



INTERNATIONAL CONFERENCE ON
SAFETY OF LIFE AT SEA, 1974

Drafting Committee

IMCO

DRAFT TEXT OF CHAPTER II-2

CONSTRUCTION - FIRE PROTECTION, FIRE DETECTION
AND FIRE EXTINGUISHMENT

Prepared by the Drafting Committee

Insert the text of Chapter II bis as set out in document SOLAS/CONF/4/1
with the following amendments:

Regulation 1 - Application

1. Now sub-paragraph (iii) is added to paragraph (a) as follows:
 - (iii) A ship which undergoes repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to the ship. An existing ship in such a case shall not as a rule comply to a lesser extent with the requirements for a new ship than it did before. Repairs, alterations and modifications of a major character and outfitting related thereto should meet the requirements for a new ship in so far as the Administration deems reasonable and practicable.
2. Sub-paragraph (o)(ii) is replaced by the following:
 - (ii) Existing passenger ships carrying not more than 36 passengers and existing cargo ships shall comply with the following:
 - (1) for ships the keels of which were laid or which were at a similar stage of construction on or after the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, the Administration shall ensure that the requirements which were applied under Chapter II of that Convention to new ships as defined in that Chapter are complied with;

- (2) for ships the keels of which were laid or which were at a similar stage of construction on or after the date of coming into force of the International Convention for the Safety of Life at Sea, 1948, but before the date of coming into force of the International Convention for the Safety of Life at Sea, 1960, the Administration shall ensure that the requirements which were applied under Chapter II of the 1948 Convention to new ships as defined in that Chapter are complied with;
 - (3) for ships the keels of which were laid or which were at a similar stage of construction before the date of coming into force of the International Convention for the Safety of Life at Sea, 1948, the Administration shall ensure that the requirements which were applied under Chapter II of that Convention to existing ships as defined in that Chapter are complied with;
3. Sub-paragraph (c)(iii) is replaced by the following paragraph (d):
 - (d) For any existing ship as defined in the present Convention the Administration shall, in addition to the requirements of sub-paragraph (c)(i) of this Regulation, decide which of the requirements of this Chapter not contained in Chapter II of the 1948 and 1960 Conventions shall be applied.
 4. Paragraphs (d) and (e) are re-lettered by (e) and (f) respectively.
 5. In the English text only, in line five of the new paragraph (e) the words "to not proceed" should read "do not proceed".
 6. The new paragraph (f) is replaced by the following:
 - (f) In the case of passenger ships which are employed in special trades for the carriage of large numbers of special trade passengers, such as the pilgrim trade, the Administration if satisfied that it is impracticable to enforce compliance with the requirements of this Chapter, may exempt

such ships, when they belong to its country, from these requirements, provided they comply fully with the provisions of:

- (i) the Rules annexed to the Special Trade Passenger Ships Agreement, 1971, and
- (ii) the Rules annexed to the Protocol of Space Requirements for Special Trade Passenger Ships, 1973, when it comes into force.

Regulation 3 - Definitions

7. Lead-in sentence is replaced by the following:

"For the purpose of this Chapter, unless expressly provided otherwise:"

8. Paragraph (c) is replaced by the following and the succeeding paragraphs are relettered accordingly:

- (c) "A Class Divisions" are those divisions formed by bulkheads and decks which comply with the following:
 - (i) they shall be constructed of steel or other equivalent material;
 - (ii) they shall be suitably stiffened;
 - (iii) they shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test;
 - (iv) they shall be insulated with approved non-combustible materials such that the average temperature of the unexposed side will not rise more than 139°C (250°F) above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180°C (325°F) above the original temperature, with the time listed below:

Class "A-60"	60 minutes
Class "A-30"	30 minutes
Class "A-15"	15 minutes
Class "A-0"	0 minutes
 - (v) the Administration may require a test of prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise.

