



Maritime and Coastguard Agency

## MERCHANT SHIPPING NOTICE

# MSN 1667 (M)

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## The Merchant Shipping (Fire Protection) Regulations 1998: Passenger ships: Fire integrity of bulkheads, decks and ventilation duct

Notice to Shipowners, Shipbuilders, Masters, Certifying Authorities and Surveyors

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### *Summary*

This Notice advises all Shipowners, Shipbuilders, Masters, Certifying Authorities and Surveyors of the new 1998 Fire Protection Regulations for fire integrity of bulkheads, decks and ventilation ducts.

#### Key Points :-

- This Notice forms an integral part of the Merchant Shipping (Fire Protection: Large Ships) Regulations 1998 and the Merchant Shipping (Fire Protection: Small Ships) Regulations 1998.
- Schedules contained in this Notice are invoked by those Regulations and are therefore a statutory obligation.

### LIST OF SCHEDULES

- Schedule 1 : Fire integrity of bulkheads and decks: Ships of Classes I, II and II(A) carrying more than 36 Passengers
- Schedule 2 : Fire integrity of bulkheads and decks: Ships of Classes I, II and II(A) carrying not more than 36 Passengers
- Schedule 3 : Fire integrity of ventilation ducts: All ships of Classes I, II and II(A)

In this Merchant Shipping Notice:-

- (1) references to regulations in the Schedules, unless otherwise stated, refer to regulations in the Merchant Shipping (Fire Protection: Large Ships) Regulations 1998;
- (2) a reference to a numbered paragraph is, unless otherwise stated, a reference to the paragraph of that number in that Schedule;
- (3) a reference to a numbered Schedule is, unless otherwise stated, a reference to the Schedule of that number in this Merchant Shipping Notice.

In this Notice the following expressions have the following meanings.

“ “A” Class Division” means a bulkhead or part of a deck which is -

- (a) constructed of steel or other equivalent material;
- (b) suitably stiffened;
- (c) so constructed as to be capable of preventing the passage of smoke and flame to the end of the 60 minute standard fire test; and
- (d) so insulated where necessary with suitable non-combustible materials that if the division is exposed to a standard fire test the average temperature on the unexposed side of the division shall not increase more than 139°C above the initial temperature nor shall the temperature at anyone point, including any joint, rise more than 180°C above the initial temperature within the time listed below –

“A-60” standard, 60 minutes;  
“A-30” standard, 30 minutes;  
“A-15” standard, 15 minutes;  
“A-0” standard, 0 minutes.

“accommodation spaces” means -

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

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

- (a) so constructed as to be capable of preventing the passage of flame to the end of the first 30 minutes of the standard fire test;
- (b) so constructed as to provide an insulation standard such that, if the division is exposed to a standard fire test, the average temperature on the unexposed side of the division shall not increase more than 139°C above the initial temperature, nor shall the temperature at anyone point, including any joint, rise more than 225°C above the initial temperature within the time listed below -

“B-15” standard, 15 minutes;  
“B-0” standard, 0 minutes; and

- (c) constructed of suitable non-combustible materials and all materials whose use is necessary for or ancillary to its construction and erection shall be non-combustible, with the exception that combustible veneers may be permitted provided that they meet the requirements of regulations 62, 80, or 97.

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

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

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

“machinery space” means a space which contains propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air conditioning machinery and similar spaces and where the context so admits, any trunk to such a space.

“machinery spaces of Category A” means a machinery space which contains -

- (a) internal combustion type machinery used either for main propulsion purposes, or for other purposes where such machinery has in the aggregate a total power output of not less than 375 kilowatts; or
- (b) any oil-fired boiler or oil-fired unit; and any trunk to such a space.

“main vertical zones” means the main vertical zones into which the hull superstructure and deck houses of a ship are divided in accordance with regulation 54; except that in the case of ships constructed on or after 1st October 1994, main vertical zones are taken to be those sections into which the hull, superstructure and deck houses are divided by “A” Class Divisions, the mean length and width of which on any deck does not in general exceed 40m.

