by the Tables set out in Schedule 1 in Merchant Shipping Notice MSN 1667 for the deck which separates the between-deck space;
  - (ii) a ship carrying 36 passengers or less, by the Tables set out in Schedule 2 in Merchant Shipping Notice MSN 1667 for the deck which separates the between-deck space;

(b) stairways may be fitted within the open part of a public space, provided that they lie wholly within such public space.

7.22 Every opening in a stairway enclosure must be provided with a means of closure which must be permanently attached thereto.



7.23 Every lift trunk must be so fitted as to prevent the passage of smoke and flame from one between-deck to another and must be provided with means of closing so as to permit the control of draught and smoke.

7.24

(a) Stairway enclosures must 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.

(b) In ships constructed on or after 1st October 1994 and in ships constructed before 1st October 1994 carrying more than 36 passengers, only public toilets, lifts, lockers of non-combustible material providing storage for safety equipment and open information counters may be located within the stairway enclosure boundaries.

(c) In ships constructed on or after 1st October 1994 and in ships constructed before 1st October 1994 carrying more than 36 passengers, only public spaces, corridors, public toilets, special category spaces and other escape stairways required by paragraph 6768(c), open deck spaces and, in the case of ships constructed before 1st October 1997, spaces to which paragraph (5) applies, are permitted to have direct access to these stairway enclosures.

7.25 Every ship constructed before 1st October 1994 carrying more than 36 passengers must comply with the following—

(a) existing spaces other than those referred to in paragraph 7.24(b) within the stairway enclosure boundaries—

(i) must be emptied, permanently closed and disconnected from the electrical system; or

(ii) must be separated from the stairway enclosure by the provision of “A” Class divisions in accordance with paragraph 7.16 – 7.18 except as it applies to ships constructed on or after 1st October 1994. Such spaces may have direct access to stairway enclosures by the provision of “A” Class doors, subject to a sprinkler system being provided in these spaces. However, cabins must not open directly into the stairway enclosure;

(b) spaces other than public spaces, corridors, public toilets, special category spaces, other stairways required paragraph 6.68(c), open deck spaces and spaces covered by paragraph (a)(ii) above are not permitted to have direct access to stairway enclosures;

(c) existing machinery spaces of category 10 described in Schedule 1 in Merchant Shipping Notice MSN 1667 and existing back offices for information counters opening directly into the stairway enclosure may be retained, provided that they are protected by smoke detectors connected to a fixed fire detection and fire alarm system complying with the requirements of Schedule 5 in Merchant Shipping Notice MSN 1666 and such offices contain only furniture of restricted fire risk;

(d) hinged fire doors in stairway enclosures which are normally kept open must be self-closing and be capable of release from a central control station and from a position at the door. All other fire doors in stairway enclosures which are normally kept open must be capable of release from a central control station and from a position at the door;

(e) a panel must be placed in a continuously manned central control station to indicate whether the fire doors in the stairway enclosures are closed.

7.26 Furniture in stairway enclosures must be limited to seating. It must be fixed, limited to 6 seats on each deck in each stairway enclosure, be of restricted fire risk, and must not restrict the passenger escape route. Additional seating in the main reception area within stairway enclosures is permitted 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 except that lockers of non-combustible material, providing storage for safety equipment are permitted.

### Openings in “A” Class divisions

7.27 Where an “A” Class division is pierced for the passage of electric cables, pipes, trunks, girders, beams or for other purposes, the arrangements must be such that the effectiveness of the division in resisting fire is not thereby impaired except as provided in paragraph 7.33.

7.28 Where ventilation ducts pass through “A” Class divisions the requirements of paragraphs 7.43 – 7.49 apply.

7.29 Except for hatches between special category spaces or ro-ro cargo spaces within a single horizontal zone, or hatches between cargo spaces or stores or baggage spaces, and hatches between such spaces and the weather decks, every opening must be provided with permanently attached means of closing which must be at least as effective for resisting fire as the division in which it is fitted.

7.30 Every door and door frame in an “A” Class division must be constructed of steel or other equivalent material and the means of securing the door when closed must provide resistance to fire as well as to the passage of smoke and flame, as far as practicable, equivalent to that of the bulkhead in which the door is situated: provided that a water-tight door must not be required to be insulated.

7.31 Any door in such a division must be so constructed that it can be opened and closed by one person from either side of the division.

7.32 In ships constructed before 1st October 1994 carrying more than 36 passengers—

- (a) hinged fire doors in main vertical zone bulkheads and galley boundaries which are normally kept open must be self-closing and be capable of release from a central control station and from a position at the door;
- (b) all other fire doors in main vertical zone bulkheads and galley boundaries which are normally kept open must be capable of release from a central control station and from a position at the door; and
- (c) a panel must be placed in a continuously manned central control station to indicate whether the fire doors in main vertical zone bulkheads and galley boundaries are closed.

7.33 In the case of a ship constructed before 1st October 1994, every door in a division constructed in compliance with paragraph 7.10 or 7.21 except a watertight door or one which is normally locked shut, must be self-closing and capable of closing against an adverse inclination of up to 3.5 degrees. The speed of door closure must be controlled so as to prevent undue danger to personnel. All such doors which are held in the open position must be capable of release from a control station, either simultaneously or in groups, and also individually from a position at the door. The release mechanism must be so designed that the door will automatically close in the

event of disruption of the control system; except that this requirement must not apply to a watertight door. Hold-back hooks, not subject to control station release, are not permitted.

7.34 In the case of a ship constructed on or after 1st October 1994 and before 1st July 1998, every door in a division constructed in compliance with paragraph 7.10 or 7.21, must satisfy the following requirements—

- (a) it must be self-closing and be capable of closing against an adverse inclination of up to 3.5 degrees at an approximately uniform rate of not more than 40 seconds and no less than 10 seconds with the ship in the upright position;
- (b) remote-controlled sliding or power-operated doors must be equipped with an alarm that sounds at least 5 seconds but no more than 10 seconds before the door begins to move and continues sounding until the door is completely closed. A door designed to re-open upon contacting an object in its path must re-open sufficiently to allow a clear passage of at least 0.75 metres but not more than 1 metre;
- (c) all doors must be capable of remote and automatic release from a continuously manned central control station, either simultaneously or in groups, and also individually from a position at both sides of the door;
- (d) a panel must be placed in the continuously manned central control station to indicate whether each of the remote-controlled doors are closed;
- (e) the release mechanism must be so designed that the door will automatically close in the event of disruption of the control system or central power supply;
- (f) release switches must have on-off function to prevent automatic resetting of the system;
- (g) hold-back hooks not subject to central control station release are prohibited;
- (h) local power accumulators for power-operated doors must be provided in the immediate vicinity of the doors to enable the doors to be operated at least 10 times (fully opened and closed) using the local controls;
- (i) double-leaf doors equipped with a latch necessary to their fire integrity must have a latch that is automatically activated by the operation of the doors when released by the system;
- (j) doors giving direct access to special category spaces which are power-operated and automatically closed need not be equipped with the alarms and remote-release mechanisms specified in sub-paragraph (b).

7.35 In the case of a ship constructed on or after 1st July 1998, all fire doors in a division constructed in compliance with paragraph 7.10 or 7.21, other than power-operated watertight doors or doors which are normally locked shut, must comply with the following requirements—

- (a) the doors must be self-closing and be capable of closing against an angle of inclination of up to 3.5 degrees opposing closure;
- (b) the approximate time of closure for hinged fire doors must be no more than 40 seconds and no less than 10 seconds from the beginning of their movement with the ship in upright position. The approximate uniform rate of closure for sliding fire doors must be of no more than 0.2 m/s and no less than 0.1 m/s with the ship in the upright position;
- (c) the doors must be capable of remote release from the continuously manned central control station, either simultaneously or in groups and must be capable of release also individually

from a position at both sides of the door. Release switches must have an on-off function to prevent automatic resetting of the system;

- (d) hold-back hooks not subject to central control station release are prohibited;
- (e) a door closed remotely from the central control station must be capable of being re-opened at both sides of the door by local control. After such local opening, the door must automatically close again;
- (f) indication must be provided at the fire door indicator panel in the continuously manned central control station whether each of the remote-released doors is closed;
- (g) the release mechanism must be so designed that the door will automatically close in the event of disruption of the control system or main source of electric power;
- (h) local power accumulators for power-operated doors must be provided in the immediate vicinity of the doors to enable the doors to be operated after disruption of the control system or main source of electric power at least ten times (fully opened and closed) using the local controls;
- (i) disruption of the control system or main source of electric power at one door must not impair the safe functioning of other doors;
- (j) remote-released sliding or power-operated doors must be equipped with an alarm that sounds for at least 5 seconds but no more than 10 seconds after the door is released from the central control station and before the door begins to move and continue sounding until the door is completely closed;
- (k) a door designed to re-open upon contacting an object in its path must re-open not more than 1 metre from the point of contact;
- (l) double-leaf doors equipped with a latch necessary to their fire integrity must have a latch that is automatically activated by the operation of the doors when released by the control system;
- (m) doors giving direct access to special category spaces which are power-operated and automatically closed need not be equipped with the alarms and remote release mechanisms required in subparagraphs (c) and (j);
- (n) the components of the local control system must be accessible for maintenance and adjusting; and
- (o) power-operated doors must be provided with a control system of an approved type which must be able to operate in case of fire, this being determined in accordance with the Fire Test Procedures Code. This system must satisfy the following requirements:
  - (i) the control system must be able to operate the door at the temperature of at least 200°C for at least 60 minutes served by the power supply;
  - (ii) the power supply for all other doors not subject to fire must not be impaired; and
  - (iii) at temperatures exceeding 200°C the control system must be automatically isolated from the power supply and must be capable of keeping the door closed up to at least 945°C.

