

CHAPTER 13 - PART A

PASSENGER SHIPS OF CLASSES I, II AND II(A)(OF 21.34 M IN LENGTH AND OVER) CARRYING NOT MORE THAN 36 PASSENGERS. (L.S. REGULATIONS 51 TO 67)

13.1 Structure (L.S. Regulation 52(1))

13.1.1 Hinged or portable decks

See paragraph 12.1.1 which applies in a similar manner.

13.1.2 False decks

See paragraph 12.1.2 which applies in a similar manner.

13.2 Aluminium Alloy Structure (L.S. Regulation 52(2))

13.2.1 Insulating the structure

13.2.1.1 Tables 1 and 2 in Schedule 2 to MSN 1667(M) require all bulkheads and decks to be 'A' Class or 'B' Class divisions except for those bulkheads which are permitted to be 'C' Class divisions and decks which have an asterisk notation and are consequently permitted, by paragraph 1(b)(i) of Schedule 2, to be of aluminium alloy with no 'A' Class standard.

13.2.1.2 Therefore all aluminium alloy bulkheads and decks except for 'C' Class bulkheads and bulkheads and decks with no 'A' Class standard, are required by L.S. Regulation 52(2)(a) to be insulated such that the temperature of their structural core does not rise more than 200°C above the ambient temperature when subjected to a standard fire test of 60 minutes and 30 minutes duration in the case of 'A' Class and 'B' Class divisions respectively. See also paragraphs 11.2.1.4, 11.2.2.2 and 13.5.14.

13.2.2 Approved insulations

See paragraph 12.2.2, which applies in a similar manner.

13.2.3 Bulkheads and decks not required to be 'A' Class or 'B' Class divisions

13.2.3.1 Any 'C' Class bulkheads, or any bulkheads and decks which are not required to be of 'A' Class standard - see paragraph 1(i) of Schedule 2 to MSN 1667(M), which are constructed of aluminium alloy and are structural bulkheads or decks supporting 'A' Class or 'B' Class divisions are required by L.S. Regulation 52(2)(a) to be insulated such that the temperature of their

structural core does not rise more than 200°C above the ambient temperature when subjected to a standard fire test for the same periods of time as required for the divisions which they are supporting.

13.2.3.2 Any structural bulkheads and decks constructed of aluminium alloy which are not required to be of 'A' Class standard (see paragraph 1(i) of Schedule 2 to MSN 1667(M)), and do not support any 'A' Class or 'B' Class divisions, are still required by L.S. Regulation 52(1) to be of an 'equivalent material' which, as defined, implies that they should be insulated in order to provide structural and integrity properties equivalent to steel at the end of an appropriate fire test for such bulkheads and decks as they do for 'A' Class and 'B' Class divisions. Nor do the regulations indicate that the core temperature limitations of 200°C should apply to such bulkheads and decks. Consequently those bulkheads and decks need only be protected respectively by a non-combustible lining or ceiling, or, in the absence of a non-combustible lining or ceiling, by a 25mm thickness of an approved 'A' Class mineral wool insulation.

13.2.4 Structure supporting lifeboats and liferafts (L.S. Regulation 52(2)(b))

Notwithstanding paragraphs 13.2.1, 13.2.3 and 13.5.14, any aluminium alloy structure which supports the lifeboat, liferaft and marine escape system embarkation, stowage, handling and lowering positions is required by L.S. Regulation 52(2)(b) to be insulated such that the temperature rise limitation of the structural core shall apply for 60 minutes duration. Such structure should be insulated in the same manner as an aluminium alloy 'A' Class division of A-0 standard.

13.3 Main Vertical Zones and Horizontal Zones (L.S. Regulation 54)

See paragraph 12.3 which applies in a similar manner.

13.4 Bulkheads Within Main Vertical Zones (L.S. Regulation 55)

13.4.1 Fire integrity and insulation standards of bulkheads (L.S. Regulation 55(1))

All bulkheads within accommodation spaces and service spaces except for those bulkheads referred to in paragraph 13.5.14 are required to be 'A' Class, 'B' Class or 'C' Class divisions as indicated in the tables in Schedule 2 to MSN 1667(M). These divisions should be constructed and insulated as indicated in paragraph 11.2.1 and 11.3 in the case of 'A' Class divisions, paragraph 11.2.2 and 11.7 in the case of 'B' Class divisions and paragraph 11.11 in the case of 'C' Class divisions.