- (d) "'B" Class Divisions" are those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:
- (i) they shall be so constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test;
 - (ii) they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139°C (250°F) above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225°C (405°F) above the original temperature, within the time listed below:

Class "B-15"	15 minutes
Class "B-0"	0 minutes
 - (iii) they shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of "B" Class divisions shall be non-combustible, except where in accordance with Parts C and D of this Chapter the use of combustible material is not precluded, in which case it shall comply with the temperature rise limitation specified in sub-paragraph (2) of this paragraph up to the end of the first one-half hour of the standard fire test.
 - (iv) the Administration may require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise.
- (e) "'C" Class Divisions" shall be constructed of approved non-combustible materials. They need meet no requirements relative to the passage of smoke and flame nor the limiting of temperature rise.

9. Paragraph (n) which is relettered paragraph (o) is replaced by the following:

- (o) "Machinery Spaces of Category A" are all spaces which contain:
- (i) internal combustion type machinery used either for main propulsion purposes, or for other purposes where such machinery has in the aggregate a total power output of not less than 373 kw, or
 - (ii) any oil-fired boiler or oil fuel unit; and trunks to such spaces.

10. In paragraph (p) which is relettered paragraph (z), first line, is replaced by the following:

"Control Stations" are those spaces in which the ship's radio or main".

11. Paragraph (t) which is relettered paragraph (v), is replaced by the following:

(v) "Lightweight" is the displacement of a ship in metric tons without cargo, fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, together with passengers, and crew and their effects.

Regulation 4 - Fire Control Plans

12. The text of Regulation 4 is replaced by the following:

Regulation 4

Fire Control Plans

There shall be permanently exhibited in all new and existing ships for the guidance of the ship's officers general arrangement plans showing clearly for each deck the control stations, the various fire sections enclosed by "A" Class divisions, the sections enclosed by "B" Class divisions (if any), together with particulars of the fire alarms, detecting systems, the sprinkler installation (if any), the fire-extinguishing appliances, means of access to different compartments, decks, etc. and the ventilating system including particulars of the fan control positions, the position of dampers and identification numbers of the ventilating fans serving each section. Alternatively, at the discretion of the Administration, the aforementioned details may be set out in a booklet, a copy of which shall be supplied to each officer, and one copy at all times shall be available on board in an accessible position. Plans and booklets shall be kept up to date, any alterations being recorded thereon as soon as practicable. Description in such plans and booklets shall be in the national language. If the language is neither English nor French, a translation into one of those languages shall be included. In addition, instructions concerning the maintenance and operation of all the equipment and installations on board for the fighting and containment of fire shall be kept under one cover, readily available in an accessible position.

Regulation 5 - Fire Pumps, Fire Mains, Hydrants and Hoses

13. Sub-paragraph (a)(ii) is replaced by the following:

(ii) In a cargo ship, the required fire pumps, other than the emergency pump (if any), shall be capable of delivering for fire fighting purposes a quantity of water, at the appropriate pressure prescribed, not less than four-thirds of the quantity required under Regulation 18 of Chapter II to be dealt with by each of the independent bilge pumps in a passenger ship of the same dimensions when employed on bilge pumping, provided that in no cargo ship need the total required capacity of the fire pumps exceed 180 cubic metres per hour.

14. Sub-paragraph (b)(ii) is replaced by the following:

(b)(ii)(1) In passenger ships carrying more than 36 passengers, each of the required fire pumps shall have a capacity not less than 80 per cent of the total required capacity divided by the minimum number of required fire pumps and each such pump shall in any event be capable of delivering at least the two required jets of water. These fire pumps shall be capable of supplying the fire main system under the required conditions.

Where more pumps than the minimum of required pumps are installed the capacity of such additional pumps shall be to the satisfaction of the Administration.

(2) In all other types of ships, each of the required fire pumps (other than any emergency pump required by Regulation 52 of this Chapter) shall have a capacity not less than 80 per cent of the total required capacity divided by the number of required fire pumps, and shall in any event be capable of supplying the fire main system under the required conditions.

Where more pumps than required are installed their capacity shall be to the satisfaction of the Administration.

15. Sub-paragraph (c)(i) is replaced by the following:

(i) The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously, except that in the case of cargo ships the diameter need only be sufficient for the discharge of 140 cubic metres per hour.

16. A new sub-paragraph (iv) is added to paragraph (c) as follows:

(iv) For machinery spaces or in similar spaces where the risk of spillage of oil exists, the nozzles shall be suitable for spraying water on oil or alternatively shall be of a dual purpose type.