7.36 In ships carrying not more than 36 passengers and in ships carrying more than 36 passengers constructed before 1st October 1994, where a space is protected by an automatic sprinkler or water mist, fire detection and fire alarm system complying with the provisions of Schedule 1 in Merchant Shipping Notice MSN 1666 or fitted with a continuous "B" Class ceiling, the

closing of openings in decks not forming steps in main vertical zones or bounding horizontal zones must be reasonably tight and such decks must meet the “A” Class integrity requirements in so far as is reasonable and practicable.

7.37 The requirements for “A” Class integrity of the outer boundaries of a ship must not apply to glass partitions, windows and sidescuttles, subject to the requirements of paragraph 7.50 – 7.52 provided that, in the case of ships constructed on or after 1st October 1994 there is no requirement for such boundaries to have “A” Class integrity in paragraph 7.52. The requirements for “A” Class integrity of the outer boundaries of the ship do not apply to exterior doors, except for those in superstructures and deckhouses facing life-saving appliances, embarkation and external muster station areas, external stairs and open decks used for escape routes. Stairway enclosure external doors need not meet this requirement.

7.38 In the case of a ship constructed on or after 1st October 1994 all “A” Class doors located in stairways, public spaces and main vertical zone bulkheads in escape routes must be equipped with a self-closing hose port of material, construction and fire resistance which is equivalent to the door in which it is fitted, and which must furnish a 150 mm square clear opening with the port open and door closed, and must be inset into the lower edge of the door opposite the door hinges or, in the case of sliding doors, nearest the opening.

### **Openings in “B” Class divisions**

7.39 Where a “B” Class division is pierced for the passage of electric cables, pipes, trunks, girders, beams or for other purposes the arrangements must be such that the effectiveness of the division in resisting fire is not thereby impaired except as provided in paragraph 7.42. Where ventilation ducts pass through “B” Class divisions the requirements of paragraph 6 of Schedule 3 of Merchant Shipping Notice MSN 1667 apply.

7.40

(a) Doors and door frames in “B” Class divisions and the means of securing them must provide a method of closure which must have resistance to fire as far as practicable equivalent to the division, except that ventilation openings may be permitted in the lower portion of such doors. Where such an opening is in or under a door, its total net area must not exceed 0.05 square metre. When such an opening is cut in a door, it must be fitted with a grille made of steel and must be capable of being manually closed from each side of the door. Doors must be non-combustible, except that in ships carrying 36 passengers or less a door which separates a cabin from an individual interior sanitary space such as a shower space may be of combustible material.

(b) In the case of a ship constructed on or after 1st October 1994, cabin doors in “B” Class divisions must be of the self-closing type. Hold-backs are not permitted.

7.41 The requirements for “B” Class integrity of the outer boundaries of a ship do not apply to glass partitions, windows and sidescuttles subject to the requirements of paragraph 6.1. The requirements for “B” Class integrity do not apply to exterior doors in superstructures and deckhouses, except that doors opening on to lifeboat and liferaft handling and embarkation areas must be of such construction as to protect these areas from a space having a potential fire hazard.

7.42 Except in the case of a ship constructed on or after 1st October 1994 carrying more than 36 passengers, where an automatic sprinkler or water mist, fire detection and fire alarm system complying with the provisions of Schedule 1 of Merchant Shipping Notice MSN 1666 is fitted—

- (a) the closing of openings in decks need only meet the “B” Class integrity requirements in so far as is reasonable and practicable;
- (b) openings in corridor bulkheads of “B” Class materials must be protected in accordance with the requirements of paragraphs 7.16 – 7.18.

### **Ventilation systems**

7.43 Wherever practicable the system of ducts leading from each ventilation fan must be within one main vertical or horizontal zone.

7.44 Where ventilation systems penetrate decks precautions must be taken, in addition to those relating to the fire integrity of the decks required by paragraph 7.27, to reduce the likelihood of smoke and hot gases passing from one between-deck space to another through the system. In addition to the insulation requirements, vertical ducts must be insulated as required by the Tables in Schedules 1 and 2 in Merchant Shipping Notice MSN 1667 as appropriate.

7.45

- (a) Ducts serving a stairway enclosure must be taken from the fan room independently of other ducts in the ventilation system and must not serve any other space.
- (b) In the case of a ship constructed on or after 1st October 1994, carrying more than 36 passengers stairway enclosures must be ventilated and must be served only by an independent fan and duct system which must not serve any other spaces in the ventilation system.

7.46 There must be provided for every control station situated below deck, other than a control station situated in the machinery space, means to ensure ventilation, visibility and freedom from smoke within it so that, in the event of a fire in the ship, the equipment it contains may be operated effectively. Unless a control station is situated on, and has access to, an open deck or is provided with local closing arrangements equally effective to maintain ventilation, visibility and freedom from smoke in the event of a fire in the ship, there must be provided at least two entirely separate means of supplying air to such control stations and the air inlets to these sources of supply must be so situated that the risk of both drawing in smoke simultaneously is, as far as practicable, eliminated.

7.47 Ventilation ducts except those in cargo spaces, must be constructed in accordance with the specifications set out in Schedule 3 in Merchant Shipping Notice MSN 1667.

### ***Additional requirements for a ship constructed on or after 1st January 1994***

7.48 Where a public space spans three or more decks by means of permanent openings and contains combustibles (such as furniture) and enclosed spaces (such as shops, offices and restaurants), the space must be equipped with a smoke extraction system; and—

- (a) the smoke extraction system must—
  - (i) be activated by operation of the smoke detection system complying with the requirements of Schedule 6 in Merchant Shipping Notice MSN 1666 ; and
  - (ii) be capable of being manually controlled; and
- (b) the size of the fan or fans must be such that the entire volume within the space can be exhausted in not more than 10 minutes.

7.49 The following arrangements must be tested in accordance with the Fire Test Procedures Code:

- (a) fire dampers, including relevant means of operation; and
- (b) duct penetrations through “A” Class divisions, except where steel sleeves are directly joined to ventilation ducts by means of riveted or screwed flanges or by welding.

### **Windows and sidescuttles**

7.50 All windows and sidescuttles in bulkheads within accommodation and service spaces and control stations other than those to which paragraphs 7.34 or 7.41 apply, must be constructed so as to preserve the integrity requirements of the type of bulkheads in which they are fitted.

7.51 Notwithstanding the requirements of the Tables set out in Schedules 1 and 2 in Merchant Shipping Notice MSN 1667 as appropriate the following apply—

- (a) all windows and sidescuttles in bulkheads separating accommodation and service spaces and control stations from weather must be constructed with frames of steel or other suitable materials; the glass must be retained by a metal glazing bead or angle; and
- (b) except in the case of ships built on or after 1st October 1994 carrying more than 36 passengers, the fire integrity of windows facing open or enclosed lifeboat and liferaft embarkation areas and of windows situated below such areas in such a position that their failure during a fire would impede the launching of, or embarkation into, lifeboats or liferafts must be such that any potential fire hazard is kept to a minimum.

7.52 In the case of a ship constructed on or after 1st October 1994, carrying more than 36 passengers, windows facing life-saving appliances, lifeboat and liferaft embarkation and muster areas, external stairs and open decks used for escape routes, and windows situated below liferaft and escape slide embarkation areas must have fire integrity as required in Table 5 of Schedule 1 in Merchant Shipping Notice MSN 1667. Where automatic sprinkler heads or water mist nozzles are provided for such windows, and where windows are located in the ship's side below the lifeboat embarkation areas they must have fire integrity at least to “A-0” Standard.

