

MERCHANT SHIPPING (FIRE APPLIANCES) RULES, 1969

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MERCHANT SHIPPING (FIRE APPLIANCES) RULES, 1969

¹1. Published in the Gazette of India, 1969, Pt. II, Sec. 3(i), p. 1045. In exercise of the powers conferred by Sec. 289 read with Cl. (b) of sub-section (2) of Sec. 458 of the Merchant Shipping Act, 1958 (44 of 1958), and in supersession of the Indian Merchant Shipping (Fire Appliances) Rules, 1956, the Central Government hereby makes the following rules, namely

1. Short title, commencement and application :-

(1) These rules may be called the Merchant Shipping (Fire Appliances) Rules, 1969.

(2) They shall come into force at once.

(3) They shall apply to

(a) every Indian ship which proceeds to sea from any port or place in India;

(b) a foreign ship when in an Indian port or Indian territorial waters : Provided that these rules shall not apply to

(i) a foreign-ship which holds a valid safety convention certificate and the actual condition whereof corresponds with the particulars

given in the certificate;

(ii) a foreign ship which would not have been within a port in India or within Indian territorial waters, but for the stress of weather or any other circumstances that neither the master nor the owner nor the charterer, if any, could have prevented or forestalled;

(iii) pleasure yachts not exceeding fifteen tons net which are neither passenger ships nor engaged in trade. ¹ [* * * * *]

1. Omitted by G.S.R. 374, dated 26th March, 1974.

2. Definitions :-

In these rules, unless the context otherwise requires,

(a) "Act" means the Merchant Shipping Act, 1958 (44 of 1958);

(b) "accommodation spaces" means passenger spaces, corridors, lavatories, cabins, offices, crew spaces, barber shops, isolated pantries, lockers and other similar spaces;

(c) "cargo spaces" means all spaces used for cargo (including cargo oil tanks) and trunks to all such spaces ;

(d) "control station" includes those spaces in which radio, main navigating or central fire recording equipment or the emergency generator is located;

(e) "crew spaces" means accommodation provided for the exclusive use of the crew;

(f) "length" in relation to a registered ship means the 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, to the point where the rudder passes out of the hull;

(g) "machinery spaces" includes all spaces used for propelling, auxiliary, or refrigerating machinery, boilers, pumps, workshops, generators, ventilation and air-conditioning machinery, oil filling station and similar spaces and trunk ways to such spaces ;

(h) "oil fired boiler" means any boiler wholly or partly fired by liquid fuel not being a domestic boiler of less than 63,000 kilocalories per hour;

(i) "oil fuel unit" means all equipments used for the preparation of

oil fuel for delivery to the oil burners of an oil fired boiler and includes the oil pressure pumps, filters and heaters;

(j) "passenger spaces" means the spaces provided for the use of passengers;

(k) "Schedule" means a Schedule to these rules;

(l) "service space" includes galleys, main pantries, laundries, store rooms, paint rooms, baggage rooms, mail rooms, bullion rooms, carpenters and plumbers' workshops, and trunkways leading to such spaces;

(m) "settling tank" means an oil storage tank provided with a heating surface not less than 0.180 squaremetre per ton of oil capacity;

(n) "short international voyage" means an international voyage in the course of which a vessel is not more than 200 miles from any port or place in which the passengers and crew could be placed in safety and which does not exceed 600 miles in length between the last port of call in the country in which the voyage begins and the final port of destination;

(o) "tons" in relation to the tonnage of a ship means gross tons.

3. Classification of Ships :-

For the purposes of these rules, ships shall be classified as follows, namely: Class I Passenger ships (other than those falling under Classes II, III and IV) engaged on international voyages. Class II Passenger ships (other than those falling under Class IV) engaged on short international voyages. Class III Unberthed Passenger ships (other than ships of Class IV) engaged on international voyages. Class IV Unberthed Passenger ships engaged on short international voyages. Class V Unberthed Passenger ships engaged on coastal voyages. Class VI Cargo ships (other than those falling under Class VII). Class VII Cargo ships engaged on coastal voyages. Class VIII Ships not falling under Classes I to VII. PASSENGER SHIPS

4. Ships of Class I Fire patrol, detection and alarm systems

:-

In every ship of Class I,

(i) an efficient patrol system capable of promptly detecting any outbreak of fire shall be maintained;

(ii) a manual fire alarm system capable of enabling the fire patrol to give an alarm immediately to the bridge or fire control station shall be fitted throughout the passenger and crew accommodation spaces;

(iii) a fire detection system complying with the requirements specified in rule 43 shall be provided in every part of the ship which is inaccessible to the fire patrol: Provided that the Central Government may, if it is satisfied, having regard to the short duration of the voyage or voyages on which a ship is engaged, that it would be unreasonable to require the ship to comply with the requirements of Cl. (iii), exempt such ship from such requirements in respect of such voyage or voyages.

5. Accommodation and service spaces :-

In every ship of Class I there shall be provided

(a) appliances capable of rapidly supplying at least two simultaneous jets of water, not emanating from the same hydrant, at least one of which shall be from a single length of hose and reaching any part of accommodation and service spaces normally accessible to the passengers or crew while the ship is being navigated when all watertight doors and all doors in main vertical zone bulkheads are closed;

(b) on each deck, a sufficient number of portable fire extinguishers so that

(i) at least two of these shall be readily available for use in every accommodation and service space between watertight bulkheads and bulkheads; and

(ii) at least one such extinguisher shall be provided for use on each side of the ship in enclosed accommodation and service spaces:

(c) in every galley, at least one portable fire extinguisher and an asbestos blanket in addition to the fire extinguisher required under Cl. (b): Provided that where the superficial deck area of any galley exceeds 45 sq. metres at least two such extinguishers and two such blankets shall be provided.

6. Cargo spaces and store rooms :-

(1) In every ship of Class I, there shall be provided appliances capable of rapidly ejecting at least two simultaneous jets of water not emanating from the same hydrant, at least one of which shall

be from a single length of hose and capable of reaching any part of any cargo spaces or any store-room when empty.

(2) In every ship of Class I of 1,000 tons gross and over, there shall be provided a fixed fire-smothering gas system complying with requirements specified in rule 40 which shall be so arranged as to protect every cargo space: Provided that the Central Government may, if it is satisfied that having regard to the short duration of the voyage or voyages on which a ship is engaged, it would be unreasonable to require the ship to comply with the requirements of this sub-rule, exempt the ship from such requirements in respect of such voyage or voyages.

7. Check It :-

Machinery spacesGeneral. Every ship of Class I shall be provided with appliances capable of ejecting rapidly and simultaneously at least two jets of water not emanating from the same hydrant, at least one of which shall be from a single length of hose, and reaching any part of any bunker spaces and any machinery spaces when all watertight doors and doors in the main vertical zone bulkheads are closed.

8. Machinery spacesShips fitted with oil-fired boilers or oil burning equipment :-

(1) In every ship of Class I fitted with main or auxiliary oil-fired boilers, there shall be provided in the machinery spaces.

(ii) at least two fire hydrants, one on the port-side and the other on the starboard side;

(iii) for each such hydrant, a fire hose with at least two nozzles, one of which shall be capable of spraying water on oil.