Regulation 8 - Fixed Gas or Steam Fire-Extinguishing Systems

17. The title and the text of Regulation 8 is replaced by the following:

Regulation 8

Fixed Gas Fire-Extinguishing Systems

- (a) The use of a fire-extinguishing medium which, in the opinion of the Administration, either by itself or under expected conditions of use gives off toxic gases in such quantities as to endanger persons shall not be permitted. In general, the Administration shall not permit the use of steam as a fire-extinguishing medium in fixed fire-extinguishing systems of new ships.
- (b) Where provision is made for the injection of gas for fire-extinguishing purposes, the necessary pipes for conveying the gas shall be provided with control valves or cocks so marked as to indicate clearly the compartments to which the pipes are led. Suitable provision shall be made to prevent inadvertent admission of the gas to any compartment. Where cargo spaces fitted with such a system for fire protection are used as passenger spaces the gas connection shall be blanked during such use.
- (c) The piping shall be arranged so as to provide effective distribution of fire-extinguishing gas.
- (d) (i) When carbon dioxide is used as the extinguishing medium in cargo spaces, the quantity of gas available shall be sufficient to give a minimum volume of free gas equal to 30 per cent of the gross volume of the largest cargo compartment in the ship which is capable of being sealed.

(ii) When carbon dioxide is used as an extinguishing medium for machinery spaces of Category A the quantity of gas carried shall be sufficient to give a minimum quantity of free gas equal to the larger of the following quantities, either:

- (1) 40 per cent of the gross volume of the largest space, the volume to include the casing up to the level at which the horizontal area of the casing is 40 per cent or less of the horizontal area of the space concerned taken midway between the tank top and the lowest part of the casing; or
- (2) 35 per cent of the entire volume of the largest space including the casing;

provided that the above-mentioned percentages may be reduced to 35 per cent and 30 per cent respectively for cargo ships of less than 2,000 tons gross tonnage; provided also that if two or more machinery spaces of Category A are not entirely separate they shall be considered as forming one compartment.

- (iii) Where the volume of free air contained in air receivers in any machinery space of Category A is such that, if released in such space in the event of fire, such release of air within that space would seriously affect the efficiency of the fixed fire-extinguishing installation, the Administration shall require the provision of an additional quantity of carbon dioxide.
- (iv) When carbon dioxide is used as an extinguishing medium both for cargo spaces and for machinery spaces of Category A the quantity of gas need not be more than the maximum required either for the largest cargo compartment or machinery space.
- (v) For the purpose of this paragraph the volume of carbon dioxide shall be calculated at 0.56 cubic metres to the kilogramme (9 cubic feet to the pound).
- (vi) When carbon dioxide is used as the extinguishing medium for machinery spaces of Category A the fixed piping system shall be such that 85 per cent of the gas can be discharged into the space within 2 minutes.



(vii) Carbon dioxide bottle storage rooms shall be situated at a safe and readily accessible position and shall be effectively ventilated to the satisfaction of the Administration. Any entrance to such storage rooms shall preferably be from the open deck, and in any case shall be independent of the protected space. Access doors shall be gastight and bulkheads and decks which form the boundaries of such rooms shall be gastight and adequately insulated.

(e) (i) Where gas other than carbon dioxide or steam as permitted by paragraph (f) of this Regulation is produced on the ship and is used as an extinguishing medium, it shall be a gaseous product of fuel combustion in which the oxygen content, the carbon monoxide content, the corrosive elements and any solid combustible elements have been reduced to a permissible minimum.

(ii) Where such gas is used as the extinguishing medium in a fixed fire-extinguishing system for the protection of machinery spaces of Category A it shall afford protection equivalent to that provided by a fixed carbon dioxide system.

(iii) Where such gas is used as the extinguishing medium in a fixed fire-extinguishing system for the protection of cargo spaces a sufficient quantity of such gas shall be available to supply hourly a volume of free gas at least equal to 25 per cent of the gross volume of the largest compartment protected in this way for a period of 72 hours.