### **Restriction of combustible materials**

7.53 The following surfaces must have low flame spread

- (a) exposed surfaces in corridors and stairway enclosures; and
- (b) within all accommodation spaces, service spaces and control stations—
  - (i) bulkheads, wall and ceiling linings; and
  - (ii) concealed or inaccessible spaces.

7.54 Within accommodation spaces, service spaces and control stations the following apply—

- (a) the total volume of combustible facings, mouldings, decorations and veneers must not exceed a volume equivalent to 2.5 millimetres of veneer on the combined area of walls and

ceilings; in the case of ships fitted with an automatic sprinkler or water mist, fire alarm and fire detection system complying with the provisions of Schedule 1 in Merchant Shipping Notice MSN 1666 the above volume may include some combustible material used for the erection of "C" Class divisions;

- (b) veneers used on surfaces and linings to which paragraph 7.53 applies must not have a gross calorific potential exceeding 45 megajoules per square metre of surface area for the thickness used as measured in accordance with the method specified in International Standard ISO 1716–1973 (E), as may be amended.
- (c) furniture in the corridors and stairway enclosures must be kept to a minimum;
- (d) primary deck coverings, if used within accommodation or service spaces or control stations, must be of an approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures; in the case of ships constructed on or after 1st July 1998 this must be determined in accordance with the Fire Test Procedures Code; and
- (e) waste paper receptacles must be constructed of non-combustible materials and with solid sides and bottoms.

7.55 Within accommodation spaces, service spaces, control stations and machinery spaces the following apply—

- (a) all ceilings, linings, grounds, draught stops and insulating materials must be of non-combustible materials except in respect of—
  - (i) mail rooms and baggage rooms;
  - (ii) materials used to insulate refrigerated compartments;
  - (iii) materials used to insulate pipe fittings for cold service systems, provided their exposed surfaces have low flame spread and, in the case of ships constructed before 1st July 1998, have qualities of resistance to the propagation of flame to the satisfaction of the Secretary of State; and
  - (iv) vapour barriers and adhesives used in conjunction with insulating materials, provided that their exposed surfaces have low flame spread and, in the case of ships constructed before 1st July 1998, have qualities of resistance to the propagation of flame to the satisfaction of the Secretary of State; and
  - (v) linings, ceilings and partial bulkheads or decks used to screen or to separate adjacent cabin balconies must be of non-combustible materials.
- (b) paints, varnishes and other finishes used on exposed interior surfaces and exposed surfaces on cabin balconies, except for natural hard wood decking systems, must not be capable of producing excessive quantities of smoke and toxic products; and, in the case of ships constructed on or after 1st July 1998, this must be determined in accordance with the Fire Test Procedures Code.
  - (i) furniture and furnishings on cabin balconies on passenger ships must be of restricted fire risk unless such balconies are protected by a fixed pressure water-spraying and fixed fire detection and fire alarm systems complying with the Fire Safety Systems Code.

### **Miscellaneous items of fire protection**



7.56 The following requirements apply to all parts of the ship—

- (a) any pipe which penetrates an “A” Class division or “B” Class division must be of suitable material having regard to the temperature such divisions are required to withstand;
- (b) pipes intended for oil or other flammable liquids must be of suitable material having regard to the risk of fire;
- (c) overboard scuppers, sanitary discharges or other outlets close to or below the waterline must not be of a material likely to fail in the event of fire and thereby give rise to a danger of flooding; and
- (d) in spaces where penetration of oil products is possible the exposed surface of insulation must be impervious to oil or oil vapours.

7.57 The following requirements apply to the accommodation spaces, service spaces, and control stations—

- (a) every air space enclosed behind a ceiling, panel or lining, must be divided longitudinally and transversely by close fitting draught stops which must be spaced not more than 14 metres apart and must be closed at each deck;
- (b) except in spaces which afford no substantial fire risk (such as void spaces or sanitary spaces), every ceiling and lining must be so constructed as to enable a fire patrol to detect any smoke originating in a concealed or inaccessible space without impairing the efficiency of the fire protection of the ship;
- (c) electric space heaters must be fixed in position and must be so constructed as to reduce risk of fire to a minimum; no such heater must be fitted with an element so exposed that clothing, curtains or similar materials can be scorched or set on fire by heat from the element;
- (d) cellulose-nitrate film must not be used for cinematograph installations.

### **Automatic sprinkler or water mist, fire detection and fire alarm system or fixed fire detection and fire alarm system**

#### **Requirements for a ship constructed on or after 25th May 1980**

7.58 Except in spaces which afford no substantial fire risk (such as void spaces or sanitary spaces), in every ship there must be installed in all accommodation spaces, service spaces and control stations throughout each separate main vertical zone or, if a main vertical zone is divided horizontally in accordance with paragraph 7.12 into parts, throughout each part vertical zone either—

- (a)
  - (i) an automatic sprinkler or water mist, fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 1 in Merchant Shipping Notice MSN 1666 and so arranged as to protect all such spaces in the ship; or

- (ii) a fixed fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 5 in Merchant Shipping Notice MSN 1666 and so arranged as to detect the presence or the signs of a fire and its location in any such spaces.

#### **Additional requirements for a ship constructed on or after 1st July 1986**

7.59 Except in spaces which afford no substantial fire risk (such as void spaces or sanitary spaces), in a ship constructed on or after 1st July 1986 complying with paragraph 6.58(a)(i) there must be installed in addition a fixed fire detection and fire alarm system of an approved type complying with the requirements of Schedule 5 in Merchant Shipping Notice MSN 1666 arranged so as to provide smoke detection in corridors, stairways and escape routes within the accommodation spaces.

#### **Additional requirements for a ship constructed on or after 1st January 1994**

7.60 In a ship constructed on or after 1st January 1994, where a public space spans three or more decks by means of permanent openings and contains combustibles (such as furniture) and enclosed spaces (such as shops, offices and restaurants), the entire main vertical zone containing the space must be protected throughout with an automatic sprinkler or water mist, fire detection and fire alarm system complying with the requirements specified in Schedule 1 in Merchant Shipping Notice MSN 1666.

#### **Ships Constructed before 1st October 1994**

7.61 Except in spaces which afford no substantial fire risk (such as void spaces or sanitary spaces), in every ship constructed on or after 1st October 1997, every ship constructed before 1st October 1994 carrying more than 36 passengers must be equipped in all accommodation and service spaces, stairway enclosures and corridors with a fixed fire detection and fire alarm system of an approved type and complying with the requirements of Schedule 5 in Merchant Shipping Notice MSN 1666 so installed and arranged as to provide smoke detection in such spaces. Such systems need not be fitted in private bathrooms, and spaces having little or no fire risks such as voids and similar spaces. Detectors operated by heat instead of smoke must be installed in galleys.

7.62

- (a) Except in spaces which afford no substantial fire risk (such as void spaces or sanitary spaces), in every ship constructed before 1st October 1994 carrying more than 36 passengers there must be installed in all accommodation and service spaces, stairway enclosures and corridors so as to protect such spaces, an automatic sprinkler or water mist, fire detection and fire alarm system of an approved type complying with the requirements of Schedule 1 in Merchant Shipping Notice MSN 1666.

#### **Ships Constructed on or after 1st October 1994**

- (b) Except in spaces which afford no substantial fire risk (such as void spaces or sanitary spaces), in every ship constructed on or after 1st October 1994 carrying more than 36 passengers there must be installed in all service spaces, control stations and accommodation spaces including corridors and stairways so as to protect such spaces, an automatic sprinkler or water mist, fire detection and fire alarm system of an approved type complying with the requirements of Schedule 1 in Merchant Shipping Notice MSN 1666 and so as to provide smoke detection, a fixed fire detection and fire alarm system complying with the requirements of Schedule 5 in Merchant Shipping Notice MSN 1666. Smoke detectors need not be fitted in

private bathrooms and galleys. Spaces having little or no fire risk such as voids, public toilets and similar spaces need not be fitted with such automatic sprinkler or water mist system or fixed fire detection and alarm system. Control stations where water may cause damage to essential equipment may be fitted with an approved fixed fire-extinguishing system of another type.