13.4.2 Corridor bulkheads (L.S. Regulation 55(2)(a))

See paragraph 12.4.2 which applies in a similar manner.

13.4.3 Corridor bulkheads when a sprinkler system is fitted (L.S. Regulation 55(2)(b))

See paragraph 12.4.3 which applies in a similar manner.

13.4.4 'B' Class bulkheads other than corridor bulkheads (L.S. Regulation 55(3))

See paragraph 12.4.1 which applies in a similar manner.

13.5 Fire Integrity of Bulkheads and Decks (L.S. Regulation 56)

13.5.1 Minimum standards and categories

Each space throughout the ship should be allocated a category from the list of categories ((1A) to (11A) inclusive) indicated in paragraph 1(b) of Schedule 2 to MSN 1667(M). The minimum fire integrity and insulation standards of the bulkheads or decks separating adjacent spaces should be determined by cross referencing the categories of the spaces in the appropriate table in Schedule 2.

13.5.2 Group of spaces

See paragraph 12.5.2 which applies in a similar manner.

13.5.3 Separating spaces with partial bulkheads; and enclosed promenades

See paragraph 12.5.3 which applies in a similar manner.

13.5.4 Insulation values of spaces with special characters of two or more space categories and separating by wire mesh bulkheads

See paragraph 12.5.4 which applies in a similar manner.

13.5.5 Doubt as to category of a space

See paragraph 12.5.5 which applies in a similar manner.

13.5.6 Spaces used for unrelated purposes

A space should not be used for two or more unrelated purposes e.g. for stores and housing fans in which case the stores and fans should be located in a storeroom (Category (9A)) and a ventilation room (Category (7A)). It is inappropriate to apply the category which provides the more stringent fire integrity and insulation standards to the boundary bulkheads and decks (in this case there are only minor differences) because the combined space may justify applying much more stringent standards and it would be impossible to compensate for the loss of the A-0 bulkhead which should separate the spaces.

13.5.7 Spaces in more than one category

When a space may be included in more than one category e.g. a space containing a diesel driven emergency generator (Categories (1A) and (6A) or (7A) whichever is applicable) then the category which should be used is the one which requires the more stringent fire integrity and insulation standard for the bulkhead or deck which separates the space from an adjacent space.

13.5.8 Stairways closed at one level and escape trunks

A stairway or an escape trunk which is closed at only one level (other than one which forms a continuous fire shelter from the lower part of a machinery space referred to in L.S. Regulation 68(5)(a)(i)) should be regarded as part of the space from which it is not separated by a fire door i.e. it should not be regarded as Category (4A) space. The category of the trunk should not be changed in such a case when it is intended to fit a non-combustible door having no fire resisting properties to the 'open' end of the stairway or trunk.

13.5.9 Enclosed emergency escape trunks

A totally enclosed emergency escape trunk belongs to a space of Category (4).
[unified text]

13.5.10 Sales shops

Sale shops should be included in Category (3A) and may be used for the sale of any commodities including those which have a flammable content such as spirits, perfumes, hair sprays, lighter fuel etc.

13.5.11 Pantries containing no cooking appliances

13.5.11.1A pantry in Category (3A) may contain coffee automats, toasters, dishwashers, microwave ovens, water boilers and similar appliances, each with a maximum power of 5Kw. In addition electrically heated cooking plates for keeping food warm, each with a maximum power of 2 Kw and a surface temperature not above 150°C may be fitted. (Note: a dining room containing the above mentioned appliances should not be regarded as a pantry). **[unified text]**

13.5.11.2 See paragraph 12.5.11 for the positioning of power sockets and the conditions under which a microwave oven may be fitted in such a pantry.

13.5.12 Main pantries, pantries containing cooking appliances and galleys

See paragraph 12.5.13 which applies in a similar manner.

13.5.13 Construction and arrangement of saunas

See paragraph 12.5.14 which applies in a similar manner.

13.5.14 Separation of machinery from other spaces

See paragraph 12.5.15 which applies in a similar manner. Paragraph 12.5.15 should also apply to any arrangement involving a false deck.

13.5.15 Open deck spaces (Category 10A)

See paragraph 12.5.20 which applies in a similar manner.