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

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

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

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

“standard fire test” means a test in which a specimen of the relevant “A” Class or “B” Class Division, having an exposed surface area of not less than 4.65 square metres and a bulkhead height or deck length of 2.44 metres, resembling as closely as possible the intended construction and including where appropriate at least one joint, is exposed in a test furnace to a series of time temperature relationships defined by a smooth curve drawn through the following temperature points measured above the initial furnace temperature -

At the end of the first	5 minutes	556°C
“ “ “ “ “	10 minutes	659°C
“ “ “ “ “	15 minutes	718°C
“ “ “ “ “	30 minutes	821°C
“ “ “ “ “	60 minutes	925°C

“Surface spread of flame” means the surface spread of flame classified as Class 1 or Class 2 within the meaning of British Standard 476: Part 7: 1971.

**regulations 54(1)(a); 54(3)(a); 55(1)(a); 55(2)(b);  
57(1)(a)(i); 57(5)(C); 60(2); 61(2);  
61(3); 65(a)(i); 65(a)(ii); 65(a)(iii).**

## **SCHEDULE 1**

### **FIRE INTEGRITY OF BULKHEADS AND DECKS**

#### **Ships of Classes I, II and II(A) carrying more than 36 Passengers**

**1.** The fire integrity of bulkheads and decks shall be as prescribed in Tables 1, 2, 3 and 4

- (a) (i) Table 1 shall apply to bulkheads bounding main vertical zones or horizontal zones;
- (ii) Table 2 shall apply to bulkheads not bounding either main vertical zones or horizontal zones;
- (iii) Table 3 shall apply to decks forming steps in main vertical zones or bounding horizontal zones;
- (iv) Table 4 shall apply to decks not forming steps in main vertical zones nor bounding horizontal zones;

**Except that in the case of a ship constructed on or after 1st October 1994** and carrying more than 36 passengers, Table 5 (and not Table 2) shall apply to bulkheads not bounding main vertical zones or horizontal zones; and Table 6 (and not Table 4) shall apply to decks not forming steps in main vertical zones nor bounding horizontal zones; and Tables 1 and 3 shall not apply.

- (b) For the purpose of determining the appropriate fire integrity and insulation standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in Categories 1 to 14 below; where the contents and use of a space are such that there may be doubt as to its classification, it shall be treated as a space within the relevant category having the most stringent boundary requirements; the number in parentheses preceding each category refers to the applicable column or row numbers in the Tables -

- (1) *control stations and similar spaces* are -

control stations;

spaces containing centralised emergency public address systems and equipment;

- (2) *stairways* include -

interior stairways, lifts and escalators and enclosures thereto (other than those wholly contained within machinery spaces) for passengers or crew; a stairway which is enclosed at only one level shall be regarded as part of the space from which it is not separated by a fire door;

- (3) *corridors* include -

passenger and crew space corridors and, except in the case of ships **constructed on or after 1st October 1994** lobbies;

- (4) *lifeboat and liferaft handling and embarkation stations* include -

open deck spaces and enclosed promenades forming lifeboat and liferaft embarkation and lowering stations;

In the case of a ship **constructed on or after 1st October 1994** the following (and not the above) shall apply

*evacuation stations and external escape routes* are -

Survival craft stowage area;

Open deck spaces and enclosed promenades forming lifeboat and liferaft embarkation and lowering stations;

Muster stations, internal and external;

External stairs and open decks for escape routes;

The ship's side to the waterline in the lightest seagoing condition, superstructure and deckhouse sides situated below and adjacent to the liferaft and evacuation slide embarkation areas;

- (5) *open deck spaces* include -

open deck spaces and enclosed promenades clear of lifeboat and liferaft embarkation and lowering stations;

the air space outside superstructures and deckhouses;

- (6) *accommodation spaces of minor fire risk* are -

cabins which are rooms containing furniture and furnishings of restricted fire risk; public

spaces which are rooms containing furniture and furnishings of restricted fire risk and having a deck area of less than 50 square metres;

offices and dispensaries which are rooms containing furniture and furnishings of restricted fire risk;