### **Protection of special category spaces and ro-ro cargo spaces**

7.63 The following requirements apply to special category spaces and ro-ro cargo spaces whether above or below the bulkhead deck—

- (a) if it is not practicable to divide such spaces into main vertical zones, equivalent protection must be obtained by dividing such spaces into horizontal zones; such a horizontal zone for the purpose of these requirements may include special category spaces or ro-ro cargo spaces on more than one deck provided that the total overall clear height for vehicles does not exceed 10 metres; the bulkheads and decks forming the boundaries of such a horizontal zone must be insulated respectively—
  - (i) in the case of ships carrying more than 36 passengers constructed before 1st October 1994, as required for Category 11 spaces in Tables 1 and 3 of Schedule 1 in Merchant Shipping Notice MSN 1667;
  - (ii) in ships constructed on or after 1st October 1994 carrying more than 36 passengers, the boundary bulkheads and decks must be insulated to “A-60” standard. However when a space classified in accordance with Schedule 1 in Merchant Shipping Notice MSN 1667 as Category 5, 9 or 10 is on one side of the division the standard may be reduced to “A-0” and where fuel oil tanks are below a special category space or ro-ro cargo space, the integrity of the deck between such spaces may be reduced to “A-0” standard;
  - (iii) in the case of ships carrying 36 passengers or less as required for Category 11A spaces in Tables 1 and 2 of Schedule 2 in Merchant Shipping Notice MSN 1667;
- (b) the requirements of paragraphs 7.27 – 7.38 and 7.43 – 7.49 for maintaining the integrity of vertical zones must apply to bulkheads and decks forming the boundaries separating horizontal zones from each other and from the remainder of the ship;
- (c) a fixed pressure water-spraying system complying with the requirements specified in Schedule 3 in Merchant Shipping Notice MSN 1666 must be provided;
- (d) indicators must be provided on the navigating bridge which must show when any access fire door in the boundary of a special category space or ro-ro cargo space is closed; and
- (e) the outlet from any exhaust ventilation duct must be sited in a safe position having regard to possible sources of ignition; ventilation ducts, including dampers, must be of steel and arrangements must be provided to permit a rapid shut-down and effective closure of the ventilation system in case of fire and
- (f) in the case of ships constructed on or after 1st July 1998 permanent openings for ventilation in the side plating, the ends or deckhead of special category spaces or ro-ro cargo spaces must be so situated that a fire in the special category space or ro-ro cargo space is not likely to endanger stowage areas or embarkation stations for survival craft or

accommodation spaces, service spaces and control stations in superstructures and deck-houses above the special category spaces or ro-ro cargo spaces.

### **Protection of cargo spaces, other than special category spaces and ro-ro cargo spaces intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion**

7.64 In every ship the following requirements apply to any cargo space, other than a special category space or ro-ro cargo space containing motor vehicles with fuel in their tanks for their own propulsion—

- (a) a fixed fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 5 or a sample extraction smoke detection system complying with Schedule 6 in Merchant Shipping Notice MSN 1666 must be provided;
- (b) a fixed pressure water-spraying system complying with the requirements specified in Schedule 3 in Merchant Shipping Notice MSN 1666 or a fixed gas fire-extinguishing system complying with the requirements specified in Schedule 4 in Merchant Shipping Notice MSN 1666 must be provided; and
- (c) the outlet from any exhaust ventilation duct must be sited in a safe position having regard to possible sources of ignition; ventilation ducts, including dampers, must be of steel; and
- (d) in the case of ships constructed on or after 1st July 1998, permanent openings for ventilation in the side plating, the ends or deckhead of cargo spaces must be so situated that a fire in the cargo space is not likely to endanger stowage areas or embarkation stations for survival craft, or accommodation spaces, service spaces or control stations in superstructures and deckhouses above the cargo spaces.

### **Special arrangements in machinery spaces**

7.65 The following requirements apply to machinery spaces—

- (a) the number of openings to machinery spaces must be the minimum compatible with the proper working of the ship;
- (b) windows must not be fitted in machinery space boundaries;
- (c) doors in the boundaries of machinery spaces of Category A, other than watertight doors and the fire-screen door referred to in paragraph (d), must be arranged so that the closure of the door will be assured in the event of fire in the space; and the doors must be provided with closing arrangements which either comply with the requirements of paragraph 7.34 as it applies to ships constructed before 1st October 1994 or are provided with power-operated closing arrangements operable from the control position required by paragraph 6.37 and
- (d) any machinery space of Category A which is accessible from an adjacent shaft tunnel must be provided with a lightweight steel fire-screen door in addition to any watertight door; the fire-screen door must be operable from each side and must be located at the shaft tunnel side of the bulkhead.

### **Means of escape**

7.66 Every ship must be provided with doorways, stairways, ladderways and other ways to provide readily accessible means of escape to the lifeboat and liferaft embarkation decks for all persons in the ship from accommodation spaces, service spaces and other spaces in which the crew is normally employed, other than machinery spaces. The means of escape must be so designed and constructed as to be capable of being easily used by the persons for whom they are intended. The number, width and continuity of such means of escape must be sufficient, having regard to the number of persons by whom they may be used.

7.67 Notwithstanding the generality of paragraph 7.66, in every ship the following must be complied with—

- (a) there must be provided below the bulkhead deck at least two means of escape from each watertight compartment or from each similarly restricted space or group of spaces; at least one of the means of escape provided from each such compartment or from each such space or group of spaces must be independent of watertight doors; one of the means of escape may be dispensed with, in an exceptional case, having regard to the nature and location of spaces and to the number of persons who normally might be employed or, except in case of a ship constructed on or after 1st October 1994 accommodated there. Where one of the means of escape is dispensed with, the sole means of escape must provide satisfactory safe escape, provided that in a ship constructed on or after 1st October 1994 the clear width of stairways in such escapes may be less than 900 millimetres but must not be less than 800 millimetres, with handrails on both sides;
- (b) there must be provided above the bulkhead deck at least two means of escape from each space bounded by main vertical zone bulkheads or from each similarly restricted space or group of spaces;
- (c)
  - (i) in the case of a ship constructed before 1st October 1994, at least one of the means of escape required by sub-paragraphs (a) and (b) must be by means of a readily accessible enclosed stairway, which must provide continuous fire shelter from the level of its origin to the appropriate lifeboat and liferaft embarkation decks or the highest level served by the stairway, whichever level is the highest; however, where only one means of escape is permitted for the purpose of compliance with sub-paragraph (a), the sole means of escape must provide satisfactory safe escape;
  - (ii) in the case of a ship constructed on or after 1st October 1994 at least one of the means of escape required by sub-paragraphs (a) and (b) must consist of a readily accessible enclosed stairway, which must provide continuous fire shelter from the level of its origin to the appropriate lifeboat and liferaft embarkation decks, or to the uppermost weather deck if the embarkation deck does not extend to the main vertical zone being considered. In the latter case, direct access to the embarkation deck by way of external open stairways and passageways must be provided and must have emergency lighting in accordance with SOLAS II-1 Reg 42-1 and slip-free surfaces underfoot. In such ships boundaries facing external open stairways and passageways forming part of an escape route and boundaries in such a position that their failure during a fire would impede escape to the embarkation deck must have fire integrity, including insulation values, in accordance with the appropriate Tables in paragraphs 7.16 – 7.18. In such ships the widths, number and continuity of escapes are as follows—

- (aa) stairways must not be less than 900 millimetres in clear width. Stairways must be fitted with handrails on each side. The minimum clear width of stairways must be increased by 10 millimetres for every one person provided for in excess of 90 persons. The maximum clear width between handrails where stairways are wider than 900 millimetres must be 1,800 millimetres. The total number of persons to be evacuated by such stairways must be assumed to be two thirds of the crew and the total number of passengers in the areas served by such stairways. The width of the stairways must conform to standards not inferior to those set out in IMO resolution A757(18);
  - (bb) all stairways sized for more than 90 persons must be aligned fore and aft;
  - (cc) doorways and corridors and intermediate landings included in means of escape must be sized in the same manner as stairways;
  - (dd) stairways must not exceed 3.5 metres in vertical rise without the provision of a landing and must not have an angle of inclination greater than 45°;
  - (ee) landings at each deck must be not less than 2 square metres in area and must increase by 1 square metre for every 10 persons provided for in excess of 20 persons but need not exceed 16 square metres, except for those landings servicing public spaces having direct access onto the stairway enclosure;
- (d) satisfactory protection of access from the stairway enclosures to the lifeboat and liferaft embarkation areas must be provided;
  - (e) lifts must not be considered as forming one of the required means of escape;
  - (f) stairways serving only a space and a balcony in that space must not be considered as forming one of the required means of escape;
  - (g) if a radio office has no direct access to a weather deck, two means of escape must be provided from the office; one of these escapes to be an opening type window or sidescuttle of sufficient size, subject to the approval of the Secretary of State in accordance with the 2023 Regulations;
  - (h) dead-end corridors must not be permitted to exceed 7 metres in ships carrying not more than 36 passengers and 13 metres in ships carrying more than 36 passengers; and in ships constructed on or after 1st October 1994 they are prohibited. For the purpose of this sub-paragraph a dead-end corridor is a corridor, or part of a corridor from which there is only one escape route;
  - (i) in special category spaces and ro-ro cargo spaces the number and disposition of the means of escape both below and above the bulkhead deck must be adequate, and, in general, the safety of access to the lifeboat and liferaft embarkation decks must be at least equivalent to that required by sub-paragraphs (a), (b), (c), (d) and (e).