(2) In every such ship, each firing space shall be provided with a receptacle containing not less than 0.30 cubic metres of sand or saw dust impregnated with soda or any other material suitable for quenching oil fires with scoops for distributing the contents of the receptacle, or alternatively, a portable fire extinguisher, suitable for extinguishing oil fires.

(3) In every such ship, each firing space in each boiler room and each compartment which contains the whole or part of fuel oil installation shall be provided with sufficient but in any case not less than two portable fire extinguishers capable of discharging froth or

any other substance suitable for quenching oil fires.

(4) In every such ship, there shall be provided in the machinery space a fire smothering gas installation complying with the requirements of rule 40, or a pressure water spraying system complying with the requirements of rule 41, or a foam fire extinguishing installation complying with the requirements of rule 42.

Explanation. For the purposes of this sub-rule, engine room and boiler room shall be regarded as a single area if they are not separated from each other by a bulkhead, and fuel oil may drain from the boiler room into the engine room bilges.

(5) The installation referred to in sub-rule (4) shall be capable of being controlled from a readily accessible position which is not likely to be cut off in the event of fire.

(6) In every such ship, there shall be provided in each of the boiler rooms at least one CO₂ fire extinguisher of 45 kg. capacity or a both fire extinguisher of at least 136 litres together with a hose on reel capable of reaching every part of the boiler room and of any space which contains the whole or part of the oil fuel installation.

9. Machinery spaces containing steam engines :-

(1) In every ship of Class I there shall be provided in spaces containing steam turbines or inclosed pressure lubricated steam engines used either for main propulsion, or having in the aggregate a total power of not less than 1,000 BHP or auxiliary purposes foam fire extinguishers each of at least 45 litres spacity or carbon dioxide fire extinguishers each of at least 15 kg. capacity efficient in number to enable foam or carbon dioxide, as the case may be, 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 turbines, ennes or associated gearing, if any:

Provided that such extinguishers shall not be necessary if adequate provision is made in such spaces by fitting a fixed fire extinguishing installation complying with the requirements of sub-rules (4) and (5) of rule 8.

(2) In every such ship, machinery spaces containing steam turbines or closed pressure lubricating steam engines shall be provided with adequate number of portable fire extinguishers on a scale of one

such extinguishers for every 1,000 BHP or part thereof:

Provided that the number of portable fire extinguishers so provided all never be less than two and may not be more than six including the be extinguishers provided under rule 10.

10. Spaces containing internal combustion type of machinery :-

In every ship of Class I using internal combustion type of machinery either to main propulsion or for auxiliary purpose associated with a total power not less than 1,000 B.H.P. there shall be provided

(i) at least two fire hydrants, one on the portside and one on the starboard side and each such hydrant shall be provided with a fire hose with at least two nozzles one of which shall be capable of spraying water on oil or alternatively suitable dual purpose nozzles;

(ii) one froth type fire extinguisher of not less than 136 litres capacity or equivalent carbon dioxide extinguisher:

(iii) one portable froth type fire extinguisher for each 1,000 BHP or part thereof, but in no case less than two such extinguishers :
Provided that not more than 6 such extinguishers need be carried in any one compartment;

(iv) a fixed fire extinguishing installation complying with the requirements of sub-rules (4) and (5) of rule 8.

11. Fire pumps :-

(1) Every ship of Class I of 4,000 tons and above shall be provided with at least three independently driven power-operated fire pumps and every such ship of less than 4,000 tons, shall be provided with at least two such fire pumps and all such fire pumps together shall be capable of delivering for fire fighting purposes, a quantity of water under the conditions and at the pressure specified in rule 33.

(2) In every ship of Class I, the arrangement of sea connection pumps and sources of power for operating them shall be such as to ensure that fire in any one compartment will not put all the fire pumps out of action.

12. Water pipes, hydrants and fire hoses :-

(1) Every ship of Class I shall be provided with water service pipes, hydrants and hoses such that an adequate supply of water for rapid

and simultaneous operation of at least two fire hoses, not emanating from the same hydrant, for the projection of two powerful jets of water would be available.

(2) The number and position of hydrants shall be such that at least two such jets of water may be rapidly and simultaneously directed into any part of the ship by means of two fire hoses one of which shall not exceed 18.00 metres in length and each such jet of water being supplied from a separate hydrant.

(3) At least one fire hose shall be provided for each such hydrant and all hoses so provided shall be used for the purposes of extinguishing fires or for the testing of fire-fighting appliances at fire drills and surveys.

13. International shore connections :-

Every ship of Class I shall be provided with at least one international shore connection complying with the requirements specified in the First Schedule and necessary facilities for enabling such a connection to be used on both sides of a ship.

14. Firemens outfit :-

(1) Every ship of Class I shall carry one fireman's outfit for each 30 metres or part thereof of the registered length of the ship, but in no case less than two.

(2) Every such outfit shall comply with the requirements of rule 44 and at least two of them shall include breathing apparatus of the air hose type.

(3) Where the fireman's outfit carried on board a ship in compliance with sub- rule (1) consists of only breathing apparatus of the air hose type, and an air hose exceeding 35 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces on the ship, at least two sets of breathing apparatus of the self- contained type shall also be provided on board the ship.

15. Portable drilling machine :-

(1) Every ship of Class I shall be provided with a portable electric drilling machine to enable emergency access to fire through decks, casings, or bulkheads.

(2) The drilling machine shall be provided with drills of various sizes up to 15 millimetres diameter and shall be stored outside the machinery spaces, preferably in a suitable box on the bridge.

16. Ships of Classes II, III, IV and V :-

Rules 4 to 15 (both inclusive) shall apply to ships of Classes II, III, IV and V as they apply to ships of Class I. Ships other than passenger ships

17. Ships of Class VI Cargo spaces :-

(1) Every ship of Class VI of 2,000 tons and above shall be protected by a fixed fire smothering gas installation complying with the requirements of rule 40: Provided that steam may be substituted for fire-smothering gas in any ship.

(2) The Central Government may exempt any ship other than a tanker from the requirements of sub-rule (1), if it is satisfied that

(i) the holds therein are provided with steel hatch covers and effective means of closing all ventilators and other openings leading to such holds;

(ii) the ship is constructed for and employed solely in the carriage of ore, coal or grain; or

(iii) to require compliance therewith would be unreasonable having regard to the short duration of the voyages on which the ship is engaged.

(3) The Central Government may exempt any tanker from the requirements of sub-rule (1) if it is satisfied that the tanker is provided with adequate installations discharging foam internally or externally to the tanks.

(4) Every ship of Class VI, in addition to complying with the requirements of this rule, shall, while carrying explosives of the nature and in quantity not permitted to be carried in a passenger vessel, comply with the following:

(i) steam shall not be used for fire-smothering purposes in any compartment carrying explosives:

(ii) 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.

Explanation. For the purpose of this sub-rule, 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 spaces not sub-divided by steel bulkheads the openings of which can be closed by steel closing plates shall, for the purpose of this sub-rule, be considered as a compartment. Where steel bulkheads with openings closed by steel closing plates are fitted, the enclosed spaces in the shelter deck may be regarded as a part of the compartment or compartments below.