- (7) *accommodation and service spaces of moderate fire risk* are -

spaces listed in Category 6 but which are rooms containing furniture and furnishings of other than restricted fire risk;

public spaces which are rooms containing furniture and furnishings of restricted fire risk and having a deck area of 50 square metres or more;

isolated lockers and store rooms within accommodation spaces having a deck area of less than 4 square metres in which no flammable liquids are stowed;

sale shops;

motion picture projection and film storage rooms;

laboratories in which no flammable liquids are stowed;

pharmacies;  
drying rooms having a deck area of less than 4 square metres;

**In the case of ships constructed on or after 1st October 1994, operating theatres.**

(8) *accommodation spaces of greater fire risk are -*

public spaces which are rooms containing furniture and furnishings of other than restricted fire risk and having a deck area of 50 square metres or more;  
hairdressing salons and beauty parlours;

(9) *sanitary and similar spaces are -*

communal sanitary facilities, showers, baths and water closets;  
laundry rooms having a deck area of less than 6 squaremetres;  
indoor swimming pool areas;  
operating theatres, **except in the case of ships constructed on or after 1st October 1994;**  
pantries containing no cooking appliances and not annexed to galleys;  
private sanitary facilities shall be considered part of the accommodation space in which they are located;

(10) *tanks, voids and auxiliary machinery spaces having little or no fire risk include -*

water tanks forming part of the ship's structure;  
voids and cofferdams;  
auxiliary machinery spaces which do not contain machinery having a pressure lubricated system and where storage of combustibles is prohibited, such as -

a ventilation and air-conditioning room; windlass room; steering gear room;  
stabilizer equipment room; electrical propulsion motor room; a room containing section switchboards and purely electrical equipment other than oil-filled electrical transformers (above 10 kVA); shaft and pipe tunnels; spaces for pumps and refrigeration machinery not using flammable liquids; closed trunks serving the spaces listed in this paragraph; other closed trunks such as pipe and cable trunks;

(11) *auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other spaces of moderate fire risk are -*

cargo oil tanks;  
cargo holds, ro-ro cargo spaces, trunkways and hatchways;  
refrigerated chambers;  
oil fuel tanks where installed in a separate space with no machinery;  
shaft and pipe tunnels allowing storage of combustibles;  
auxiliary machinery spaces specified in category 10 which contain machinery having a pressure lubricated system or where storage of combustibles is permitted;  
oil fuel filling stations;  
spaces containing oil-filled electrical transformers (above 10 kVA);  
spaces containing turbine and reciprocating steam engine driven auxiliary generators and small internal combustion engines of power output up to 110 kilowatts driving emergency generators, sprinkler pumps, drencher pumps or fire pumps, bilge pumps, etc;  
special category spaces (Tables 1 and 3 only apply);  
closed trunks serving the auxiliary machinery spaces listed in this category;

**In the case of ships constructed on or after 1st October 1994**, the following modifications shall apply –

The title of this section shall be -

“auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other spaces of moderate fire risk.”

Internal combustion engines of power output up to 110 kilowatts driving generators shall be added; and references to special category spaces shall be omitted;

- (12) *machinery spaces and galleys* are -

main propelling machinery rooms other than electrical propulsion motor rooms;  
boiler rooms;  
auxiliary machinery spaces, other than those in Categories 10 and 11, which contain internal combustion machinery or other oil-burning, heating or pumping units;  
galleys and annexes;  
pantries containing cooking appliances;  
trunks and casings to the spaces listed in this category;

- (13) *store-rooms, workshops and similar spaces* are -

laundry rooms having a deck area of 6 square metres or more;  
drying-rooms having a deck area of 4 square metres or more;  
lockers and store rooms not containing flammable liquids, other than those within accommodation spaces having a deck area of less than 4 square metres;  
mail and baggage rooms;  
workshops not part of machinery spaces or galleys;

- (14) *spaces in which flammable liquids are stowed* include

lamp rooms;  
paint rooms;  
store-rooms containing flammable liquids (including dyes, medicines, or potable spirits);  
laboratories in which flammable liquids are stowed.