7.68 In every ship the means of escape from any public room which may be used for the purpose of concerts, cinema shows and similar forms of entertainment must be adequate, having regard to the number of persons who may be in the audience, and the seating must be arranged in rows to ensure free access to the exits. When in any such public room subdued lighting is used, the exits must be clearly marked with illuminated signs and any doors must be constructed to open outwards.

7.69 In every ship suitable signs must be displayed in passageways and stairways indicating the direction of escape to passenger assembly stations. Such signs must be continuously illuminated and must be adequate in number and distribution. They must be capable of being illuminated by the ship's emergency lighting system.

7.70 In the machinery spaces in every ship there must be provided from each machinery space two means of escape in compliance with the following requirements—

- (a) where the space is below the bulkhead deck the two means of escape must consist of either—
  - (i) 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 access is provided to the appropriate lifeboat and liferaft embarkation decks; one of these ladders must be provided with continuous fire shelter from the lower part of the space to a safe position outside the space; or
  - (ii) one steel ladder leading to a door in the upper part of the space from which access is provided to such 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 a safe escape route to the lifeboat and liferaft embarkation deck;
  
- (b) where the space is above the bulkhead deck, the two means of escape must be as widely separated as possible and the doors leading from such means of escape must be in a position from which access is provided to the appropriate lifeboat and liferaft embarkation decks; where such escapes require the use of ladders these must be of steel;
  
- (c) in a ship of less than 1,000 tons, one of the means of escape required by this paragraph may be dispensed with having regard to the width and disposition of the upper part of the machinery space, subject to the approval of the Secretary of State in accordance with the 2023 Regulations; in a ship of 1,000 tons or over one of the means of escape required by this paragraph may be dispensed with provided that either a door or a steel ladder provides a safe escape route to the embarkation deck having regard to the nature and location of the space and whether persons are normally employed in that space; and
  
- (d) in the case of ships constructed on or after 1st October 1994, two means of escape must be provided from a machinery control room located within a machinery space, at least one of which will provide continuous fire shelter to a safe position outside the machinery space.

7.71 In every ship one of the means of escape from the machinery spaces where the crew is normally employed must avoid access to any special category space or ro-ro cargo spaces.

7.72 In the case of ships carrying more than 36 passengers—

- (a) the means of escape including stairways and exits must be marked, at all points of the escape route including angles and intersections, by lighting or photo-luminescent strip indicators placed not more than 0.3 metres above the deck. The marking must enable passengers [and crew] to identify all routes of escape and readily identify the escape exits;
  
- (b) if electric illumination is used, it must be supplied by the emergency source of power and it must be so arranged that the failure of any single light, or cut in a lighting strip, will not result in the marking being ineffective;

- (c) additionally, all escape route signs and fire equipment location markings must be of photoluminescent material or marked by lighting;
- (d) such lighting and photoluminescent material must comply with guidelines set out in IMO Resolution A752(18);
- (e) the requirements of these sub-paragraphs are in addition to the emergency lighting required by SOLAS II-1 Reg 42-1; and

***Additional requirement for a ship constructed on or after 1st January 1994***

7.73 Where a ship constructed on or after 1st January 1994 has a public space spanning three or more decks by means of permanent openings and containing combustibles (such as furniture) and enclosed spaces (such as shops, offices and restaurants)—

- (a) each level within the space must have two means of escape; and
- (b) one of those means of escape must give direct access to an enclosed vertical means of escape meeting the requirements of paragraph 7.67(c) for a readily accessible enclosed stairway.

***Additional requirements for ro-ro passenger ships***

7.74

- (a) Ro-ro passenger ships must comply with subparagraphs (b) to (h) of this paragraph:

(a)

- (i) Handrails or suitable handholds must be provided in all corridors along the entire escape route to the assembly and embarkation stations so that a firm handhold is available, where practicable, every step of the way.

- (ii) Such fittings must be provided on both sides of corridors exceeding, in the case of side to side corridors, 1 m in width and in the case of forward to aft corridors, 1.8 m in width.

- (iii) Suitable means must be provided to assist the crossing of lobbies, atria and other large open spaces on such escape routes with the ship at large angles of heel or trim.

- (iv) Handrails must be capable of supporting a distributed load of 750 N/m acting horizontally towards the vertical mid plane of the corridor, and acting vertically downwards, with the ship upright. The two loads need not be supported simultaneously.

(b)

- (i) In public spaces and along escape routes deck coverings and furniture, including cabinets but excluding portable tables and chairs, must be securely fixed.

- (ii) Except when the ship is secured in her berth, and so far as practicable passengers are not aboard, escape routes must be kept clear of obstructions such as cleaning carts, bedding, luggage and boxed goods.

- (c) Escape routes from normally occupied spaces to assembly stations must be as direct as practicable, and must be marked with signs in accordance with IMO Resolution A.760(18) as amended by MSC Resolution 82(70).



(d) Openings from enclosed spaces to weather decks must where practicable be of a type suitable for use as emergency exits.

(e)

(i) Decks must be sequentially numbered commencing with deck one which must be the lowest or tank top level.

(ii) Deck numbers must be displayed in prominent and continuously illuminated positions at stair landings and lift lobbies.

(iii) Where decks are also named, the deck number must be displayed with the name.

(f)

(i) Diagrammatic plans showing escape routes must be prominently exhibited in public spaces and on the inside of each cabin or stateroom door where any person is accommodated.

(ii) Such plans must be as far as practicable correctly oriented with respect to their viewing position and such position must be indicated on each plan in relation to the escape routes.

(g) The doors of cabins and staterooms where any person is accommodated and all doors in escape routes must not require the use of keys or similar devices to open them when moving in the direction of escape.

#### 7.75

(a) This paragraph applies to ro-ro passenger ships constructed on or after 1st July 1997.

(b) The lowest 0.5 metre of any bulkhead, lining or partition adjacent to an escape route must be capable of supporting a loading of 1500 Pa acting perpendicular to the plane of the bulkhead, lining or partition.

(c) It must not be necessary to climb more than two decks up or down in order to reach an assembly station or open deck from any passenger space, neither must it be necessary to cross from one side of the ship to the other to attain an escape route.

(d) From open decks provided in compliance with sub paragraph (c) of this paragraph, external open routes must be provided to the appropriate lifeboat and liferaft embarkation areas.

7.76 An evacuation analysis demonstrating compliance with paragraph 7.66 must be produced for ro-ro passenger ships constructed on or after 1st July 1999. Such analysis must—

(a) be carried out concurrently with the design of the vessel;

(b) identify and as far as practicable eliminate congestion arising due to the intended movement of passengers and crew along escape routes during mustering and embarkation into lifeboats and liferafts;

(c) demonstrate that escape routes can reasonably accommodate the loss of any route, assembly station, embarkation station, evacuation system, lifeboat or liferaft as a result of a casualty.

## SECTION 8

### Structural Fire Protection

**Ships of Classes VII, VII(A), VIII, VIII(A), IX and IX(A) and Tankers of Classes VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 Tons or over**

#### Application

This section applies to cargo ships of ships of Classes VII, VII(A), VIII, VIII(A), IX and IX(A) and tankers of Classes VII(T), VIII(A)(T) and IX(A)(T) of 500 tons or over.

#### Structure

8.1 Paragraphs 7.3 - 7.4 apply to ships to which this section applies as it applies to ships to which section 7 applies.

#### Helicopter decks

8.2 Paragraphs 7.5 – 7.9 apply to ships to which this section applies as it applies to ships to which section 7 applies.

#### Methods of fire protection

8.3 One of the following methods of protection must be adopted in the accommodation and service spaces—

- (a) Method IC—The construction of all internal divisional bulkheading must be of non-combustible “B” Class divisions or “C” Class divisions without the installation of an automatic sprinkler or water mist, fire detection and fire alarm system in the accommodation and service spaces, except as required by paragraphs 8.43 - 8.45; or
- (b) Method IIC—An automatic sprinkler or water mist, fire detection and fire alarm system as required by paragraphs 8.43 - 8.45 must be fitted in all spaces in which fire might be expected to originate with no restriction on the type of internal divisional bulk-heading; or
- (c) Method IIIC—A fixed fire detection and fire alarm system, as required by paragraphs 8.43 - 8.45 must be fitted in all spaces in which a fire might be expected to originate with no restriction on the type of internal divisional bulkheading, except that in no case must the area of any accommodation space or spaces bounded by continuous “A” Class divisions and/or “B” Class divisions exceed 50 square metres subject to the requirements of paragraph 8.7.