18. Fire pumps and water service pipes :-

In every ship of Class VI there shall be provided

(a) water service pipes complying with the requirement of rule 35; and

(b) where the ship is of 1000 tons or more,

(i) two independently driven power pumps; and

(ii) an alternative provision for water for fire-fighting if any fire in any one compartment could put all the pumps out of action:

Provided that in the case of ships of 2000 tons or more, such provision shall be by means of fixed emergency pump independently driven and capable of rapidly supplying two powerful jets of water simultaneously to reach any part of the ship.

19. Fire hydrant, hoses and nozzles :-

In every ship of Class VI of 1000 tons or more,

(i) the number of fire hoses (excluding those required in any engine room or boiler room) to be provided, (each such hose complete with couplings and nozzles) shall be one for each 30 metres length of the ship together with one spare for the ship but shall in no case be less than 5 in all: Provided that the Central Government may increase the number of hoses to be carried so as to ensure that hoses in sufficient number are available and accessible at all times having regard to the type of ship and the nature of services;

(ii) the number and position of the hydrants in accommodation, service and machinery spaces shall be such as to ensure that at least two jets of water not emanating from the same hydrant, one of which shall be from a single length of hose, may reach any part of the ship normally accessible to passengers and crew while the

ship is being navigated ;

(iii) arrangements shall be such as to ensure that at least two jets of water can reach any part of any cargo space when empty;

(iv) all hydrants in machinery spaces of ships fitted with main or auxiliary oil-fired boilers or internal combustion type of machinery shall be provided with hoses complete with nozzles each of which shall be suitable for spraying water on oil, or alternatively with suitable dual purpose nozzles.

20. Portable fire extinguishers :-

(1) Every ship of Class VI shall be provided with sufficient number of portable fire extinguishers to ensure that at least one such extinguisher will be readily available for use in every crew and passenger space, if any.

(2) The number of such fire extinguishers shall not be less than 5 in a ship of 1000 tons or more and not less than 3 in a ship of less than 1000 tons.

21. Firemens outfit :-

(1) Every ship of Class VI shall carry one firemen's outfit for each 30 metres (or part thereof) of the registered length of the ship and shall comply with the requirements of rule 44 provided that no such ship shall be required to carry more than three such outfits.

(2) At least one such outfit carried in any such ship shall include a breathing apparatus of the air hose type.

(3) If any such ship carries firemen's outfits containing only breathing apparatus of the air hose type and an air hose exceeding 35 metres in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least one breathing apparatus of the self-contained type shall be provided in addition.

22. Portable drilling machine :-

(1) Every ship of Class VI, other than a tanker, on which a supply of electric energy is available shall be provided with a portable drilling machine to provide emergency means of access to fires through decks, casings or bulkheads.

(2) The drilling machine shall be provided with drills of various sizes up to 12 m.m. diameter and shall be stored outside the machinery spaces, preferably in a suitable box on the bridge.

23. Machinery spacesShips fitted with main or auxiliary oil-fired boilers :-

(1) In every ship of Class VI fitted with main or auxiliary oil-fired boilers, there shall be provided

(i) in the machinery spaces, at least two fire hydrants one on the portside and one on the starboard side and each such hydrant shall be provided with a fire hose with nozzle suitable for spraying water on oil, or alternatively with suitable dual purpose nozzles;

(ii) in firing spaces, a receptacle containing at least 0.30 cubic metres of sand or saw dust impregnated with soda or any other material suitable for quenching oil fires along with scoops for distributing the contents of the receptacle, or alternatively a portable fire extinguisher;

(iii) in each firing space, in each boiler room and in each space of such space containing the whole or part of oil fuel installation, at least two portable fire extinguishers which shall be capable of discharging froth or any other substance suitable for quenching oil fires;

(iv) one extinguisher of at least 45 litres capacity or an equivalent carbon dioxide extinguisher in each boiler room if the number of burners therein is five or more, provided that if the number of such burners is less than five, one portable froth fire extinguisher for each such burner may be carried.

(2) Every ship of Class VI shall also be provided in the machinery spaces with one of the fixed fire extinguishing installations as required under sub-rule (4) of rule 8.

24. Space, containing steam turbine separated from boiler room by a watertight bulkhead :-

Every ship of Class VI shall be provided in spaces containing steam turbines but not requiring any fixed smothering installation

(i) with at least two fire hydrants one on the portside and one on the starboard side and each such hydrant shall be provided with a fire hose with a nozzle ;

(ii) with sufficient number of 45 litres foam fire extinguishers or equivalent number of carbon dioxide fire extinguishers to enable foam or carbon- dioxide to be directed to the machinery and its operations, unless the installation is adequately protected by one of the fixed fire extinguishing installations required under Cl. (iv) of rule 10.

(iii) with portable foam fire extinguishers as shown below:

(a) for machinery up to 2000 B.H.P.two such portable fire extinguishers;

(b) for every additional 1000 B.H.P.one additional portable fire extinguisher subject to a maximum of six: Provided that if there is also a switchboard, then one portable carbon dioxide fire extinguisher shall also be carried.

25. Spaces containing internal combustion type machinery

:-

(1) Every ship of Class VI using internal combustion engines either for main propulsion machinery or for auxiliary purposes associated with a total power not less than 1000 B.H.P. shall be provided with

(i) two fire hydrants, one on the portside and one on the starboard side and each such hydrant shall be provided with a fire hose with nozzle suitable for spraying water on oil, or alternatively with suitable dual purpose nozzles;

(ii) in each engine space, a froth fire extinguisher, of at least 45 litres capacity or equivalent carbon dioxide extinguisher;

(iii) portable fire extinguishers, capable of discharging froth or any other substance suitable for quenching oil fires, in accordance with the following Table:

BHP of main engine	No. of portable fire extinguishers
Not ovr 1000	2
Over 1000 but not over 2000	3
Over 2000 but not over 3000	4
Over 3000 but not over 4000	5
Over 4000	6

(2) Every such ship of Class VI shall also be provided in addition, with one of the fire extinguishing installations required under sub-rule (4) of rule 8. Explanation. For the purposes of this sub-rule engine room and boiler room shall be regarded as a single area if they are not separated from each other by a bulkhead, and fuel oil may drain from the boiler room to the engine room bilges.

(3) The provisions of sub-rule (1) shall not apply if the Central Government is satisfied that to require compliance therewith will be unreasonable having regard to the short duration of the voyages on which the ship is engaged.

26. International shore connection :-

Every ship of Class VI shall be provided with

(i) at least one international shore connection complying with the requirements specified in the First Schedule;

(ii) necessary facilities for enabling such a connection to be used on both sides of the ship.

27. Ships of Class VII of 1000 tons and above :-

Rules 17 to 26 (both inclusive) shall apply to ships of Class VII of 1000 tons and above as they apply to ships of Class VI.

28. Ships of Class VII of 500 tons and above but less than 1000 tons :-

(1) This rule shall apply to ships of Class VII of 500 tons and above but less than 1000 tons.

(2) Every such ship shall be provided with at least:

(i) one pump operated by power and one fire hose, whereby a powerful jet of water can be rapidly directed into any part of the ship, together with a spare hose of 9 metres length;

(ii) three portable fire extinguishers readily accessible for use in crew spaces and passenger spaces, if any;

(iii) a fireman's outfit complying with the requirements specified in the Fourth Schedule.