(f) Where the use of steam is permitted by the Administration in addition to the required fire-extinguishing medium, it shall be used only in cargo ships with the proviso that the boiler or boilers available for supplying steam shall have an evaporation of at least 1 kilogramme for each 0.75 cubic metres (1 pound of steam per 12 cubic feet) of the gross volume of the largest cargo volume in the ship. The piping shall be arranged so as to provide effective distribution of steam. Where steam is used in large holds there shall be at least two pipes, one of which shall be fitted in

the forward part and one in the after part; the pipes shall be led well down in the space as remote as possible from the shell. Moreover the Administration shall be satisfied that steam will be available immediately and will not be dependent on the lighting of boilers and that it can be supplied continuously until the end of the voyage in the required quantity in addition to any steam necessary for the normal requirements of the ship including propulsion and that provision is made for extra feed water necessary to meet this requirement.

- (g) Means shall be provided for automatically giving audible warning of the release of fire-extinguishing gas into any space to which personnel normally have access. The alarm shall operate for a suitable period before the gas is released.
- (h) The means of control of any such fixed gas fire-extinguishing system shall be readily accessible and simple to operate and shall be grouped together in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

Regulation 9 - Fixed Froth Fire-Extinguishing Systems in Machinery Spaces

18. The text of paragraph (a) is replaced by the following:

- (a) Any required fixed froth fire-extinguishing system in machinery spaces shall be capable of discharging through fixed discharge outlets in not more than five minutes, a quantity of froth sufficient to cover to a depth of 150 millimetres (6 inches) the largest single area over which oil fuel is liable to spread. The system shall be capable of generating froth suitable for extinguishing oil fires. Means shall be provided for effective distribution of the froth through a permanent system of piping and control valves or cocks to suitable discharge outlets, and for the froth to be effectively directed by fixed sprayers on other main fire hazards in the protected space. The expansion ratio of the froth shall not exceed 12 to 1.

Regulation 12 - Automatic Sprinkler and Fire Alarm and Fire Detection Systems

19. At the end of sub-paragraph (a)(i), the reference "by this Part of this Regulation" is replaced by "in this Regulation".

Regulation 20 - Fire Integrity of Bulkheads and Decks

20. Sub-paragraph (b)(ii)(11) is replaced by the following:

(11) Auxiliary Machinery Spaces, Cargo Spaces, Special Category Spaces, Cargo and other Oil Tanks and other Similar Spaces of Moderate Fire Risk

Cargo oil tanks.

Cargo holds, trunkways and hatchways.

Refrigerated chambers.

Oil fuel tanks (where installed in a separate space with no machinery).

Shaft alleys and pipe tunnels allowing storage of combustibles.

Auxiliary machinery spaces as in Category (10) which contain machinery having a pressure lubrication system or where storage of combustibles is permitted.

Oil fuel filling stations.

Spaces containing oil-filled electrical transformers (above 10 kVA).

Spaces containing turbine and reciprocating steam engine driven auxiliary generators and small internal combustion engines of power output up to 112 KW driving emergency generators, sprinkler, drencher or fire pumps, bilge pumps, etc.

Special category spaces (Tables 1 and 3 only apply).

Closed trunks serving the spaces listed above.

Regulation 22 - Protection of Stairways and Lifts (in Accommodation and Service Spaces)

21. The parentheses in the title are deleted.

22. In the English text only, paragraph (c) is replaced by the following:

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

Regulation 26 - Windows and Sidescuttles

23. In paragraph (a) the reference to "Regulations 23 and 24 of this Chapter" is replaced by "Paragraph (h) of Regulation 23 and paragraph (c) of Regulation 24 of this Chapter."

Regulation 28 - Miscellaneous Items

24. The following sub-heading is inserted before paragraph (a):

"Requirements Applicable to all Portions of the Ship"

25. The following sub-heading is inserted before paragraph (b):

"Requirements Applicable to Accommodation and Service Spaces, Control Stations, Corridors and Stairways"

Regulation 30 - Protection of Special Category Spaces

26. The text of sub-paragraph (h)(i) is replaced by the following:

(h) Precautions against Ignition of Inflammable Vapours

(i) Equipment which may constitute a source of ignition of inflammable vapours and in particular electrical equipment and wiring, shall be installed at least 0.45 metres (18 inches) above the deck, provided that if the Administration is satisfied that the installation of such electrical equipment and wiring below this level is necessary for the safe operation of the ship, such electrical equipment and wiring shall be of a type approved for use in an explosive petrol and air mixture. Electrical equipment installed at more than 450 millimetres (18 inches) above the deck shall be of a type so enclosed and protected as to prevent the escape of sparks. The reference to a level of 450 millimetres (18 inches) above the deck shall be construed to mean each deck on which vehicles are carried and on which explosive vapours might be expected to accumulate.