#### Bulkheads within accommodation spaces, services spaces and control stations

8.4 All bulkheads which are required to be “B” Class divisions must extend from deck to deck and to the shell or other boundaries, unless continuous “B” Class ceilings and/or linings are fitted

on both sides of the bulkhead in which case the bulkhead may terminate at the continuous ceiling and/or lining.

8.5 In ships where Method IC is adopted all bulkheads which are not required to be either "A" Class divisions or "B" Class divisions, must be "C" Class divisions.

8.6 In ships where Method IIC is adopted there is no restriction on the construction of bulkheads which are not required to be "A" Class divisions or "B" Class divisions except where "C" Class bulkheads are required in accordance with Table 1 in Schedule 1 in Merchant Shipping Notice MSN 1668.

8.7 In ships where Method IIIC is adopted there is no restriction on the construction of bulkheads which are not required to be "A" Class divisions or "B" Class divisions except where "C" Class bulkheads are required in accordance with Table 1 in Schedule 1 in Merchant Shipping Notice MSN 1668. In no case must the area of any accommodation space or spaces bounded by continuous "A" Class divisions and/or "B" Class divisions exceed 50 square metres provided that this area may be exceeded in public spaces.

### **Fire integrity of bulkheads and decks**

8.8 In addition to complying with the specific requirements for fire integrity of bulkheads and decks referred to elsewhere in this section, the minimum fire integrity of bulkheads and decks must be as prescribed in Schedule 1 of Merchant Shipping Notice MSN 1668.

### **Protection of stairways and lifts in accommodation and service spaces**

8.9 Every stairway within accommodation spaces, service spaces and control stations must be constructed of steel unless the Secretary of State has given approval for the use of other equivalent material under the 2023 Regulations. Every such stairway and lift must lie respectively within an enclosure or trunk constructed of "A" Class divisions of "A-0" standard except that an isolated stairway serving only two decks must only be required to be enclosed at one level by either "A" Class divisions of "A-0" standard: or "B" Class divisions of "B-0" standard; provided that the fire integrity of any bulkhead which separates a stairway from either a machinery space of Category A or a ro-ro cargo space must be determined by reference to Table 1 of Schedule 1 in Merchant Shipping Notice MSN 1668.

(a) On ships having accommodation for 12 persons or less, where stairways penetrate more than a single deck and where there are at least two escape routes direct to the open deck at every accommodation level, the "A-0" standard in paragraph 7.9 may be reduced to "B-0" standard.

8.10 Every opening in a stairway enclosure and lift trunk must be provided with a means of closure which must be permanently attached thereto and which must comply with the requirements of paragraphs 8.11 – 8.18 or 8.19 – 8.23, whichever is applicable.

### **Openings in "A" Class divisions**

8.11 Where an “A” Class division is pierced for the passage of electric cables, pipes, trunks, girders, or beams or for other purposes, the arrangements must be such that the effectiveness of the division in resisting fire is not thereby impaired.

8.12 The construction of all doors and frames in “A” Class bulkheads, with the means of securing the doors when closed, must provide resistance to fire as well as to the passage of smoke and flame, as far as is reasonably practicable, equivalent to that of the bulkheads in which the doors are situated this being determined in accordance with the Fire Test Procedures Code. Such doors and door frames shall be constructed of steel or other equivalent material. Doors approved without the sill being part of the frame, which are installed on or after 1 July 2010, shall be installed such that the gap under the door does not exceed 12 mm. A non-combustible sill shall be installed under the door such that floor coverings do not extend beneath the closed door.

8.13 Every door in an “A” Class bulkhead must be so constructed that it can be opened and closed by one person from either side of the division.

8.14 Every door in an “A” Class bulkhead which forms part of a stairway enclosure or lift trunk serving accommodation spaces, service spaces or control stations and every door in a casing of a machinery space of Category A must be self-closing.

8.15 Hold-back arrangements may be fitted to doors to which paragraph 8.14 refers provided that such arrangements—

- (a) have remote release fittings of a type which in the event of disruption of the control system will automatically close the doors; and
- (b) will permit each door to be closed manually.

8.16 Doors fitted in boundary bulkheads of machinery spaces of Category A must be reasonably gastight and self-closing.

8.17 Watertight doors need not be insulated.

8.18 Where ventilation ducts pass through “A” Class divisions the requirements of Schedule 3 in Merchant Shipping Notice MSN 1668 must apply.

### **Openings in “B” Class divisions**

8.19 Where a “B” Class division is pierced for the passage of electric cables, pipes, trunks, girders, or beams, or for other purposes, the arrangements must be such that the effectiveness of the division in resisting fire is not thereby impaired.

8.20 The construction of all doors and door frames in “B” Class bulkheads must provide resistance to fire as well as the passage of flame, as far as is reasonably practicable, equivalent to that of the bulkheads in which the doors are situated, this being determined in accordance with the Fire Test Procedures Code except that ventilation openings may be permitted in the lower portion of such doors. this being determined in accordance with the Fire Test Procedures Code except that ventilation openings may be permitted in the lower portion of such doors

8.21 The number of ventilation openings in “B” Class divisions must be kept to a minimum; such openings must generally be provided only in the lower part doors or by utilising gaps under doors. Openings in doors must be provided with a grille made from non-combustible material. Openings must not be provided in a “B” Class division forming a stairway enclosure. The net

area of any such opening or openings must not exceed 0.05 square metre and in no case must a gap under a door exceed 25 millimetres. The grille must be capable of being manually closed from each side of the door.

8.22 Every door in a “B” Class bulkhead which forms a stairway enclosure or part thereof must be self-closing.

8.23 Hold-back arrangements may be fitted to doors to which paragraph 8.22 refers provided that such arrangements—

- (a) have remote release fittings of a type which in the event of disruption of the control system will automatically close the doors; and
- (b) will permit each door to be closed manually.

### **Ventilation systems**

8.24 Where ventilation systems penetrate decks, precautions must be taken, in addition to those relating to the fire integrity of the decks required by paragraph 8.11 – 8.18, to reduce the likelihood of smoke and hot gases passing from one between-deck space to another through the system. In addition to the insulation requirements, vertical ducts must be insulated as required by the Tables in Schedule 1 in Merchant Shipping Notice MSN 1668.

8.25 Ducts serving a stairway enclosure must be taken from the fan room independently of other ducts in the ventilation system and must not serve any other space.

8.26 There must be provided for every control station situated below deck, other than a control station in the machinery space, means to ensure ventilation, visibility and freedom from smoke within it so that in the event of a fire in the ship, the equipment it contains may be operated effectively. Unless the control station is situated on, and has access to, an open deck or is provided with local closing arrangements equally effective to maintain ventilation, visibility and freedom from smoke in the event of a fire in the ship, there must be provided at least two entirely separate means of supplying air to such control stations and the air inlets to these sources of supply must be so situated that the risk of both drawing in smoke simultaneously is, as far as practicable, eliminated.

8.27 Ventilation ducts except those in cargo spaces, must be constructed in accordance with the specifications set out in Schedule 3 in Merchant Shipping Notice MSN 1668.

8.28 The following arrangements must be tested in accordance with the Fire Test Procedures Code:

- (a) fire dampers, including relevant means of operation; and
- (b) duct penetrations through “A” Class divisions, except where steel sleeves are directly joined to ventilation ducts by means of riveted or screwed flanges or by welding.

### **Details of construction**

8.29 Where Method IC is adopted ceilings, linings, draught stops and their associated grounds in accommodation and service spaces and control stations must be non-combustible.

8.30 Where Method IIC or Method IIIC is adopted ceilings, linings, draught stops and their associated grounds in corridors and stairway enclosures serving accommodation and service spaces and control stations must be non-combustible.

### **Restriction of combustible materials**

8.31 All exposed surfaces in corridors and stairway enclosures and surfaces in concealed or inaccessible spaces within accommodation or service spaces or control stations must have low flame spread and, in the case of ships constructed before 1st July 1998, must have qualities of resistance to the propagation of flame to the satisfaction of the Secretary of State.

8.32 Primary deck coverings, if applied within accommodation or service spaces or control stations, must be of an approved material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures; in the case of ships constructed on or after 1st July 1998, this must be determined in accordance with the Fire Test Procedures Code.

8.33 Paints, varnishes and other finishes used on exposed surfaces within accommodation and service spaces, control stations and machinery spaces must not contain nitrocellulose or other highly flammable base products and must not be capable of producing excessive quantities of smoke. Such surfaces, in the case of ships constructed before 1st July 1998, must have qualities of resistance to the propagation of flame to the satisfaction of the Secretary of State and, in the case of ships constructed on or after 1st July 1998, must not be capable of producing excessive quantities of smoke or toxic products, this being determined in accordance with the Fire Test Procedures Code.