(3) Every such ship which is fitted with main or auxiliary oil-fired boilers or internal combustion type machinery shall be provided with a hydrant and a fire hose with nozzles, one of which shall be

suitable for spraying water on oil; or alternatively with suitable dual purpose nozzles.

(4) Every such ship fitted with main or auxiliary oil-fired boilers shall be provided in each boiler room either with a receptacle containing at least 0.30 cubic metres of sand or any other material suitable for quenching oil fires together with scoops for distributing the contents of the receptacle or with a portable fire extinguisher.

(5) In each firing place in every such ship and in each compartment therein containing the whole or part of the fuel oil installation, there shall be provided at least two portable fire extinguishers which shall be capable of discharging froth or any other substance suitable for quenching oil fires. In addition one such fire extinguisher of at least 45 litre capacity or an equivalent carbon dioxide extinguisher shall be provided in each boiler room if the number of burners is five or more and the number of such burners is less than five in a boiler room, there shall be provided therein one froth extinguisher of at least 9 litres capacity for each such burner.

(6) Every such ship of Class VII fitted with main or auxiliary oil-fired boilers or internal combustion machinery shall be provided in the machinery space with one of the fixed fire extinguishing installations as required under sub-rule (4) of rule 8.

(7) Every ship to which this rule applies, being a ship fitted with internal combustion propelling machinery, shall be provided in the machinery spaces with portable fire extinguishers capable of discharging froth or other substance suitable for quenching oil fires, in accordance with the following Table:

B.H.P of main engines	Number of portable extinguishers
Not over 100	3
Over 100 but not over 150	4
Over 150 but not over 200	5
Over 200 but not over 250	6
Over 250	7

Provided that, for the number of portable fire extinguishers set

forth in the foregoing Table, there may be substituted two such extinguishers as are referred to in the fore-going provision, and either

(a) one froth fire extinguisher of a t least 45 litres, or

(b) an equivalent carbon dioxide fire extinguisher.

29. Ships of 150 tons and above but less than 500 tons :-

(1) This rule applies to ships of Class VII which are of 150 tons and more but less than 500 tons.

(2) Every such ship shall be provided with at least

(i) one power pump and one fire hose whereby one powerful jet of water can be rapidly directed into any part of the ship;

(ii) four fire buckets;

(iii) one fireman's axe.

(3) Every such ship, if fitted with main or auxiliary oil-fired boilers or internal combustion propelling machinery shall be provided with a nozzle suitable for spraying water on oil by means of hose referred to in Cl. (i) of sub-rule (2).

(4) Every such ship if fitted with main or auxiliary oil-fired boilers shall be provided

(i) in the machinery spaces, either with a receptacle containing an adequate quantity of sand or saw dust impregnated with soda or any other dry material suitable for quenching oil fires together with a scoop for distributing the contents of the receptacle, or with a portable fire extinguisher;

(ii) in the boiler room and each compartment in the ship which contains the whole or part of fuel oil installation, with at least two portable fire extinguishers capable of discharging froth or other substance suitable for quenching oil fires;

(iii) in the machinery space with one of the fixed fire extinguishing installations as required under sub-rule (4) of rule 8.

(5) Every such ship if fitted with internal combustion propelling machinery shall be provided in the engine room with

(i) a receptacle containing an adequate quantity of sand or saw dust impregnated with soda or any other dry material suitable for

quenching oil fires together with a scoop for distributing the contents of the receptacle;

(ii) at least two portable extinguishers capable of discharging froth or any other substance suitable for quenching oil fires;

(iii) one fire extinguisher of 45 litre capacity.

30. Ships of under 150 tons :-

(1) This rule applies to ships of Class VII of less than 150 tons.

(2) Every such ship shall be provided with

(i) one pump and one fire hose whereby a powerful jet of water can be directed into any part of the ship;

(ii) at least three fire buckets;

(iii) a fireman's axe :

Provided that in open ships fitted with internal combustion propelling machinery, two fire buckets with lanyard attached may be substituted for a pump and a fire hose and such fire buckets shall be in addition to the fire buckets referred to in Cl.(ii)

(3) Every such ship, if fitted with main or auxiliary oil-fired boilers or internal combustion propelling machinery, shall be provided with

(i) a receptacle containing an adequate quantity of sand or saw dust impregnated with soda or any other dry material suitable for quenching oil fires together with a scoop for distributing the contents of the receptacle;

(ii) if the ship is provided with a fire hose, a nozzle for spraying water on oil by means of that hose;

(iii) at least two portable fire extinguishers capable of discharging froth or any other substance suitable for quenching oil fires.

31. Ships of Class VIII :-

Rules 27 to 30 (both inclusive) shall apply to ships of Class VIII as they apply to ships of Class VII. General

32. Spaces containing particular risks :-

In every ship to which these rules apply containing spaces such as galley, gasoline compartments, cinemas, electric- steering gear, battery charging room and such other similar spaces which in the opinion of the Central Government contain particular risk, there

shall be provided such fire appliances as may be specified by the Central Government for avoiding such risk.

33. Fire pumps :-

(1) Every fire pump required to be carried under these rules shall be operated by means of power other than the ship's main engines, sanitary, ballast, bilge, or general service pumps may be accepted as fire pumps provided that they are not normally used for pumping oil and in case they are occasionally used for pumping or transferring fuel oil, suitable change over arrangements are fitted.

(2) Each of the required type of fire pumps, other than an emergency pump referred to in these rules, shall have a capacity of not less than 80 percent of the total required capacity divided by the number of pumps required under these rules and shall, in any case, be capable of delivering at least two simultaneous jets of water at a throw of at least 12 metres at the pressure specified below at every prescribed nozzle, other than a spray nozzle, when used with any of the fire hoses and nozzles provided in compliance with these rules:

Passenger Ships.	
4000 tons and over.	3.5 kilogrammes per sq. centimetre.
Below 4000 tons.	3.0 kilogrammes per sq. centimetre.
Cargo Ships.	
6000 tons and over.	3.0 kilogrammes per sq. centimetre.
Below 6000 tons.	2.6 kilogrammes per sq. centimetre.

(3) In every ship required by these rules to be provided with fire pumps operated by power, the total pumping capacity of such pumps shall not be less than that specified below:

(i) in the case of a passenger ship, the required fire pumps shall be capable of delivering a quantity of water, at the appropriate pressure prescribed in sub-rule (2), not less than two-thirds of the quantity required to be dealt with by the bilge pumps;

(ii) in the case of a cargo ship, the required fire pumps, other than an emergency pump, shall be capable of delivering a quantity of water, at the appropriate pressure prescribed in sub-rule (2), not less than four thirds of the quantity required to be dealt with by each of the independent bilge pumps in a passenger ship of the

same dimensions when employed on bilge pumping. For this purpose diameter of the bilge main shall be calculated according to the following formulae (the actual internal diameter of the bilge main being the nearest standard size acceptable to the Central Government): $d = \frac{L \cdot B}{D}$ where d = internal diameter of bilge in millimetres where L means length between perpendiculars in metres. B means greatest moulded breadth in metres. D means depth to bulkhead deck amidship in metres: Provided that in no cargo ship need the total required capacity of the fire pumps exceed 180 tonnes per hour.