13.5.16 Superscription 'a' in the tables in Schedule 2 of MSN 1667(M)

13.5.16.1 When adjacent spaces are in the same numerical category and a superscription 'a' appears in the table 1 of Schedule 2 of MSN 1667(M) and the spaces are used for the same purpose, a bulkhead need not be fitted between the spaces e.g. in Category (7A), two machinery space of other Category A adjacent to each other. If a bulkhead is fitted between two such spaces the bulkhead need only be of steel having no fire integrity standard or it may be of expanded metal.

13.5.16.2 Although a paint room and a store room having an area of more than 2m² are in the same numerical category (Category (9A)) they are used for different purposes and therefore a bulkhead of A-0 standard should be fitted between them as indicated in table 1.

13.5.16.3 Similarly in Category (9A) table 1, a bulkhead need not be fitted between two storerooms which are used for the same purpose or, if a bulkhead is fitted, it need have no fire integrity standard e.g. two linen storerooms. However the bulkhead separating two storerooms used for different purposes e.g. linen and provision storerooms should be of A-0 standard as specified in table 1.

13.5.17 Internal bulkheads of refrigerated chambers

The internal bulkheads of refrigerated chambers (Category (9A)) including the bulkhead between the storerooms and the handling room need not meet any fire integrity standard provided that the handling room is included in the chambers when obtaining the fire integrity and insulation standards of the boundary divisions from the tables. See paragraph 12.11.6.4 for refrigerated chambers insulated with organic foams, cork or other inflammable materials (see also paragraph 11.17).

13.5.18 Main zone divisions (L.S. Regulation 54)

Any 'B' Class or 'C' Class standard which is assigned to a bulkhead in table 1 of Schedule 2 to MSN 1667(M) should be substituted by A-0 standard when the bulkhead forms part of a main zone division.

13.5.19 Asterisk in the tables

13.5.19.1 Where an asterisk appears in tables 1 and 2 of Schedule 2 to MSN 1667(M) the bulkheads and decks are required to be of steel or equivalent material but need have no 'A' Class standard. However, where such a deck, except an open deck, is penetrated for the passage of electric cables, pipes and vent ducts, such penetrations should be made tight to prevent the passage of flame and smoke. **[unified text]** When such bulkheads and decks are constructed of aluminium alloy paragraphs 13.2.3 and 13.2.4 should apply.

13.5.19.2 Notwithstanding the provision of an asterisk in the tables, any of the following structure which is constructed of aluminium alloy should be an 'A' Class division of A-0 standard:

- (a) any part of the hull or side of a superstructure or deckhouse which does not support the lifeboat, liferaft and marine escape system embarkation, stowage, handling and lowering positions but is within 3 m of such positions;
- (b) the ends and sides of any superstructure or deckhouses which overlook a deck used for transferring passengers or crew from a muster station to an embarkation deck, the superstructure or deckhouse not being one which supports the lifeboat, liferaft and marine escape system embarkation, stowage, handling and lowering positions; and
- (c) any deck which is used for transferring passengers or crew from a muster station to an embarkation deck.

13.5.20 Continuous 'B' Class ceilings or linings as 'A' Class insulations

13.5.20.1 A continuous 'B' Class ceiling or lining should only be used respectively as the insulating medium for 'A' Class decks or bulkheads when the boards or panels from which the ceiling or lining is constructed have been approved for such use and a certificate issued. The ceiling or lining should be constructed in accordance with the conditions indicated on the approval certificate.

13.5.20.2 See paragraphs 11.3.1 and 11.3.2 and paragraphs 11.3.4.2 to 11.3.4.9 inclusive.

13.5.21 Boundaries and intersections of 'A' Class divisions

See paragraph 12.5.22 which applies in a similar manner.

13.5.22 Spaces not included in any category

13.5.22.1 Tanks, voids and similar spaces listed under Category (10) in paragraph 1(b) of Schedule 1 to MSN 1667(M) which are not listed under any

category in paragraph 1(b) of Schedule 2 should be regarded as Category (7A) spaces. Spaces behind ceiling and linings should not be regarded as voids (see paragraph 13.12.6.1).

13.5.22.2 Spaces listed under Category (11) in Schedule 1 which are not listed under any category in Schedule 2 should be regarded as Category (9A) spaces.

13.6 Protection of Stairways (L.S. Regulation 57)

13.6.1 Construction and insulation

See paragraph 12.6.1 which applies in a similar manner.

13.6.2 Stairways penetrating main zone steps

13.6.2.1 When a stairway enclosure penetrates a step in a main zone bulkhead, the bulkheads and decks forming the enclosure which projects above or below the step should be regarded as main zone divisions and any penetrations through such bulkheads should be treated accordingly.