8.34

- (a) Insulating materials must be of non-combustible materials except in respect of—
  - (i) cargo spaces;
  - (ii) materials used to insulate refrigerated compartments;
  - (iii) materials used to insulate pipe fittings for cold service systems, provided that their exposed surfaces have low flame spread or, in the case of ships constructed before 1st July 1998, have qualities of resistance to the propagation of flame to the satisfaction of the Secretary of State; and
  - (iv) vapour barriers and adhesives used in conjunction with insulating materials provided that their exposed surfaces have low flame spread or, in the case of ships constructed before 1st July 1998, have qualities of resistance to the propagation of flame to the satisfaction of the Secretary of State.
  
- (b) In a ship constructed before 1st February 1992, a non-combustible bulkhead, lining or ceiling fitted in an accommodation or service space may have a combustible veneer which—
  - (i) in corridors, stairway enclosures and control stations, does not exceed 1.5 millimetres in thickness;
  - (ii) in any other accommodation or service space, does not exceed 2.0 millimetres in thickness.
  
- (c) In a ship constructed on or after 1st February 1992—

- (i) the total volume of combustible facings, mouldings, decorations and veneers in any accommodation or service space bounded by non-combustible bulkheads, ceilings and linings must not exceed a volume equivalent to a 2.5 millimetre veneer on the combined area of the walls and ceilings;
- (ii) a non-combustible bulkhead, lining or ceiling fitted in an accommodation or service space may have a combustible veneer with a gross calorific potential not exceeding 45 megajoules per square metre of surface area for the thickness used (as measured in accordance with the method specified in International Standard ISO 1716–1973(E), as may be amended).

### **Miscellaneous items of fire protection**

8.35 Any pipe which penetrates an “A” Class division or “B” Class division must be of suitable material having regard to the temperature such divisions are required to withstand.

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

8.37 Overboard scuppers, sanitary discharges or other outlets close to or below the waterline must not be of a material likely to fail in the event of fire and thereby give rise to danger of flooding.

8.38 Electric space heaters must be fixed in position and must be so constructed as to reduce the risk of fire to a minimum. No such heater must be constructed with an element so exposed that clothing, curtains or other material can be scorched or set on fire by heat from the element.

8.39 Cellulose-nitrate film must not be used in cinematograph installations.

8.40 All waste-paper receptacles must be constructed of non-combustible materials with solid sides and bottoms.

8.41 In spaces where penetration of oil products is possible, the exposed surface of insulation materials must be impervious to oil or oil vapours.

8.42 Every air space enclosed behind a ceiling, panel or lining within accommodation spaces, service spaces and control stations must be divided by close fitting draught stops which must be spaced not more than 14 metres apart and which must be closed at each deck.

### **Fixed fire detection and fire alarm system, and automatic sprinkler or water mist, fire detection and fire alarm system**

8.43 In ships in which Method IC is adopted, a fixed fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 5 in Merchant Shipping Notice MSN 1666 must be so installed and arranged as to provide smoke detection and manually-operated call points in all corridors, stairways and escape routes within accommodation spaces.

8.44 In ships in which Method IIC is adopted, an automatic sprinkler or water mist, fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 1 in Merchant Shipping Notice MSN 1666 must be so installed and arranged as to protect accommodation spaces, galleys and other service spaces, except spaces which afford no

substantial fire risk such as void spaces and sanitary spaces. In addition, a fixed fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 5 in Merchant Shipping Notice MSN 1666 must be so installed and arranged as to provide smoke detection and manually-operated call points in all corridors, stairways and escape routes within accommodation spaces.

8.45 In ships in which Method IIIC is adopted, a fixed fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 5 in Merchant Shipping Notice MSN 1666 must be so installed and arranged as to detect the presence of fire in all accommodation spaces and service spaces, except spaces which afford no substantial fire risk such as void spaces and sanitary spaces. Notwithstanding the foregoing exception smoke detection and manually-operated call points must be installed in all corridors, stairways and escape routes.

### **Special arrangements in machinery spaces**

8.46 The following requirements must apply to machinery spaces—

- (a) the number of openings to machinery spaces must be the minimum compatible with the proper working of the ship;
- (b) windows must not be fitted in machinery space boundaries;
- (c) any machinery space of Category A which is accessible from an adjacent shaft tunnel must be provided with a light-weight steel fire-screen door in addition to any watertight door; the fire-screen door must be operable from each side and must be located at the shaft tunnel side of the bulkhead.

### **Means of escape**

8.47 In every ship stairways and ladderways must be arranged so as to provide ready means of escape to the lifeboat and liferaft embarkation deck from all accommodation spaces, service spaces and other spaces in which crew are normally employed. In particular the following must be complied with—

- (a) at all levels of accommodation there must be provided at least two widely separated means of escape from each restricted space or group of spaces;
- (b) below the lowest open deck such escapes must be by means of stairways except that one of these stairways may be replaced by a trunked vertical ladder;
- (c) above the lowest open deck the means of escape must be stairways or doors to an open deck or a combination thereof;
- (d) one of the means of escape may be dispensed with in an exceptional case having regard to the nature and location of the space and to the number of persons who normally might be accommodated or employed there;
- (e) no dead-end corridors having a length of more than 7 metres must be permitted; a dead-end corridor is a corridor or part of a corridor from which there is only one escape route;
- (f) the width and continuity of the means of escape must be to the satisfaction of the Secretary of State; and



(g) if a radio office has no direct access to the open deck, two means of escape from such office must be provided; one of these escapes may be an opening type window or sidescuttle of sufficient size.

8.48 In all cargo spaces intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion where the crew is normally employed the number and locations of escape routes to the open deck must be sufficient to provide ready escape for the number of persons involved but must in no case be less than two and must be as widely separated as possible.

8.49 In every ship two means of escape must be provided from each machinery space of Category A. In particular one of the following requirements must be complied with—

(a) 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 access is provided to the lifeboat or liferaft embarkation deck or decks; in general, one of these ladders must provide continuous fire shelter from the lower part of the space to a safe position outside the space; the shelter must be of steel, insulated where necessary, and be provided with a self-closing steel door at the lower end; or

(b) one steel ladder leading to a door in the upper part of the space from which access is provided to the lifeboat or liferaft embarkation deck or decks 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 lifeboat and liferaft embarkation deck.

8.50 In a ship of less than 1,000 gross tonnage, subject to the approval of the Secretary of State in accordance with the 2023 Regulations, one of the means of escape required under paragraph 7.46 (a), (b) or (c) may be dispensed with, due regard being paid to the dimension and disposition of the upper part of the space. In addition, the means of escape from machinery spaces of category A need not comply with the requirement for an enclosed fire shelter. In the steering gear space, a second means of escape must be provided when the emergency steering position is located in that space unless there is direct access to the open deck.

8.51 From machinery spaces other than machinery spaces of Category A, escape routes must be provided having regard to the nature and location of the space and the number of persons normally employed in that space.

8.52 Lifts must not be considered as forming one of the required means of escape.

## **SECTION 9**

### **Structural Fire Protection**

#### **Tankers**

#### **Tankers of Classes VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 Tons or over**

#### **Application**

9.1 Paragraphs 9.2 to 9.25 inclusive apply to tankers of Classes VII(T), VIII(T), VIII(A)(T) and IX(A)(T) of 500 tons or over carrying crude oil and petroleum products having a closed flash-point not exceeding 60°C, and the Reid vapour pressure of which is below that of atmospheric pressure, or other liquids having a similar or additional fire hazard, and to gas carriers, being ships constructed on or after 1st September 1984. Such tankers constructed on or after the 25th May 1980 but before 1st September 1984 must comply with the provisions in Schedule 3 in Merchant Shipping Notice MSN 1670. Such tankers constructed after 26th May 1965 but before 25th May 1980 must comply with the provisions in Schedule 4 in Merchant Shipping Notice MSN 1670.

## **Structure**

9.2 The hull, superstructures, structural bulkheads, decks and deckhouses must be constructed of steel or other equivalent material, except that the crowns and casings of machinery spaces of Category A and the exterior boundaries of superstructures and deckhouses which are required to be insulated to “A-60” standard in compliance with paragraph 9.5 - 9.8 must be constructed only of steel.