(4) If more fire pumps operated by power than are required by these rules are provided in any ship the Central Government may permit the capacity of any such additional fire pumps to be less than 80 per cent.

(5) Relief valves shall be provided in conjunction with all the fire pumps if the pumps are capable of developing a pressure exceeding the design pressure of water service pipes, hydrants or hoses provided that such valves shall be so placed and adjusted as to prevent excessive pressure in any part of the fire main system.

(6) Every centrifugal pump which is connected to the fire main shall be fitted with a non-return valve.

(7) In every ship of Class I, II, III or IV an emergency fire pump shall be fitted abaft of the ship's collision bulkhead.

(8)

(i) Emergency fire pumps required to be provided under these rules shall be of fixed and self priming type independently driven by compression ignition engine or other approved means and shall have an adequate capacity for supplying at least two jets of water at the appropriate pressure prescribed in sub-rule (2) and shall be located at the place remote from machinery spaces and shall have their own sea-sections capable of providing adequate suction lift for the intended purpose but the suction lift shall under no circumstances exceed six metres :

(ii) Handles for starting the emergency fire pump prime movers should be stowed and marked so that they can be easily located in an emergency.

34. Water pipes and fire hydrants :-

(1) All water pipes and fire hydrants provided in compliance with these rules shall be so placed that, in addition to complying with other requirements under these rules, fire hoses may easily be coupled to them.

(2) The diameter of the fire main and water service pipes shall be sufficient for the effective distribution of the maximum required discharge from one or two fire pumps as required to be provided by the rules operating simultaneously except that in the case of cargo ships the diameter need only be sufficient for the discharge of 140 tonnes per hour. The fire mains shall have no connection other than those necessary for fire fighting and washing down.

(3) In ships likely to carry deck cargo, the position of the hydrants shall be such that they are always easily accessible with pipes and arranged in a manner to avoid risk of damage from such cargo and in ships where the deck pipe lines run on exposed deck two such lines shall be provided.

(4) Water pipes shall not be made of material which may be readily rendered ineffective by heat. They shall not be made of cast iron and shall be galvanised if made of iron or steel.

(5) All hose couplings and outlets on ship's fire mains to which hose connection is made shall be of 64 millimetres instantaneous pattern, and shall be of a type approved by the Central Government.

(6) The fire main shall be situated outside the machinery spaces and the discharge line or lines shall be fitted with isolating valves at the connections to the fire main provided that when the machinery space is situated amidships, the isolating valves shall also be provided in the fire main so that fire hydrants at both ends of the ship may be used simultaneously and separately.

(7) Cocks and valves shall be fitted to water service pipes and shall be so arranged that any fire hose coupled thereto may be removed while fire pumps are in operation.

(8) All water pipes for fire extinguishing system shall be provided with drain valves for use in frosty weather and so located that they may not be damaged by cargo.

35. Fire hose :-

(1) Fire hoses provided in compliance with these rules shall be

suitable for the intended use and shall not exceed 20 metres in length and shall be made in leather, seamless hemp closely woven flax canvas or any other suitable material and shall be provided with couplings, conductors and other necessary equipment and also with suitable nozzles.

(2) Every fire hose provided in compliance with these rules, together with the tools and fittings necessary for its use, shall be kept in a conspicuous position near the fire hydrants or connections with which it is intended to be used.

(3) The fire hoses provided in compliance with these rules shall not be used for any purposes other than for extinguishing fires or at fire drills or for testing fire appliances.

36. Nozzles :-

The nozzles required to be provided under these rules and used for extinguishing fires, other than oil fires, shall have a bore of 12 mm provided that nozzles having bores of 16 mm and 20 mm may also be used in machinery spaces. Nozzles larger in diameter may be provided if the requirements of these rules relating to provision of water for fire fighting purposes is otherwise complied with.

37. Fire buckets :-

(1) Every fire bucket provided in compliance with these rules shall be painted red and shall be clearly and permanently marked in black or white with the word "Fire". Every such fire bucket shall be kept filled with sand or water.

(2) At least half the number of such fire buckets shall be fitted with lanyards of sufficient length to enable the buckets to be filled from the sea with the ship in light condition.

(3) Such fire buckets shall not be used for any purpose other than for extinguishing fires.

38. Acceptable equivalents for fire extinguishers :-

Wherever these rules provide for substitutes, the acceptable equivalents for fire extinguishers shall be as prescribed below:

39. Fire extinguishers :-

(1) Non-portable foam and carbon dioxide fire extinguishers provided in compliance with these rules shall be constructed in accordance with the requirements of the Second and Third

Schedules respectively.

(2)

(a) Portable fire extinguishers (other than carbon dioxide fire extinguishers) provided in compliance with these rules shall, if they are of a type discharging fluid, have a capacity of not more than 13.5 litres and not less than 9 litres.

(b) Portable carbon dioxide fire extinguishers provided in compliance with these rules shall have a capacity of not less than 4.5 kg. of carbon dioxide.

(c) Portable dry powder fire extinguishers provided in compliance with these rules shall have a capacity of not less than 4.5 kg. of dry powder.

(d) Portable fire extinguishers of other types provided in compliance with these rules shall be of not less than the fire extinguishing equivalent of 9 litres fluid fire extinguisher.

(e) Portable fire extinguishers provided in compliance with these rules shall not exceed 25.5 kg. in weight in the fully charged condition and shall be as portable as a 13.5 litres fluid fire extinguisher.

(3) Potable fire extinguishers provided in compliance with these rules for use in accommodation or service spaces of any ship shall so far as practicable have a uniform method of operation.

(4) Portable fire extinguishers provided in compliance with these rules shall, subject to sub-rules (2) and (3) be designed and constructed to the satisfaction of the Central Government.

(5)

(a) Fire extinguishers in which the substance used for extinguishing fires is stored under pressure shall not be provided for use in accommodation spaces.

(b) Notwithstanding the requirement of Cl.(a), portable dry powder fire extinguishers wherein the substance to extinguish fire is stored under pressure may be provided in compliance with these rules in either the accommodation or service spaces or in the machinery spaces, subject to their number not exceeding one half of the total number of extinguishers required to be provided in either of these spaces.

(6) Fire extinguishers provided for use in any ship to which these rules apply shall not contain an extinguishing medium which either itself or when in use gives off gases harmful to persons.

(7) For the purposes of these rules,

(a) the capacity of any fire extinguisher other than a carbon dioxide fire extinguisher shall be taken to be the greatest volume or weight of extinguishing medium which it can contain when sufficient space is left to ensure the proper operation of the extinguisher.

(b) the capacity of a carbon dioxide fire extinguisher shall be taken to be the greatest weight of carbon dioxide which it can safely contain in a tropical climate.

(8) Every fire extinguisher provided in compliance with these rules shall be kept fully charged at all times.

(9) A spare charge shall be provided for every portable fire extinguisher provided in compliance with these rules, except that for each such fire extinguisher which is of a type that cannot readily be recharged while the ship is at sea, an additional portable fire extinguisher of the same type, or its equivalent, shall be provided in lieu of a spare charge.