- (c) Where a single value is shown for the fire integrity of a division between two spaces, that value shall apply in all cases.
- (d) **Except in the case of ships constructed on or after 1st October 1994**, in determining the applicable fire integrity standard of a division between two spaces within a main vertical zone or horizontal zone which is not protected by an automatic sprinkler, fire detection and fire alarm system complying with the provisions of Schedule 1 of Merchant Shipping Notice No. M.1666 or between such zones neither of which is so protected, the higher of the two values given in the Tables shall apply.
- (e) **Except in the case of ships constructed on or after 1st October 1994**, in determining the applicable fire integrity standard of a division between two spaces within a main vertical zone or horizontal zone which is protected by an automatic sprinkler, fire detection and fire alarm system complying with the provisions of Schedule 1 of Merchant Shipping Notice MSN 1666 (M), or between such zones both of which are so protected, the lesser of the two values given in the Tables shall apply; where a main vertical zone or horizontal zone provided with a sprinkler system and a main vertical or horizontal zone not provided with such a system meet within accommodation and service spaces, the higher of the two values given in the Tables shall apply to the division between the zones.

- (f) In Tables 1 to 4 the superscription has the following meaning -
- (i) “a” - Where adjacent spaces are in the same numerical category and superscription <sup>a</sup> appears, a bulkhead or deck between such spaces need not be fitted if in the opinion of the Secretary of State it is unnecessary.
  - (ii) “b” - Where superscription <sup>b</sup> appears the lesser insulation value may be permitted but only if at least one of the adjoining spaces is protected by an automatic sprinkler, fire detection and fire alarm system complying with the provisions of Schedule 1 of Merchant Shipping Notice MSN 1666 (M).
- (g) In Tables 5 and 6 the superscription has the following meaning -
- (i) “a” - Where adjacent spaces are in the same numerical category and superscription <sup>a</sup> appears, a bulkhead or deck between such spaces need not be fitted if in the opinion of the Secretary of State it is unnecessary.
  - (ii) “b” - The ship’s side, to the waterline in the lightest seagoing condition, superstructure and deckhouse sides situated below and adjacent to the liferafts and evacuation slides may be reduced to “A-30”.
  - (iii) “c” - Where public toilets are installed completely within the stairway enclosure, the public toilet bulkhead within the stairway enclosure can be of “B” Class integrity.
- (h) Where a dash appears in the Tables set out at the end of this regulation, no special requirements for material or integrity of boundaries are required.
- (i) The Secretary of State may, in respect of Category 5 spaces, permit lower standards than the integrity values in Tables 1 or 2, for the ends of deckhouses and superstructures, and the integrity values in Tables 3 or 4 for weather decks; the requirements of Tables 1 to 4 in respect of Category 5 shall not necessitate enclosure of spaces which, in the opinion of the Secretary of State, need not be enclosed. **In the case of a ship constructed on or after 1st October 1994**, this subparagraph shall apply with the substitution of Table 5 for Tables 1 or 2; Table 6 for Tables 3 or 4 and Tables 5 and 6 for Tables 1 to 4.
2. Continuous “B” Class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing wholly or in part, to the required insulation and integrity of a division.
  3. The integrity of “A” Class divisions shall be maintained at the intersections and boundaries of such divisions.





**TABLE 1- BULKHEADS BOUNDING MAIN VERTICAL ZONES OR HORIZONTAL ZONES**

Spaces	(1)	(2)	(3)	(4)	(S)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations (1)	A-60	A-30	A-30	A-0	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways (2)		A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-30	A-60	A-15 A-0	A-60
Corridors (3)			A-0	A-0	A-0	A-0	A-30 A-0	A-30 A-0	A-0	A-0	A-30	A-60	A-15 A-0	A-60
Lifeboat and liferaft handling and embarkation stations (4)				—	—	A-0	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-60
Open deck spaces (5)					—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk (6)						A-15 A-0	A-30 A-0	A-30 A-0	A-0	A-0	A-15 A-0	A-30	A-15 A-0	A-30
Accommodation spaces of moderate fire risk (7)							A-30 A-0	A-60 A-15	A-0	A-0	A-30 A-0	A-60	A-30 A-0	A-60
Accommodation spaces of greater fire risk (8)								A-60 A-15	A-0	A-0	A-60 A-15	A-60	A-30 A-0	A-60
Sanitary and similar spaces (9)									A-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk (10)										A-0	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk (11)											A-0	A-60	A-0	A-60
Machinery spaces and main galleys (12)												A-60	A-30 <sup>b</sup> A-15	A-60
Store-rooms, workshops etc. (13)													A-0	A-30
Other spaces in which flammable liquids are stored (14)														A-60