9.3 Where any part of the structure is of aluminium alloy, the following requirements must apply—

- (a) the insulation of aluminium alloy components of “A” Class divisions or “B” Class divisions, and supports of such divisions, must be such that the temperature of the structural core does not rise more than 200°C above the ambient temperature at any time during a standard fire test of 60 minutes duration in the case of an “A” Class division and 30 minutes duration in the case of a “B” Class division; and
- (b) the insulation of aluminium alloy components of columns, stanchions and other structural members required to support lifeboat and liferaft stowage, launching and embarkation areas, must be such that the temperature rise limitation specified in sub-paragraph (a) must apply for 60 minutes duration.

## **Helicopter decks**

9.4 Paragraphs 7.5 – 7.9 must apply to every tanker to which this Part applies as it applies to ships to which Part VI applies.

## **Exterior boundaries of superstructures and deckhouses**

9.5 Exterior boundaries of superstructures and deckhouses enclosing accommodation, including any overhanging decks which support such accommodation, must be constructed of steel and insulated to “A-60” standard for the whole of the portions which face the cargo area and on the side portions for a distance of not less than 3 metres from the portions which face the cargo area.

9.6 Entrances, air inlets and openings to accommodation spaces, service spaces and control stations must not face the cargo area. They must be located on the transverse bulkhead not facing the cargo area or on the outboard side of the superstructure or deckhouse at a distance of at least 4 per cent of the length of the ship but not less than 3 metres from the end of the

superstructure or deckhouse facing the cargo area; provided that such distance need not exceed 5 metres.

9.7 No doors must be fitted within the limits specified in paragraph 9.6 unless, and subject to the approval of the Secretary of State in accordance with the 2023 Regulations—

- (a) that space is a cargo control station, provisions room or store room; and
- (b) that space does not have access to any accommodation space, service space or control station.

Where such doors are fitted to a space located aft of the cargo area, the boundaries of the space must be insulated to “A-60” standard, with the exception of the boundary facing the cargo area. Bolted plates for removal of machinery may be fitted within the limits specified in paragraph 9.6. Wheelhouse doors and wheelhouse windows may be located within the limits specified in paragraph 9.6 so long as they are designed to ensure that the wheelhouse can be made rapidly and efficiently gas and vapour tight.

9.8 Windows and sidescuttles facing the cargo area and on the sides of the superstructures and deckhouses within the limits specified in paragraph 9.6 must be of the fixed (non-opening) type. In the case of ships constructed on or after 1st July 1998, such windows and sidescuttles, except wheelhouse windows, must be of “A-60” standard except that “A-0” class standard is acceptable for windows and sidescuttles outside the limit specified in SOLAS II-2 regulation 9.2.4.2.5. In the case of ships constructed before 1st July 1998, such windows and side scuttles in the first tier on the main deck must be fitted with inside covers of steel or equivalent material.

### **Boundary bulkheads and decks of machinery spaces of Category A and cargo pump rooms**

9.9 Windows and sidescuttles must not be fitted in internal or external boundary bulkheads or decks of machinery spaces of Category A and cargo pump rooms, or in skylights to such spaces, except that such windows and sidescuttles may be fitted in a bulkhead between a machinery space of Category A and a machinery control room located within the boundaries of such a space.

9.10 Skylights to machinery spaces of Category A and cargo pump rooms must be capable of being closed and opened from outside the spaces which they serve.

### **Bulkheads within accommodation spaces, service spaces and control stations**

9.11 All bulkheads which are not required to be either “A” Class divisions or “B” Class divisions must be “C” Class divisions.

9.12 All bulkheads required to be “B” Class divisions must extend from deck to deck and to the shell plating or other boundaries, except that where continuous “B” Class ceilings and/or linings are fitted on both sides of the bulkheads the bulkheads may terminate at such ceilings and/or linings.

9.13 All materials used in the construction of “B” Class divisions and “C” Class divisions and doors in “B” Class bulkheads and “C” Class bulkheads must be non-combustible.

## **Fire integrity of bulkheads and decks**

9.14 In addition to complying with the specific requirements for fire integrity of bulkheads and decks referred to elsewhere in this Part the minimum fire integrity of bulkheads and decks must comply with the requirements of Schedule 2 in Merchant Shipping Notice MSN 1668.

## **Protection of stairways and lifts in accommodation and service spaces**

9.15 Every stairway within accommodation spaces, service spaces and control stations must be constructed of steel except where the Secretary of State has given approval for the use of other equivalent material under the 2023 Regulations. Every such stairway and lift must lie respectively within an enclosure or trunk constructed of "A" Class divisions of "A-0" standard except that an isolated stairway serving only two decks must only be required to be enclosed at one level by either "A" Class divisions of "A-0" standard or "B" Class divisions of "B-0" standard provided that the fire integrity of any bulkhead which separates a stairway from either a machinery space of Category A or a cargo pump room must be determined by reference to Table 3 of Schedule 2 in Merchant Shipping Notice MSN 1668.

9.16 Every opening in a stairway enclosure and lift trunk must be provided with a means of closure which must be permanently attached thereto and which must comply with the requirements of paragraphs 9.17 or 9.18, whichever is applicable.

### **Openings in "A" Class divisions**

9.17 Paragraphs 8.11 – 8.18 must apply to every tanker to which this Section applies, as it applies to ships to which Section 8 applies.

### **Openings in "B" Class divisions**

9.18 Paragraphs 8.19 – 8.23 must apply to every tanker to which this Section applies as it applies to ships to which Section 8 applies.

## **Ventilation systems**

9.19 Paragraphs 8.24 – 8.28 must apply to every tanker to which this Section applies as it applies to ships to which Section 8 applies; except that Schedule 2 must be substituted for Schedule 1 of Merchant Shipping Notice MSN 1668.

## **Details of construction**

9.20 All ceilings, linings, draught stops and their associated grounds in accommodation and service spaces and control stations must be of non-combustible materials.

### **Restriction of combustible materials**

9.21 Paragraphs 8.31 – 8.34 must apply to every tanker to which this Section applies as it applies to ships to which Section 8 applies.

### **Miscellaneous items of fire protection**

9.22 Paragraphs 8.35 – 8.42 apply to every tanker to which this Section applies as it applies to ships to which Section 7 applies.

### **Fixed fire detection and fire alarm system**

9.23 In every tanker to which this Section applies a fixed fire detection and fire alarm system of an approved type complying with the requirements specified in Schedule 5 in Merchant Shipping Notice MSN 1666 must be so installed and arranged as to provide smoke detection and manually-operated call points in all corridors, stairways and escape routes within accommodation spaces.

### **Special arrangements in machinery spaces**

9.24 Paragraph 8.46 must apply to every tanker to which this Section applies, as it applies to ships to which Section 8 applies.

### **Means of escape**

9.25 Except for paragraph 8.48, paragraph 8.47 to 8.52 must apply to every tanker to which this Section applies as it applies to ships to which Section 8 applies.

## **SECTION 10**

### **Special Requirements for Ships Carrying Dangerous Goods**

#### **Ships carrying explosives**

10.1 Where any ship (other than a passenger ship) carries explosives of such nature and of such quantity as are not permitted to be carried in a passenger ship by regulation 16(1) of the Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997, such explosives must not be carried in any compartment fitted with steam fire smothering arrangements. There must be provided in any compartment containing such explosives and in every adjacent compartment, a smoke detection system, or a fire detection system capable of automatically

indicating the presence or indication of fire and its location. The indicators must be centralised either on the navigating bridge or at other control stations provided with direct communication with the navigating bridge, except that, and subject to the approval of the Secretary of State in accordance with the 2023 Regulations, the indicators may be distributed among several stations if such arrangements are at least as effective as centralised indicators.

10.2 For the purposes of this requirement “compartment” means all spaces contained between two adjacent permanent bulkheads and includes the lower hold and all cargo spaces above it. The whole of any shelter deck space not sub-divided by steel bulkheads the openings in which can be closed by steel closing plates must, for the purpose of this requirement, be considered as a single space. Where steel bulkheads with openings closed by steel closing plates are fitted, the enclosed spaces in the shelter deck must be considered as part of the compartment or compartments below.

### **Ships carrying dangerous goods**

10.3 Subject to paragraph 10.4, ships constructed on or after 1st September 1984 of the following descriptions that is to say—

- (a) passenger ships; and
- (b) cargo ships of 500 tons or over,

which are intended, or which contain cargo spaces which are intended, for the carriage of dangerous goods on international voyages, must comply with the protective requirements prescribed in Merchant Shipping Notice MSN 1669.

10.4 Paragraph 10.3 does not apply to ships intended for the carriage of dangerous goods in limited quantities as referred to in section 18 of the general introduction to the International Maritime Dangerous Goods Code.

10.5 Nothing in paragraph 10.3 is to be taken to require duplication of anything already provided in a ship in compliance with other requirements of this Notice.

## **More information**

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