40. Smothering gas and steam installation :-

(1) Where provision is made for the injection of gas or steam into machinery or cargo spaces for fire extinguishing purposes, the necessary pipes for conveying the gas or steam shall be provided with control valves or cocks which shall be so placed that they will be easily accessible and not readily cut off from use by an outbreak of fire. Such control valves or cocks shall be so marked as to indicate clearly the compartments to which the pipes are laid. Suitable provision shall be made to prevent inadvertent admission of the gas or steam to any compartment. Where cargo spaces fitted with smothering gas for fire protection are used as passenger spaces the smothering gas or steam pipe connection shall be blanked during service as a passenger space.

(2) The piping shall be so arranged as to distribute the smothering gas or steam in an effective manner. In holds over 20 metres in length at least two pipes shall be provided in cargo space one at each end of the hold, i.e., one on the forward side and the other on the after part. Except in tankers and ships used for the conveyance

of coal, pipes for conveying steam shall be fitted with outlets as low as practicable in the space which they serve and as nearly as possible to the centre line of the space.

(3) In tankers, the piping system shall be so arranged that the smothering gas when discharged, will be distributed over the surface of the cargo.

(4) Where a generator producing inert gas is used to provide smothering gas in the fixed smothering installation for cargo spaces, it shall be capable of producing hourly a volume of free gas equal to 25 per cent of the gross volume of the largest compartment protected in this way for a period of 72 hours.

(5) When steam is used as an extinguishing medium in cargo spaces, the boilers available for supplying steam shall have an evaporation of at least one kilogramme of steam per hour for each 0.75 cubic metre of the gross volume of the largest cargo compartment in the ship. The steam shall be available in the required quantity whenever needed during the course of the voyage and for this purpose suitable provision by way of extra feed water shall be made.

(6) When carbon dioxide is used as an extinguishing medium

(i) if discharged into space containing boilers or internal combustion type of machinery, the quantity of gas available shall be sufficient to give a minimum quantity of free gas to larger of the following quantities, namely, either a volume to include the casing up to the level at which the

(a) 40 per cent of the gross volume of the largest space, such horizontal area of the casing is 40 per cent or less of the space concerned; or

(b) 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 or 30 per cent, as the case may be, in the case of cargo ships of less than 2000 tons :

Provided further that if two or more spaces containing boilers or internal combustion type of machinery are not entirely separate, they shall be deemed as forming one compartment;

(ii) if discharged into 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;

(iii) if discharged into both cargo spaces and spaces containing boilers or internal combustion type of machinery, the quantity of gas need not be more than the maximum required either for the largest cargo compartment or machinery spaces;

(iv) if discharged into spaces containing boilers or internal combustion type of machinery, the fixed piping system shall be such that 88 per cent of the gas shall be capable of being discharged into such spaces within two minutes.

(7) For the purpose of determining the quantity of liquid carbon dioxide required to produce the volume of smothering gas required under these rules, 1 kg. of liquefied carbon dioxide shall be deemed to produce 0.56 cubic metres of gas.

(8) Adequate means shall be provided for giving audible warning when carbon dioxide is about to be released into any working spaces.

(9) When carbon dioxide is used as the extinguishing medium in spaces containing boilers or oil fuel installations a quantity of gas which can be Discharged normally without danger to the operator shall be available near the oil fuel unit.

41. Fixed pressure water spraying systems for machinery Spaces :-

(1) Every fixed pressure water spraying system fitted in compliance with these rules shall be provided with a pump, piping system, control valves, and spraying nozzles.

(2) The spraying nozzles shall be of such a type, sufficient in number and so arranged as to ensure distribution of water spray such as will effectively extinguish oil on fire in the spaces protected thereby. Spraying nozzles shall be fitted above bilges, tank tops and other areas over which oil fuel is liable to spread and above other main fire hazards in the spaces to be protected.

(3) The water spraying system may be divided into sections and shall be controlled from distribution manifolds the valves of which shall be capable of being operated from easily accessible positions outside the spaces to be protected and which shall be capable of withstanding the effects of an outbreak of fire for a reasonable

time.

(4) The water spraying system shall be kept charged at the necessary pressure and the pump supplying the water for the system shall be automatically put into action by pressure drop in the system.

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

(6) Means shall be provided which will prevent nozzles, from becoming clogged by impurities in the water or corrosion of piping, nozzles, valves and pump.

(7) The water spraying system shall include mobile sprayers ready for immediate use in the firing area of the boiler or in the vicinity of the oil fuel unit.

(8) No part of the water spraying system shall be situated forward of the collision bulkheads in any passenger steamer.

(9) Operating instructions in clear and permanent lettering shall be affixed to every water spraying system or in a position adjacent thereto.

42. Fixed Foam fire extinguishing installations :-

(1) Every fixed foam fire extinguishing installation fitted in compliance with these rules shall 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 15 centimetres the largest single area over which oil fuel is liable to spread. Such installation shall be capable of generating foam suitable for extinguishing oil fires and means shall be provided for the effective distribution of the foam through a permanent system of piping and control valves or cocks to discharge outlets, and for the foam to be effectively directed by fixed sprayers on other main oil fire hazards in the protected space either simultaneously or separately. Such installation shall include mobile sprayers ready for immediate use in the firing area of the boiler.

(2) Every fixed area fire extinguishing installation fitted in lieu of a fixed fire smothering gas installation required by these rules to be provided in the oil cargo spaces of any tanker shall be capable of distributing on the decks over the oil cargo tanks through fixed discharge outlets in not more than 15 minutes, a quantity of foam sufficient to cover to a depth of at least 5 centimetres the whole of tank deck area. Such installation shall be capable of generating foam suitable for extinguishing oil fires and means shall be provided for the effective distribution of the foam through a permanent system of piping and control valves or cocks to discharge outlets. There shall be sufficient mobile foam sprayers capable of being connected to the installation whereby foam can be directed into any tank. Explanation. For the purpose of this sub-rule, "tank deck area" means an area equivalent to the extreme length of the cargo tanks multiplied by the breadth of the ship.

(3) Every fixed foam fire extinguishing installation shall be so arranged that a fire in any of the spaces it protects will not render the controls inaccessible nor put the installation out of action.

(4) Operating instructions in clear and permanent lettering shall be affixed to every fixed foam fire extinguishing installation or in a position adjacent thereto.

43. Fire detection systems :-

(1) Every fire detection system fitted in compliance with these rules shall be capable of automatically indicating the presence or indication of fire and its location. The indicators shall be centralised either on the navigating bridge or at other control stations which are provided with direct communication with the navigating bridge:

Provided that the Central Government may in any ship permit the indicators to be distributed among several stations if they are satisfied that such arrangements are at least as effective as if the indicators were so centralised.

(2) In any passenger steamer electrical equipment used in the operation of any fire detection system fitted in compliance with these rules shall be capable of being supplied from two sources of electric power one of which shall be the emergency source of power.

(3) The indicating system of any fire detection system fitted in compliance with these rules shall operate both audible and visible

alarms at the stations referred to in sub-rule (1).

44. Firemen's outfits :-

(1) Every firemen's outfit carried in compliance with these rules shall consist of

(a) a breathing apparatus complying with the requirements specified in the Fourth Schedule;

(b) a portable self-contained electric-battery-operated safety lamp capable of functioning efficiently for a period of at least three hours; and

(c) a fireman's axe.