13.6.2.2 See paragraphs 15.2.2, 15.3.1 and 15.6.1 for further information relating to stairways.

13.6.3 Stairways serving two decks (L.S. Regulation 57(1)(a))

See paragraph 12.6.3 which applies in a similar manner.

13.6.4 Stairways in public rooms (L.S. Regulation 57(1)(b))

See paragraph 12.6.4 which applies in a similar manner.

13.6.5 Lift trunks in stairway enclosures

13.6.5.1 The boundaries and doors of a lift trunk which is situated within a stairway enclosure are not required to meet any 'A' Class standard provided that:

(a) any boundary of the lift trunk which forms part of the stairway enclosure is an 'A' Class division of the appropriate standard specified in Schedule 2 to MSN 1667(M); and

(b) any opening in the lift trunk which gives direct access to any space situated outside the stairway enclosure is provided with an approved lift door of the same 'A' Class standard as the bulkhead in which it is fitted.

13.6.5.2 A lift trunk which extends above or below a stairway enclosure may be treated in the same manner.

13.6.6 Means of closure (L.S. Regulation 57(3))

Door openings in lift trunks should be fitted with efficient doors. Where the opening occurs in an area of the trunk which forms an 'A' Class division, then the door should be of an approved type of the same 'A' Class standard or greater.

13.6.7 Stairway enclosures - stowage of equipment

See paragraph 12.6.7 which applies in a similar manner.

13.7 Openings in 'A' Class Divisions (L.S. Regulation 58)

13.7.1 General comment

See paragraph 12.7.1 which applies in a similar manner.

13.7.2 Hatches (L.S. Regulation 58(3))

See paragraph 12.7.2 which applies in a similar manner.

13.7.3 Watertight doors (L.S. Regulation 58(4))

See paragraph 12.7.3 which applies in a similar manner.

13.7.4 Doors and shutters

See paragraph 12.7.4 which applies in a similar manner.

13.7.5 Relaxation from requirements (L.S. Regulation 58(9))

Relaxations from the requirements specified respectively in paragraphs 11.5, 11.6 and 13.9 for pipes, electrical cables and ducting penetrating 'A' Class decks as indicated in L.S. Regulation 58(9) should not normally be permitted except when it can be shown that it is impracticable to conform with any requirement e.g. when there is insufficient space to fit a 900mm long spigot. In such cases the surveyor should submit details to Headquarters for consideration.

13.7.6 External doors (L.S. Regulation 58(10))

See paragraph 12.7.6 which applies in a similar manner.

13.8 Openings in 'B' Class Divisions (L.S. Regulation 59)

13.8.1 General comment

13.8.1.1 When a 'B' Class division is intersected by structure or penetrated for any purpose, the fire integrity and insulation standard of the division should be maintained in way of such an intersection or penetration.

13.8.1.2 Pipes and electrical cables penetrating 'B' Class divisions should be dealt with as indicated in paragraphs 11.8 and 11.9 respectively.

13.8.1.3 Ventilation ducting which penetrates 'B' Class divisions should be dealt with as indicated in paragraph 13.9.

13.8.1.4 See paragraph 11.7.9 for lighting fittings in 'B' Class ceilings and paragraph 11.7.8 for access panels in 'B' Class ceilings or linings.

13.8.2 Doors (L.S. Regulation 59(2))

See paragraph 12.8.2 which applies in a similar manner.

13.9 Ventilation Systems (L.S. Regulation 60)

13.9.1 Independent ventilation systems

See paragraph 12.9.1 which applies in a similar manner.

13.9.2 Systems within main zones (L.S. Regulation 60(1))

See paragraph 12.9.2 which applies in a similar manner.

13.9.3 Penetration of main zone divisions (L.S. Regulation 60(2))

See paragraph 12.9.3 which applies in a similar manner.

13.9.4 Smoke control (L.S. Regulation 60(3))

See paragraph 12.9.4 which applies in a similar manner.

13.9.5 Vertical ducts (L.S. Regulation 62(2))

13.9.5.1 For the purpose of L.S. Regulation 62(2) a vertical duct is a duct which passes through more than one deck. This regulation requires vertical ducts to be insulated as required by the tables in Schedule 2 to MSN 1667(M). Compliance with this regulation may be achieved in the case of vertical ducts which are fitted with fire dampers immediately above each 'A' Class deck by insulating each damper coaming to the 'A' Class standard of the deck through which the duct passes to the extent shown in figure 12.7.