**TABLE 2 - BULKHEADS NOT BOUNDING EITHER MAIN VERTICAL ZONES OR HORIZONTAL ZONES**

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations (1)	B-0 <sup>a</sup>	A-0	A-0	A-0	A-0 B-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways (2)		A-0 <sup>a</sup>	A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-15	A-30	A-15 A-0	A-30
Corridors (3)			C	A-0	A-0 B-0	B-0	B-15 B-0	B-15 B-0	B-0	A-0	A-15	A-30	A-0	A-30 A-0
Lifeboat and liferaft handling and embarkation stations (4)				—	—	A-0	A-0	A-0	A-0	A-0	A-0	A-15	A-0	A-15 A-0
Open deck spaces (5)					—	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0 B-0	A-0 B-0
Accommodation spaces of minor fire risk (6)						B-0 C	B-15 C	B-15 C	B-0 C	A-0	A-15 A-0	A-30	A-0	A-30 A-0
Accommodation spaces of moderate fire risk (7)							B-15 C	B-15 C	B-0 C	A-0	A-15 A-0	A-60	A-15 A-0	A-60 A-15
Accommodation spaces of greater fire risk (8)								B-15 C	B-0 C	A-0	A-30 A-0	A-60	A-15 A-0	A-60 A-15
Sanitary and similar spaces (9)									C	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk (10)										A-0 <sup>a</sup>	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar spaces of moderate fire risk (11)											A-0 <sup>a</sup>	A-0	A-0	A-30 <sup>b</sup> A-15
Machinery spaces and main galleys (12)												A-0 <sup>a</sup>	A-0	A-60
Store-rooms, workshops etc. (13)													A-0 <sup>a</sup>	A-0
Other spaces in which flammable liquids are stored (14)														A-30 <sup>b</sup> A-15

**TABLE 3 - DECKS FORMING STEPS IN MAIN VERTICAL ZONES OR BOUNDING HORIZONTAL ZONES**

Space below 	Space above 	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations	(1)	A-60	A-60	A-30	A-0	A-0	A-15	A-30	A-60	A-0	A-0	A-30	A-60	A-15	A-60
Stairways	(2)	A-15	A-0	A-0	A-0	A-0	A-0	A-15 A-0	A-15 A-0	A-0	A-0	A-0	A-60	A-0	A-60
Corridors	(3)	A-30	A-0	A-0	A-0	A-0	A-0	A-15 A-0	A-15 A-0	A-0	A-0	A-0	A-60	A-0	A-60
Lifeboat and liferaft handling and embarkation stations	(4)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces	(5)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk	(6)	A-60	A-30 A-0	A-15 A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-15 A-0	A-15	A-0	A-15
Accommodation spaces of moderate fire risk	(7)	A-60	A-60 A-15	A-30 A-0	A-15 A-0	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-30 A-0	A-30	A-0	A-30
Accommodation spaces of greater fire risk	(8)	A-60	A-60 A-15	A-60 A-15	A-60 A-15	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-30 A-0	A-60	A-15 A-0	A-60
Sanitary and similar spaces	(9)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)	A-60	A-60	A-60	A-60	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-0	A-30	A-30 <sup>b</sup> A-0	A-30
Machinery spaces and main galleys	(12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Store-rooms, workshops etc.	(13)	A-60	A-60 A-15	A-30 A-0	A-15	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-0	A-30	A-0	A-30
Other spaces in which flammable liquids are stored	(14)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60