(2) Where more than one such outfit is provided they shall be kept in readily accessible and widely separated positions which are not likely to be cut off in the event of fire.

45. Fire Control plans :-

(1) There shall be permanently exhibited for the guidance of the master and officers of all ships over 21 metres in length general arrangement plans showing clearly for each deck the position of the control stations, the sections of the ship which are enclosed by fire resisting bulkheads together with particulars of the fire alarms, fire detection systems, the sprinkler installations, firemen's outfits, the means of access to the various compartments and decks in the ship, the ventilating system including particulars of the master's 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 rule 49.

(2) The general arrangement plans required by this rule shall be kept up-to-date, any alterations being recorded therein without delay.

46. Means for stopping machinery, shutting off oil fuel suction pipes and closing of openings :-

(1) In every ship to which these rules apply there shall be provided means for stopping ventilating fans serving machinery, accommodation and cargo spaces. For machinery and cargo spaces there shall be provided means for closing all skylights, doorways, ventilators, annular spaces round the funnels and other openings to

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

(2) In every ship to which these rules apply machinery driving (forced or 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 spaces in which such machinery or pumps are situated and such controls shall be capable of stopping such machinery or pumps in the event of fire in the said spaces.

(3) In every ship to which these rules apply every pipe connected to any oil fuel storage, settling or daily service tank, not being a double bottom tank, which if damaged would permit discharge of contents so as to cause a fire hazard, shall be fitted with a valve or cock which shall be secured to the tank to which it is connected and which shall be capable of being closed from a readily accessible position outside the space in which the tank is situated, provided that in case of any inlet pipe to such a tank non-return valve, similarly secured to the tank may be substituted. In the case of an oil deep tank traversed by any shaft or pipe tunnel a valve shall be fitted on the tank, but an additional valve or valves may be fitted on the pipe line or lines outside the tunnel or tunnels to enable control to be exercised in the event of fire.

47. Stowage of movable fire appliances :-

All movable fire appliances other than firemen's outfits, required to be provided in compliance with these rules, shall be stowed where they will be readily accessible from the spaces in which they are intended to be used and, in particular, fire extinguishers shall be stowed near the entrances to spaces in which they are intended to be used.

48. Approval of material, etc :-

Where these rules require that a particular fitting, appliance, apparatus or equipment or any type or equivalent thereof shall be provided, fitted or carried or any particular arrangement or provision shall be made, then every such fitting, appliance, apparatus or equivalent thereof or any such arrangement or provision shall be such as is reasonably adequate for the purpose for which it is required to be provided.

49. Requirements for ships of special design and layout :-

Where in the case of a ship in which particular fittings, appliance,

apparatus or any other equipment or any type thereof fitted in compliance with these rules are not considered by the Central Government as adequate, having regard to her design, layout or susceptibility to risk of fire, it may, notwithstanding anything contained in these rules, require, by order in writing, the ship to provide such other fittings, appliances, apparatus or equipment as it may consider necessary.

50. Equivalents, exemptions and savings :-

(1) Where these rules require that a particular fitting, material, appliance, apparatus or equipment or any type thereof shall be fitted or carried in a ship or that any particular arrangement or provision shall be made, the Central Government may allow any other fitting, material, appliance, apparatus or any type thereof to be carried or fitted or any other arrangement or provision to be made in that ship if they are satisfied, by trial thereof or otherwise, that such other fittings, material, appliance, apparatus or equipment or type thereof or any such other arrangement or provision is at least as effective as that required under these rules.

(2) The Central Government may, on such conditions as it thinks fit, exempt

(a) any ship of Class V, VII or VIII from the requirements of these rules if it is satisfied that by the nature of her construction and design it is neither practicable nor reasonable for that ship to comply with such requirements;

(b) any ship which is not normally engaged on international voyages but which in exceptional circumstance is required to undertake a single international voyage from the requirement of these rules, provided the ship complies with such safety requirements as are, in the opinion of the Central Government, adequate for the intended voyage.

(3) These rules shall not apply in the case of a ship the keel of which was laid before the Safety Convention came into force:

Provided that such ship complies with the requirements of the Indian Merchant Shipping (Fire Appliances) Rules, 1956, as in force immediately before the coming into force of these rules and complies also with such other requirements as to improvement and modifications in standards of fire safety as may be specified by the Central Government having due regard to the date the ship was

built and the extent of major structural alterations involved.

51. Penalties :-

Whoever commits a breach of any of the provisions of these rules shall be punishable with fine which may extend to one thousand rupees and in the event of a continuing breach of these rules, with a further fine which may extend to fifty rupees for every day after the first during which the breach continues.

SCHEDULE 1

SCHEDULE

FIRST SCHEDULE

(See rule 13 and 26)

International Shore Connection

1. The International Shore connection, as hereinafter illustrated which is required to be provided in compliance with these rules, shall be in accordance with the following specifications:

Outside diameter	178 millimeters
Inner diameter	64 millimeters
Bolt circle diameter	132 millimeters
Holes	4 holes each of 19 millimeters diameters equidistantly placed slotted to the flange periphery.
Flange thickness	14.5 millimeters minimum
Bolts	4, each of 16 millimeters diameter and 50 millimeters in length.
Flange surface	Flat face
Material	Any suited to 10.5 kilograms per square centimeter service.
Gasket	Any suited to 10.5 kilograms per square centimeter service.

2. The connection shall be constructed of material suitable for 10.5 kilograms per square centimeter service. The flange shall have a flat face on one side, and to the other shall have permanently attached thereto a coupling that will fit the ship's hydrants and hoses. The connection shall be kept aboard the ship together with a gasket of any material suitable for 10.5 kilograms per square centimeter service, together with four 16 millimeters bolts and 50 millimetres in length and eight washers service, together with four 16 millimetres diameter bolts and 50 millimeters in length and eight washers.

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SCHEDULE 2
SCHEDULE

SECOND SCHEDULE

(See rule 39)

Non-portable foam fire extinguishers.

(1) Every foam fire extinguisher, other than a portable fire extinguisher provided in compliance with These rules shall be so designed and constructed that The interior of The extinguisher can be examined.

(2) The body of The extinguisher shall be cylindrical with ends which shall be dished outwards without reverse flanging, to a radius not exceeding The diameters of The body. The body and ends shall be made of sheet steel, which shall be tinned or lead-coated internally, and every part of the extinguisher shall, where necessary, be protected against corrosion.

(3) The body of The extinguisher, shall be welded or riveted. All riveted joints shall be soldered.

(4) The body shall be provided with an opening for the introduction of an inner container. The opening shall be fitted with a cap of gunmetal or other suitable material,

screwed with a continuous thread, through The side of which safety holes or slots shall be provided so that when The cap is being removed any pressure of gas remaining in The container may be released gradually, should The discharge opening be choked. The cap joint shall be made with acid-resisting rubber, greased leather, or other suitable material.

(5) If the extinguisher is provided with an inner container, such container shall be adequately supported.

(6) A reinforced discharge hose shall be provided together with a nozzle, The area of which shall be such that when The extinguisher is operated The foam is projected to a distance of 13.50 meters for a period of not less than 100 seconds, in The case of an extinguisher of 136 liters capacity or over, and to a distance of 10.5 meters for a period not less than 90 seconds in The case of an extinguisher of under 136 liters capacity.