13.9.5.2 Vertical ducts having a cross sectional area not exceeding 0.02m² which pass through 'A' Class decks other than those which are main zone divisions, are not required to be fitted with fire dampers. Such vertical ducts

should be insulated to the same 'A' Class standard as the decks through which they pass by continuing the insulation fitted to the deck plating along the ducts for a distance of not less than 380mm from the deck plating.

13.9.5.3 Ducts of not less than 0.075m² cross sectional area and all vertical ducts are required by paragraph 1 of Schedule 3 to MSN 1667(M) to be constructed of steel or other equivalent material. Where an equivalent material such as aluminium alloy is contemplated the shipbuilder should be informed that the inside and outside of such ducts would need to be insulated to A-0 standard.

13.9.6 Air supply to control stations (L.S. Regulation 60(4))

See paragraph 12.9.6 which applies in a similar manner.

13.9.7 Ducts from machinery spaces of Category A, galleys etc. (paragraph 2 of Schedule 3 to MSN 1667(M))

See paragraph 12.9.7 which applies in a similar manner.

13.9.8 Ducts from accommodation spaces etc. (paragraph 3 of Schedule 3 to MSN 1667(M))

See sub-paragraphs 12.9.7.1, 12.9.7.2 and 12.9.7.3 which apply in a similar manner.

13.9.9 Galley exhaust ducts (paragraph 4 of Schedule 3 to MSN 1667(M))

13.9.9.1 See paragraph 12.9.9 which applies in a similar manner.

13.9.9.2 When an exhaust duct is fitted with branches serving different items of galley equipment, the requirements of paragraph 4 of Schedule 3 to MSN 1667(M) should apply to each branch. In such a case, the owner should be informed that in the event of a fire it is imperative to close the dampers in all branch ducts before releasing the fire extinguishing medium. Compliance with those standards is not necessary when a galley exhaust duct does not pass through accommodation spaces or other spaces containing combustibles e.g. when the duct goes directly to the open air from the galley. However L.S. Regulation 47(1)(a) and (b) should be complied with in respect of stopping the fan and providing a means of closure at the duct outlet. It would be sensible in such a case to fit a grease trap in the duct.

13.9.10 Openings for recirculating or exhausting air or balancing systems

See paragraph 12.9.10 which applies in a similar manner.

13.9.11 Ducts passing through 'A' Class divisions (L.S. Regulation 60(2))

See paragraph 12.9.11 which applies in a similar manner.

13.9.12 Fire resisting ducts (paragraph 5(b) Schedule 3 to MSN 1667(M))

See paragraph 12.9.12 which applies in a similar manner.

13.9.13 Ducts passing through 'B' Class divisions (paragraph 6, Schedule 3 to MSN 1667(M))

See paragraph 12.9.13 which applies in a similar manner.

13.9.14 Fire dampers

See paragraph 12.9.14 which applies in a similar manner.

13.10 Windows and Sidescuttles (L.S. Regulation 61)

13.10.1 Interior windows and sidescuttles (L.S. Regulation 61(1))

See paragraph 12.10.1 which applies in a similar manner.

13.10.2 Windows facing lifeboat and liferaft positions (L.S. Regulation 61(2)(b) and (3))

See paragraph 12.10.2 which applies in a similar manner.

13.11 Restriction of Combustible Materials (L.S. Regulation 62)

13.11.1 Surface spread of flame (L.S. Regulation 62(1))

See paragraph 12.11.1 which applies in a similar manner.

13.11.2 Total volume of combustibles (L.S. Regulation 62(2)(A))

See paragraph 12.11.2 which applies in a similar manner.

13.11.3 Gross calorific potential (L.S. Regulation 62(2)(b))

See paragraph 12.11.3 which applies in a similar manner.

13.11.4 Furniture in corridors and stairway enclosures (L.S. Regulation 62(2)(c))

See paragraph 12.11.4 which applies in a similar manner.

13.11.5 Primary deck coverings (L.S. Regulation 62(2)(d))

See paragraph 12.11.5 which applies in a similar manner.

13.11.6 Non-combustible materials (L.S. Regulation 62(3)(a))

See paragraph 12.11.6 which applies in a similar manner.

13.11.7 Oil and oil vapour barriers (L.S. Regulation 62(3)(a)(iv))

See paragraph 12.11.5 which applies in a similar manner.