**TABLE 4 - DECKS NOT FORMING STEPS IN MAIN VERTICAL ZONES NOR BOUNDING HORIZONTAL ZONES**

Space below 	Space above 	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations	(1)	A-30 A-0	A-30 A-0	A-15 A-0	A-0	A-0 B-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-0	A-60	A-0	A-60 A-15
Stairways	(2)	A-0	A-0	A-0	A-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0	A-0	A-30	A-0	A-30 A-0
Corridors	(3)	A-15 A-0	A-0	A-0a B-0a	A-0	A-0 B-0	A-0 B-0	A-15 B-0	A-15 B-0	A-0 B-0	A-0	A-0	A-30	A-0	A-30 A-0
Lifeboat and liferaft handling and embarkation stations	(4)	A-0	A-0	A-0	A-0	—	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces	(5)	A-0	A-0	A-0 B-0	A-0	—	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0 B-0	A-0
Accommodation spaces of minor fire risk	(6)	A-60	A-15 A-0	A-0	A-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-15 A-0	A-0	A-15 A-0
Accommodation spaces of moderate fire risk	(7)	A-60	A-30 A-0	A-15 A-0	A-15 A-0	A-0 B-0	A-0 B-0	A-15 B-0	A-30 B-0	A-0 B-0	A-0	A-15 A-0	A-30 A-0	A-0	A-30 A-0
Accommodation spaces of greater fire risk	(8)	A-60	A-60 A-15	A-60 A-0	A-30 A-0	A-0 B-0	A-15 B-0	A-30 B-0	A-60 B-0	A-0 B-0	A-0	A-30 A-0	A-30 A-0	A-0	A-30 A-0
Sanitary and similar spaces	(9)	A-0	A-0	A-0 B-0	A-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0 <sup>a</sup>	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)	A-60	A-60 A-15	A-60 A-15	A-30 A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-0 <sup>a</sup>	A-0	A-0	A-30 <sup>b</sup> A-15
Machinery spaces and main galleys	(12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-30	A-30 <sup>a</sup>	A-0	A-60
Store-rooms, workshops etc.	(13)	A-60	A-30 A-0	A-15 A-0	A-15 A-0	A-0 B-0	A-15 A-0	A-30 A-0	A-30 A-0	A-0 B-0	A-0	A-0	A-0	A-0	A-15 <sup>b</sup> A-0
Other spaces in which flammable liquids are stored	(14)	A-60	A-60 A-30	A-60 A-30	A-60	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-30 <sup>b</sup> A-0	A-30 <sup>b</sup> A-0	A-0	A-30 <sup>b</sup> A-0

**TABLE 5 - BULKHEADS NOT BOUNDING EITHER MAIN VERTICAL ZONES OR HORIZONTAL ZONES**

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations (1)	B-0 <sup>a</sup>	A-0	A-0	A-0	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways (2)		A-0 <sup>a</sup>	A-0	A-0	A-0	A-0	A-15	A-15	A-0 <sup>c</sup>	A-0	A-15	A-30	A-15	A-30
Corridors (3)			B-15	A-60	A-0	B-15	B-15	B-15	B-15	A-0	A-15	A-30	A-0	A-30
Evacuation stations and external escape routes (4)				—	A-0	A-60 <sup>b</sup>	A-60 <sup>b</sup>	A-60 <sup>b</sup>	A-0	A-0	A-60 <sup>b</sup>	A-60 <sup>b</sup>	A-60 <sup>b</sup>	A-60 <sup>b</sup>
Open deck spaces (5)					—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk (6)						B-0	B-0	B-0	C	A-0	A-0	A-30	A-0	A-30
Accommodation spaces of moderate fire risk (7)							B-0	B-0	C	A-0	A-15	A-60	A-15	A-60
Accommodation spaces of greater fire risk (8)								B-0	C	A-0	A-30	A-60	A-15	A-60
Sanitary and similar spaces (9)									C	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk (10)										A-0 <sup>a</sup>	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, spaces, cargo and other oil tanks and other similar spaces of moderate fire risk (11)											A-0 <sup>a</sup>	A-0	A-0	A-15
Machinery spaces and main galleys (12)												A-0 <sup>a</sup>	A-0	A-60
Store-rooms, workshops, pantries etc. (13)													A-0 <sup>a</sup>	A-0
Other spaces in which flammable liquids are stored (14)														A-30