(7) The charge and The air space above The level of The solution in The body shall be so regulated that The maximum pressure in The extinguisher when put into action, with all outlets closed, does not exceed 19.75 kg. Per square centimeter, with The solution at a temperature of 38C.

(8) The extinguisher shall be capable of withstanding for a period of 5 minutes an internal pressure of 1 times the pressure in the extinguisher when put into action with all outlets closed, and in no event of less than 25 kg. Per square centimeter.

(9) The outside of The extinguisher shall be clearly and permanently marked with

- (a) The name of the maker or vendor of The extinguisher;
- (b) The capacity of the extinguisher;
- (c) The level of the solution, when the extinguisher is filled to its working capacity;
- (d) The pressure under which the extinguisher was tested;
- (e) Instructions for operating the extinguisher;
- (f) The year in which the extinguisher was manufactured.

SCHEDULE 3

SCHEDULE

THIRD SCHEDULE

(See rule 39)

Non-portable carbon dioxide fire extinguishers.

(1) Every carbon dioxide fire extinguisher provided in compliance with these rules shall be provided with suitable cylinders designed and constructed to the satisfaction of the Central Government.

(2) Each cylinder shall be provided with an internal discharge tube, and a valve to release the gas.

(3) The extinguisher shall be provided with a discharge hose, which shall be

reinforced so as to withstand a pressure of at least 127 kg. per square centimeter when the necessary couplings are fitted. The bore of the discharge hose shall not be less than the sizes respectively set forth in the following Table:

Capacity of extinguisher	Minimum bore of discharge
4.5kg. 16.0kg. 45.0kg.	6mm. 9mm. 12mm.

The discharge hoses shall be provided with horn which shall be of electrically non-conducting material and of a design which will reduce the velocity of the gas discharged. The metal of the operating handle shall be sheathed to protect the hand of the operator from extreme cold.

(4) At any temperature between 15C and 18C inclusive the extinguisher shall discharge gas at such a rate that carbon dioxide equal in weight to 3/4 of the capacity of the container will be discharged in the periods respectively set forth in the following Table:

Capacity of extinguisher	Period
4.5kg. 16.0kg. 45.0kg.	20 seconds 30 to 45 seconds 60 to 90 seconds

(5) The outside of the extinguisher shall be clearly and permanently marked with

- (a) The name of the maker or vendor of the extinguisher;
- (b) The capacity of the extinguisher;
- (c) Instructions for operating the extinguisher;
- (d) Markings, which will indicate the respective weights of the extinguisher when empty and when, filled;
- (e) The year in which the extinguisher was manufactured.

SCHEDULE 4
SCHEDULE

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FOURTH SCHEDULE

(See rule 44)

Fireman's outfit

1. Breathing apparatus. Every breathing apparatus provided in compliance with these rules may be either

(a) a smoke helmet or a smoke mask, each of which shall be provided with an air-pump or bellows and an air hose; or

(b) a self contained breathing apparatus.

2. Smoke helmet and smoke mask. Every smoke helmet or smoke mask provided in compliance with these rules shall be provided with a hose for the supply of air from the outside atmosphere. An air pump or bellows shall be provided which shall be suitable for pumping air through the hose. The hose shall be of the non-collapsing type and shall be sufficient in length to enable the air pump or bellows to be on the open deck in clean air well clear of any hatch or doorway, while the wearer of the helmet or mask is in any part of the accommodation, service, cargo, or machinery spaces. Efficient couplings shall be provided if two or more lengths of hose are to be joined in order to reach the aforesaid spaces. The air inlet to the pump or bellows shall be so protected as to ensure that the supply of air cannot be obstructed.

3. Self-contained breathing apparatus.

(a) Every self-contained breathing apparatus provided in compliance with these rules shall be of the open circuit compressed air type.

(b) The storage capacity of the compressed air cylinder or cylinders attached to the apparatus and carried by the wearer shall be at least 1,200 litres of free air. The storage cylinders shall be constructed of suitable material and shall be of efficient design and of sufficient strength to withstand with an adequate factor of safety the internal pressure to which they may be subjected, and each cylinder shall be capable of withstanding a test by hydraulic pressure suitable in excess of the working pressure.

(c) Means shall be provided for the automatic regulation of the air supply to the wearer of the apparatus in accordance with his breathing requirements, when he is breathing any volume of pure air up to 85 litres per minute at any time when the pressure in the supply cylinder or cylinders is above 10.50 kg. per square centimetre. Means shall be provided for overriding the automatic air supply valve.

(d) A pressure gauge with an anti-bursting orifice shall be incorporated in the high pressure air supply system to enable the wearer to read directly and easily the pressure of air in the supply cylinder or cylinders.

(e) Means shall be provided for warning the wearer audibly when 80 per cent, of the usable capacity of the apparatus has been consumed.

(f) The maximum weight of any such apparatus shall not exceed 16 kg. Excluding any life line and, if they do not form an integral part of the apparatus, any safety belt or harness.

(g) Every self-contained breathing apparatus shall be provided with fully charged spare cylinders having a spare storage capacity of at least 2,400 litres of free air except that

(i) If the ship is carrying five sets or more of such apparatus the total spare storage capacity of free air shall not be required to exceed 9,600 litres;

(ii) If the ship is equipped with means for recharging the air cylinders to full pressure with air free from contamination, the spare storage capacity of the fully charged spare cylinder of each such apparatus shall be of at least 1,200 litres of free air, and the total spare storage capacity of free air provided in the ship shall not be required to exceed 4,800 litres.

(h) A servicing and instruction manual shall be kept with each such apparatus.

4. General.

(a) Every breathing apparatus shall be constructed of materials having adequate mechanical strength, durability and resistance to deterioration by heat or by contact with water and such materials shall be resistant to fire and shall not allow the breathing circuit to be penetrated by smoke or chemical fumes likely to be encountered in service. The fabric used in the construction of any harness provided with such apparatus shall be resistant to shrinkage. Exposed metal parts of the apparatus harness and fittings shall be of material so far as practicable resistant to frictional sparking.

(b) The following equipment shall be provided for use with each set of breathing apparatus

(i) a fire proof life and signaling line at least 3 meters longer than is required to reach from the open deck in clear air well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces. The line shall be made of copper or vanished steel wire rope having a Breaking strength of at least 50 kilonewtons and shall be overlaid up to at least 32 millimeters in circumference by hemp or other covering to provide a surface which can be gripped when wet;

(ii) an adjustable safety belt or harness to which such line be capable of being securely attached and detached by the wearer means of a snap hook;

(iii) Means for protecting the eyes and face of the wearer against smoke;

(iv) Plates of suitable non-inflammable material bearing a close legible code of signals to be used between the wearer and his attendant, one of which shall be attached to the safety belt or harness and another attached to the free end of the lifeline;

(v) for every apparatus other than a smoke helmet a light weight safety Helmet with lining and adjustable head band.

(c) Every breathing apparatus shall be clearly marked with name of the maker or vendor and the year of manufacture. Operating instructions in clear and permanent lettering shall be affixed to such apparatus.