Regulation 31 - Cargo Spaces other than Special Category Spaces intended for the Carriage of Motor Vehicles with Fuel in their Tanks for their own Propulsion

27. The words "Protection of" are added at the beginning of the title.

Regulation 32 - Maintenance of Fire Patrols, etc., and Provision for Fire-Extinguishing Equipment

28. The footnote to sub-paragraph (c)(iv) is replaced by the following:

* "A water fog applicator might consist of a metal "L"-shaped pipe, the long limb being about 2 metres (6 feet) in length capable of being fitted to a fire hose and the short limb being about 250 millimetres (10 inches) in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle."

29. The text of paragraphs (h) and (i) are replaced by the following:

(h) Fire-Extinguishing Appliances in Spaces containing Internal Combustion Type Machinery

Spaces containing internal combustion machinery used either for main propulsion, or for other purposes when such machinery has in the aggregate a total power output of not less than 373 KW, shall be provided with the following arrangements:

- (i) There shall be one of the fire-extinguishing systems required by sub-paragraph (g)(i) of this Regulation.
- (ii) There shall be at least one set of portable air-froth equipment complying with the provisions of paragraph (d) of Regulation 7 of this Chapter.
- (iii) There shall be in each such space approved froth-type fire extinguishers each of at least 45 litres (10 gallons) capacity or equivalent sufficient in number to enable froth or its equivalent to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards. In addition, there shall be provided a sufficient number of portable froth extinguishers or equivalent which shall be so located that an extinguisher is not more than 10 metres (33 feet) walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space.

(1) Fire-Extinguishing Arrangements in Spaces containing Steam Turbines or enclosed Steam Engines

In spaces containing steam turbines or enclosed steam engines used either for main propulsion or for other purposes when such machinery has in the aggregate a total power output of not less than 500 b.h.p.:

- (i) There shall be provided froth fire extinguishers each of at least 45 litres (10 gallons) capacity or equivalent sufficient in number to enable froth or its equivalent to be directed on to any part of the pressure lubrication system, on to any part of the casings enclosing pressure lubricated parts of the turbines, engines or associated gearing, and any other fire hazards. Provided that such extinguishers shall not be required if protection at least equivalent to this sub-paragraph is provided in such spaces by a fixed fire-extinguishing system fitted in compliance with sub-paragraph (g)(1) of this Regulation;
- (ii) There shall be provided a sufficient number of portable froth extinguishers or equivalent which shall be so located that an extinguisher is not more than 10 metres (33 feet) walking distance from any point in the space; provided that there shall be at least two such extinguishers in each such space, and such extinguishers shall not be required in addition to any provided in compliance with sub-paragraph (h)(iii) of this Regulation.

Regulation 37 - Openings in "A" Class Divisions

30. Paragraph (c) is replaced by the following:

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

Regulation 40 - Protection of Accommodation and Service Spaces

31. The text of sub-paragraph (a)(iii) is replaced by the following:

- (iii) Except in cargo spaces, nail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, grounds, ceilings and insulations shall be of non-combustible materials. The total volume of combustible facings, mouldings, decorations and veneers in any accommodation or public space shall not exceed a volume equivalent to 2.5 millimetres (1/10 inch) veneer on the combined area of the walls and ceilings. All exposed surfaces in corridors or stairway enclosures and in concealed or inaccessible spaces shall have low flame spread characteristics.

Regulation 47 - Fire-Detection Systems and Fire-Extinguishing Equipment

32. The text of sub-paragraph (c)(iv) is replaced by the following:

- (iv) All required hydrants in the machinery spaces of ships with oil-fired boilers or internal combustion type propelling machinery shall be fitted with hoses having nozzles as required in paragraph (g) of Regulation 5 of this Chapter.