**TABLE 6 - DECKS NOT FORMING STEPS IN MAIN VERTICAL ZONES NOR BOUNDING HORIZONTAL ZONES**

Space below  Space above 	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations (1)	A-30	A-30	A-15	A-0	A-0	A-0	A-15	A-30	A-0	A-0	A-0	A-60	A-0	A-60
Stairways (2)	A-0	A-0	—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-30	A-0	A-30
Corridors (3)	A-15	A-0	A-0 <sup>a</sup>	A-60	A-0	A-0	A-15	A-15	A-0	A-0	A-0	A-30	A-0	A-30
Lifeboat and liferaft handling and embarkation stations (4)	A-0	A-0	A-0	A-0	—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces (5)	A-0	A-0	A-0	A-0	—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk (6)	A-60	A-15	A-0	A-60	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of moderate fire risk (7)	A-60	A-15	A-15	A-60	A-0	A-0	A-15	A-15	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of greater fire risk (8)	A-60	A-15	A-15	A-60	A-0	A-15	A-15	A-30	A-0	A-0	A-0	A-0	A-0	A-0
Sanitary and similar spaces (9)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk (10)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0 <sup>a</sup>	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk (11)	A-60	A-60	A-60	A-60	A-0	A-0	A-15	A-30	A-0	A-0	A-0 <sup>a</sup>	A-0	A-0	A-30
Machinery spaces and main galleys (12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-30	A-30 <sup>a</sup>	A-0	A-60
Store-rooms, workshops etc. (13)	A-60	A-30	A-15	A-60	A-0	A-15	A-30	A-30	A-0	A-0	A-0	A-0	A-0	A-0
Other spaces in which flammable liquids are stored (14)	A-60	A-60	A-60	A-60	A-0	A-30	A-60	A-60	A-0	A-0	A-0	A-0	A-0	A-0

regulations 54(1)(b); 54(3)(b); 55(1)(b); 55(2)(b);  
57(1)(a)(ii); 60(2); 61(2); 65(a)(iii)

## SCHEDULE 2

### FIRE INTEGRITY OF BULKHEADS AND DECKS

#### Ships of Class I, II and II(A) carrying not more than 36 Passengers

1. The fire integrity of bulkheads and decks shall be as prescribed in Tables 1 and 2 -

- (a) (i) Table 1 shall apply to bulkheads separating adjacent spaces;
- (ii) Table 2 shall apply to decks separating adjacent spaces.
- (b) For the purpose of determining the appropriate fire integrity and insulation standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in Categories 1A to 11A below; the number in parentheses preceding each category refers to the applicable column or row numbers in the Tables -

(1A) *control stations and similar spaces are -*

control stations;

spaces containing centralised emergency public address systems and equipment;

(2A) *corridors include -*

passenger and crew space corridors and lobbies;

(3A) *accommodation spaces are -*

spaces so defined but excluding stairways, corridors, lobbies;

(4A) *stairways include -*

interior stairways, lifts and escalators and enclosures thereto (other than those wholly contained within the machinery spaces);

a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door;

(5A) *service spaces of low risk are -*

- (i) ***in a ship constructed on or after 1st September 1984 but before 1st February 1992,*** lockers and storerooms having areas of less than 2 square metres, drying rooms and laundries;

- (ii) ***in a ship constructed before 1st September 1984 or on or after 1st February 1992,*** lockers and storerooms not having provision for the storage of flammable liquids and having areas of less than 4 square metres, and drying rooms and laundries;

(6A) *machinery spaces of category A*

(7A) *other machinery spaces*

(8A) *cargo spaces* are -

so defined and including trunkways and hatchways to such spaces, but excluding special category spaces and ro-ro cargo spaces;

(9A) *service spaces of high risk* are -

(i) ***in a ship constructed on or after 1st September 1984 but before 1st February 1992,*** galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 2 square metres or more, and workshops other than those forming part of the machinery spaces;

(ii) ***in a ship constructed before 1st September 1984 or on or after 1st February 1992,*** galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and storerooms having areas of 4 square metres or more, spaces for the storage of flammable liquids, and workshops other than those forming part of the machinery spaces;

(10A) *open decks* are -

open deck spaces, enclosed promenades having no fire risk, and the air space outside superstructures and deckhouses;

(11A) *special category spaces etc.* are-

special category spaces and ro-ro cargo spaces.