13.11.8 Adhesives (L.S. Regulation 62(3)(a)(iv))

See paragraph 12.11.6 which applies in a similar manner.

13.11.9 Smoke and toxicity (L.S. Regulation 62(3)(b))

See paragraph 12.11.7 which applies in a similar manner.

13.12 Miscellaneous Items (L.S. Regulation 63)

13.12.1 Pipes penetrating 'A' and 'B' Class divisions (L.S. Regulation 63(1)(a))

See paragraphs 12.12.1 which applies in a similar manner.

13.12.2 Materials used for oil pipes (L.S. Regulation 63(1)(b))

See paragraph 12.12.2 which applies in a similar manner.

13.12.3 Overboard scuppers, discharges etc. (L.S. Regulation 623(1)(c))

See paragraph 12.12.3 which applies in a similar manner.

13.12.4 Oil and oil vapour barriers (L.S. Regulation 63(1)(d))

See paragraph 12.12.4 which applies in a similar manner.

13.12.5 Draught stops (L.S. Regulation 63(2)(a))

See paragraph 12.12.5 which applies in a similar manner.

13.12.6 Closure of decks (L.S. Regulation 63(2)(a))

13.12.6.1 L.S. Regulation 63(2)(a) requires air spaces behind ceilings and linings to be closed at each deck. The integrity and insulation standards of decks specified in table 6 in Schedule 2 to MSN 1667(M) are to be maintained in the air spaces behind the ceilings and linings as though such air spaces are part of the accommodation spaces, service spaces or control stations as appropriate from which they are separated by the ceiling or lining. The air spaces behind ceilings and linings which cannot be regarded as void spaces should be regarded as Category (7A) because the ceilings and linings separating the air spaces from the accommodation spaces, service spaces and control stations would have to be 'A' Class divisions in compliance with tables 1 and 2 in Schedule 2 to MSN 1667(M).

13.12.6.2 The fire integrity and insulation standards of decks in the region behind ships' side linings, should not be impaired by any means which may be adopted to enable a ship to withstand the effects of collision or contact damage e.g.;

(a) Where openings are cut in a deck behind linings (to permit rapid down-flooding when the ship sustains hull damage above that deck), the openings should be enclosed in 'A' Class bulkheads and steps of the appropriate standard indicated in the table 1 in Schedule 2 to MSN 1667(M), extending from the deck in which the openings are situated to above the deepest waterline (see figure 12.9). Any pipes which are provided for the rapid release of air from a space below the bulkhead deck into another space above (in order to facilitate cross-flooding in a damaged condition) should be fitted with steel flaps as shown in figure 12.10 so as to maintain the 'A' Class integrity of the deck separating the two spaces. Any proposed alternative arrangement should be submitted to Headquarters for consideration.

13.12.7 Detection of smoke (L.S. Regulation 63(2)(b))

See paragraph 12.12.7 which applies in a similar manner.

13.12.8 Electric space heaters (L.S. Regulation 63(2)(c))

See paragraph 12.12.8 which applies in a similar manner.

13.13 Sprinkler and Detector Systems (L.S. Regulation 64)

See paragraph 12.13 which applies in a similar manner.

13.14 Special Category Spaces and Ro-Ro Cargo Spaces (L.S. Regulation 65)

13.14.1 Ventilation fans serving special category spaces or Ro-Ro cargo spaces and machinery used for operating bow or stern doors should be situated in spaces separated from the special category spaces or Ro-Ro cargo spaces by 'A' Class divisions as specified in tables 1 and 2 of Schedule 2 to

MSN 1667(M). Fans with motors of less than 2 kW used for stirring the air within a special category space in order to prevent stratification may be situated within the space subject to the fan motors complying with the Merchant Shipping (Passenger Ship Construction; Ships of Classes I, II and IIA) Regulations 1998; Regulation 60(3); and the fan blades being of a non-sparking type.

13.14.2 Air pipes to trunks and voids should not terminate within a special category or a closed Ro-Ro cargo space because they impair the 'A' Class integrity of the deck which separates such spaces. The air pipes should be taken to open decks or looped over within the special category space and taken out through the ships side. See also paragraph 12.12.6.

13.15 Special Arrangements from Machinery Spaces (L.S. Regulation 67)

See paragraph 12.15 which applies in a similar manner.