33. The text of paragraph (h) is replaced by the following:

(h) **Fire-Fighting Appliances in Spaces containing Internal Combustion Type Machinery**

Where internal combustion type engines are used, either for main propulsion or for auxiliary purposes associated with a total power output of not less than 746 kW, a ship shall be provided with the following arrangements:

- (i) there shall be one of the fixed arrangements required by sub-paragraph (g)(i) of this Regulation;
- (ii) there shall be in each engine space one approved froth type extinguisher of not less than 45 litres (10 gallons) capacity or equivalent and also one approved portable froth type extinguisher for each 746 kW of engine power output or part thereof; but the total number of portable extinguishers so supplied shall be not less than two and need not exceed six.

Regulation 49 - Oil Fuel used for Internal Combustion Engines

34. The text of Regulation 49 is replaced by the following:

Regulation 49

Oil Fuel used for Internal Combustion Engines

No internal combustion engine shall be used for any fixed installation in a ship if its fuel has a flashpoint of 43°C (110°F) or less (closed cup test) as determined by an approved flashpoint apparatus.

Regulation 51 - General Requirements for Cargo Ships of 4,000 Tons Gross Tonnage and Upwards other than Tankers

35. The words "Covered by Part E of this Chapter" are added to the title.

Regulation 52 - Fire-Extinguishing Systems and Equipment

36. Paragraphs (c), (d), (e) and (f) are replaced by the following:

(c) Fire Hydrants, Hoses and Nozzles

(i) In a ship of 1,000 tons gross tonnage and upwards the number of fire hoses to be provided, each complete with couplings and nozzles, shall be one for each 30 metres (100 feet) length of the ship and one spare but in no case less than five in all. This number does not include any hoses required in any engine or boiler room. The Administration may increase the number of the hoses required so as to ensure that hoses in sufficient number are available and accessible at all times, having regard to the type of the ship and the nature of the trade on which the ship is employed.

(ii) In accommodation, service and machinery spaces, the number and position of hydrants shall be such as to comply with the requirements of paragraph (d) of Regulation 5 of this Chapter.

(iii) In a ship the arrangements shall be such that at least two jets of water can reach any part of any cargo space when empty.

(iv) All required hydrants in the machinery spaces of ships with oil fired boilers or internal combustion type propelling machinery shall be fitted with hoses having nozzles as required in paragraph (g) of Regulation 5 of this Chapter.

(d) International Shore Connection

(i) A ship of 1,000 tons gross tonnage and upwards shall be provided with at least one international shore connection, complying with paragraph (h) of Regulation 5 of this Chapter.

(ii) Facilities shall be available enabling such a connection to be used on either side of the ship.

(e) Portable Fire-Extinguishers in Accommodation and Service Spaces

The ship shall be provided in accommodation and service spaces with such approved portable fire-extinguishers as the Administration may deem to be appropriate and sufficient; in any case, their number shall not be less than five for ships of 1,000 tons gross tonnage and upwards.

(f) Fixed Fire-Extinguishing Arrangements in Cargo Spaces

(i) Cargo spaces of ships of 2,000 tons gross tonnage and upwards shall be protected by a fixed fire-extinguishing system complying with Regulation 8 of this Chapter.

(ii) The Administration may exempt from the requirements of sub-paragraph (i) of this paragraph the cargo holds of any ship (other than the tanks of a tanker) -

(1) if they are provided with steel hatch covers and effective means of closing all ventilators and other openings leading to the holds;

(2) if the ship is constructed and intended solely for carrying such cargoes as ore, coal or grain;

(3) where it is shown to the satisfaction of the Administration that the ship is engaged on voyages of such short duration that it would be unreasonable to apply the requirement.

(iii) Every ship in addition to complying with the requirements of this Regulation shall, while carrying explosives of such nature or in such quantity as are not permitted to be carried in passenger ships under Regulation 8 of Chapter VII of this Convention comply with the following requirements:

(1) Steam shall not be used in any compartment containing explosives. For the purpose of this sub-paragraph, "compartment" means all spaces contained between two adjacent permanent bulkheads and includes the lower hold and all cargo spaces above it.

(2) In addition, in each compartment containing explosives and in adjacent cargo compartments, there shall be provided a smoke- or fire-detection system in each cargo space.

(h) Fire Fighting Appliances in Spaces containing Internal Combustion Type Machinery

Where internal combustion type engines are used, either for main propulsion machinery, or for auxiliary purposes associated with a total power output of not less than 746 kW, a ship of 1,000 tons gross tonnage and upwards shall be provided with the following arrangements:

- (i) There shall be one of the fixed arrangements required by sub-paragraph (g)(i) of this Regulation.
- (ii) There shall be in each engine space one approved froth type extinguisher of not less than 45 litres (10 gallons) capacity or equivalent and also one approved portable froth extinguisher for each 746 kW of engine power output or part thereof; but the total number of portable extinguishers so supplied shall be not less than two and need not exceed six.

Regulation 54 - Special Arrangements in Machinery Spaces

37. The text of Regulation 54 is replaced by the following:

Regulation 54

Special Arrangements in Machinery Spaces

- (a) Means shall be provided for stopping ventilating fans serving machinery and cargo spaces and for closing all doorways, ventilators, annular spaces around funnels and other openings to such spaces. These means shall be capable of being operated from outside such spaces in case of fire.
- (b) Machinery driving forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they may be stopped in the event of a fire arising in the space in which they are located.
- (c) Every oil fuel suction pipe from a storage, settling or daily service tank situated above the double bottom shall be fitted with a cock or valve capable of being closed from outside the space concerned in the event of a fire arising in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel, valves on the tanks shall be fitted but control in event of fire may be effected by means of an additional valve on the pipe line or lines outside the tunnel or tunnels.

Regulation 55 - Application

38. The text of paragraph (a) is replaced by the following:

- (a) This part shall apply to all new tankers carrying crude oil and petroleum products having a flashpoint not exceeding 60°C (140°F) (closed cup test) as determined by an approved flashpoint apparatus and whose Reid vapour pressure is below that of atmospheric pressure, and other liquid products having a similar fire hazard.

39. In the French text only of paragraph (b) reference to "Regulation 49" is substituted by "Regulation 52".

Regulation 57 - Construction

40. The text of sub-paragraph (a)(i) is replaced by the following:

- (a) (i) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.

Regulation 60 - Cargo Tank Protection

41. In the fourth line of paragraph (d) the word "and" between "internally" and "externally" is replaced by "or".

Regulation 62 - Inert Gas System

42. The second sentence of paragraph (1) is replaced by the following:

"In addition, an effective water lock shall be installed at the scrubber or on deck."

43. Sub-paragraph (c)(iii) is replaced by the following:

- (iii) low pressure in the supply to the deck water seal, if such equipment is installed;

Regulation 68 - Openings in Main Vertical Zone Bulkheads

44. The text of Regulation 68 is replaced by the following:

Regulation 68

Openings in Main Vertical Zone Bulkheads

- (a) The ship shall comply substantially with Regulation 29 (1948).
(b) Fire doors shall be of steel or equivalent material with or without non-combustible insulation.

- (c) In the case of ventilation trunks and ducts having a cross-sectional area of 0.02 square metres (31 square inches) or more which pass through main zone divisions, the following additional provisions shall apply:
- (i) for trunks and ducts having cross-sectional areas between 0.02 square metres (31 square inches) and 0.075 square metres (116 square inches) inclusive, fire dampers shall be of a fail-safe automatic closing type, or such trunks and ducts shall be insulated for at least 450 millimetres (18 inches) on each side of the division to meet the applicable bulkhead requirements;
 - (ii) for trunks and ducts having a cross-sectional area exceeding 0.075 square metres (116 square inches), fire dampers shall be of a fail-safe automatic closing type.

Miscellaneous

45. Wherever appearing in the text of Chapter II-bis as set out in document SOLAS/CONF/4/1 and the amendments listed above:

- (a) the word "inflammable" is replaced by the word "flammable";
 - (b) the words "life-boat" and "life-raft" should be replaced by "lifeboat" and "liferaft" respectively;
 - (c) the word "incombustible" is replaced by the word "non-combustible";
 - (d) the word "ton(s)" (1,000 kg) is replaced by the words "metric ton(s)";
 - (e) references to Chapter II are replaced by Chapter II-1;
 - (f) British units are deleted;
 - (g) references to paragraphs of Regulation 3 are replaced in accordance with the new numbering of that Regulation.
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