CHAPTER 13 - PART B

PASSENGER SHIPS OF CLASSES II(A)(LESS THAN 21.34 M IN LENGTH) AND III TO VI(A) INCLUSIVE. (S.S. REGULATIONS 40 TO 43)

13.16 Drawings and Information required

13.16.1 Owners should arrange for drawings giving full particulars of their proposals for the structural fire protection of these smaller variety of passenger ship to be prepared and the submitted to the local MCA Marine Office for consideration and approval. Once approved the drawings should be retained in an appropriate file for record purposes and to facilitate future inspections.

13.16.2 Subsequent alterations to the structural fire protection arrangements of any ship should only be undertaken with the prior approval of the inspecting surveyor. Once such alterations have been agreed and undertaken, the drawings held for record purposes should be suitably amended, or replaced with new drawings (shipowners are strongly recommended to retain copies of all approved drawings and associated correspondence).

13.17 Structure of Ships of Classes IIA (less than 21.34 m in length), III and IV (S.S. Regulation 41)

For the purpose of this regulation, wood and glass reinforced plastic constructions will not normally be accepted in lieu of steel. When it is proposed to use aluminium alloy in lieu of steel for any part of the structure, full details of the extent to which the alloy is to be used and insulated should be submitted to Headquarters for consideration.

13.18 Structure of Ships of Classes V to VI(A) Inclusive

In the case of decked ships of Classes V to VI(A) inclusive, materials other than steel or aluminium alloy may be accepted for use in their construction provided that full details of the materials and the extent to which they are to be used are submitted to Headquarters for consideration well in advance of the commencement of construction.

13.19 Boundaries of Machinery Spaces Containing Internal Combustion Propulsion Machinery or Oil-Fired Boilers (S.S. Regulation 42)

13.19.1 Boundaries not required to be 'A' Class divisions

13.19.1.1 Ships of Classes III and IV and decked ships of Class V to VI(A); constructed of aluminium alloy.

When ships of Classes III and IV and decked ships of Classes V to VI(A) inclusive are constructed of aluminium alloy, the hull, bulkheads and decks, which are not required by S.S. Regulation 42 to be A Class divisions, should be insulated to A-O standard inside the machinery spaces. The insulation should be an approved 'A' Class type and it should be fitted in accordance with the conditions stated in the approval certificate. (See paragraphs 11.2.1.4 and 11.2.1.6).

13.19.1.2 Decked ships of Classes V to VI(A); of wooden construction.

When ships of Classes V to VI(A) inclusive are permitted by the MCA to be constructed of wood, the hull, bulkheads and decks inside the machinery spaces should be insulated as follows, or in some equally effective manner:

(a) the hull, bulkheads and deck should be faced with a 12.5mm minimum thickness of an approved 'A' Class board type insulation with galvanised steel sheet of not more than 1.0mm thickness bonded to its exposed surface. The steel covered panels of insulation should be secured at their edges to the ships side frames, bulkheads or bulkhead stiffeners and deck beams by means of stout steel self-tapping screws and steel washers, spaced not more than 300mm apart. The steel covered panels should be fitted closely together and should be of such a size as to be easily removable for examination of the wooden structure. The steel covered panels should terminate at the floor plates or 400mm above the bottom shell whichever is the higher. Any gap between the frames or stiffeners should be boxed-in using the board insulation and faced with sheet steel. Steel grilles may be fitted in the boxed-in portion and top of the board insulation at the ships side and in the board insulation in way of the deck in order to allow free movement of air by fusible links or similarly effective means; and

(a) when the ship is of substantial wood construction the insulation on the machinery space boundaries, which are not required to be 'A' Class divisions, may be dispensed with, provided details of the construction are submitted for consideration by Headquarters at an early stage of building and subsequently found to be suitable for such a dispensation.

13.19.1.3 *Decked ships of Classes V to VI(A); of GRP construction*

When decked ships of Classes V to VI(A) inclusive are permitted by the MCA to be constructed of glass reinforced plastic, the hull, bulkheads and decks inside the machinery spaces should be insulated as follows, or in some equally effective manner:

(a) the hull, bulkheads and deck should be faced with a 19mm minimum thickness of an approved 'A' Class board type insulation which is to be screwed at its edges to 75mm x 25mm grounds of the same material using stout steel self-tapping screws spaced not more than 300mm apart. The board grounds should be bolted to the ships side frames, bulkheads or bulkhead stiffeners and deck beams at a spacing of not more than 400mm apart (the bolt heads being glassed into the structure). The board grounds should be recessed in order to accommodate the nut and washer and present a flush surface for the attachment of the board insulation. The board insulation should be faced with sheet steel having a thickness of not more than 1.0mm. Adjacent sheets should be overlapped by not less than 25mm and secured in way of the overlaps to the board insulation by means of stout steel self-tapping screws at a spacing of not more than 250mm apart. The board insulation should terminate at the floor plates or 400mm above the bottom shell whichever is the higher. Any gap between the frames, stiffeners or board grounds should be boxed-in using the board insulation and faced with steel;

(b) when an approved 'B' Class mineral wool insulation is to be used to insulate the structure, the insulation should have a minimum thickness of 50mm and should be attached to the structure by steel pins, wire, netting and spring steel washers spaced not more than 400mm apart. The steel pins should be welded to steel pads which should then be glassed into the structure. The insulation should terminate at the floor plates or 400mm above the bottom shell whichever is the higher. The insulation should be provided with an oil and oil vapour barrier (see paragraph 12.12.4).

13.19.2 Boundaries required to be 'A' Class divisions

(Note, the '**accommodation spaces**' referred to in S.S. Regulation 42 should include any open or partially closed space situated on a weather deck which is available to passengers.)

13.19.2.1 Ships of Classes IIA (less than 21.34 m in length), III and IV and decked ships of Classes V to VI(A) inclusive; constructed of steel or aluminium alloy.

In such ships the bulkheads and decks which are required by S.S. Regulation 42 to be 'A' Class divisions should have an integrity and insulation standard as follows:

Class of ship	Integrity and insulation standard
IIA	A-60
III	A-60
IV	A-30
V	A-15
VI	A-60
VI(A)	A-60

Approved 'A' Class insulations should be used and fitted in accordance with the conditions stated in the approval certificates (see also paragraphs 11.2.1.4, 11.2.1.6 and 11.4)

13.19.2.2 Decked Ships of Classes V to VI(A) which are constructed of material other than steel or aluminium alloy.

(a) When decked ships of Classes V to VI(A) inclusive, are permitted by the MCA to be constructed of materials other than steel or aluminium alloy, the bulkheads and decks which are required by S.S. Regulation 42 to be 'A' Class divisions should be constructed of steel and insulated as indicated in paragraph 13.19.12. However where this is impracticable, consideration may be given for the divisions to be constructed of the material used to construct the remainder of the ship and insulated such that they provide an equivalent standard to the appropriate 'A' Class standard referred to in paragraph 13.19.1.2.

(b) When such ships are **constructed of wood**, the minimum thickness of an approved board type insulation used to insulate the bulkheads and decks should be 25mm, 19mm and 12.5mm respectively for A-60, A-30 and A-15 standards. The board insulation should be fitted and faced in the same manner as that indicated in paragraph 13.19.1.3.

(c) When such ships are **constructed of glass reinforced plastic**, the minimum thickness of an approved board type insulation used to insulate the bulkhead and decks should be 32mm, 25mm and 19mm respectively for A-60, A-30 and A-15 standards. The board insulation should be fitted and faced in the same manner as that indicated in paragraph 13.19.1.3

(d) When it is intended to use an approved mineral wool insulation to insulate materials other than steel or aluminium alloy, details of the insulation and the method of fitting it to the bulkheads and decks should be submitted to Headquarters for consideration before the commencement of the construction. However it should be noted that when the insulation is to be faced with sheet steel, the sheet steel should not be fitted directly on the surface of the insulation (see paragraph 12.12.4).

13.19.2.3 Open Boats of Classes V to VI(A)

(a) In the case of open boats of Class V to VI(A) inclusive, the bulkheads or engine casings or the bulkheads which separate the machinery space from the accommodation spaces may be of wood provided they are adequately insulated on the inside with a suitable asbestos-free board type of material (e.g. Masterclad) having a minimum thickness of 9.5mm faced with sheet steel.

(b) However, when the engine of an open boat is situated below a partial deck, the machinery space should be treated in a similar manner as the machinery space of a decked ship of the same class.

13.20 Gas Tight Construction

Surveyors should note that S.S. Regulation 42 requires the part of the hull and bulkheads and decks, which form the boundaries of machinery spaces containing internal combustion propulsion machinery, or oil-fired boilers on ships of Classes III and IV and decked ships of Classes V to VI(A) inclusive, to be of gas tight construction.