- (c) Where a single value is shown for the fire integrity of a boundary between two spaces, that value shall apply in all cases.
- (d) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is not protected by an automatic sprinkler, fire detection and fire alarm system complying with the provisions of Schedule 1 of Merchant Shipping Notice MSN 1666 (M) or between such zones neither of which is so protected the higher of the two values given in the Tables shall apply.
- (e) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is protected by an automatic sprinkler, fire detection and fire alarm system complying with the provisions of Schedule 1 of Merchant Shipping Notice MSN 1666 (M), or between such zones both of which are so protected, the lesser of the two values given in the Tables shall apply; where a sprinklered zone and a non-sprinklered zone meet within accommodation and service spaces, the higher of the two values given in the Tables shall apply to the division between the zones.
- (f) Where adjacent spaces are of the same numerical category and the superscription<sup>a</sup> is specified a bulkhead or deck of the rating shown in the Tables is only required when such spaces are used for different purposes.
- (g) Bulkheads separating the wheelhouse and chartroom from each other may be "B-0" rating.
- (h) "B-0" and "C" where appearing in Table 1 shall be read as "A-0" where the division is a main vertical zone or a horizontal zone.



- (i) Where an asterisk is specified in the Tables, the division is required to be of steel or equivalent material but is not required to be of "A" Class standard; however in the case of a division which is a main vertical zone or a horizontal zone, an asterisk appearing in Table 2, except Categories 8A and 10A, shall be read as "A-0".
- 2. Continuous "B" Class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division.
- 3. The integrity of 'A' Class divisions shall be maintained at intersections and boundaries.

**TABLE 1 - FIRE INTEGRITY OF BULKHEADS SEPARATING ADJACENT SPACES**

Spaces	(1A)	(2A)	(3A)	(4A)	(5A)	(6A)	(7A)	(8A)	(9A)	(10A)	(11A)
Control stations (1A)	A-0	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*	A-60
Corridors (2A)		C	B-0	A-0	B-0	A-60	A-0	A-0	A-15 A-0	*	A-15
Accommodation spaces (3A)			C	A-0	B-0	A-60	A-0	A-0	A-5 A-0	*	A-30 A-0
Stairways (5A)				A-0	A-0	A-60	A-0	A-0	A-15 A-0	*	A-15
Service spaces of low risk (SA)					C	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A (6A)						*	A-0	A-0	A-60	*	A-60
Other machinery spaces (7A)							A-0a	A-0	A-0	*	A-0
Cargo spaces (8A)								*	A-0	*	A-0
Service spaces of high risk (9A)									A-0a	*	A-30
Open decks (10A)										—	A-0
Special category spaces etc. (11A)											A-0

**TABLE 2 -FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES**

Space below	Space above	(1A)	(2A)	(3A)	(4A)	(5A)	(6A)	(7A)	(8A)	(9A)	(10A)	(11A)
Control stations	(1A)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*	A-30
Corridors	(2A)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Accommodation spaces	(3A)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30 A-0
Stairways	(4A)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*	A-0
Service spaces of low risk	(5A)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A	(6A)	A-60	A-60	A-60	A-60	A-60	*	A-60	A-30	A-60	*	A-60
Other machinery spaces	(7A)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*	A-0
Cargo spaces	(8A)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*	A-0
Service spaces of high risk	(9A)	A-60	A-30	A-30 A-0	A-30 A-0	A-0 A-0	A-60	A-0	A-0	A-0	*	A-30
Open decks	(10A)	*	*	*	*	*	*	*	*	*	—	A-0
Special category spaces etc.	(11A)	A-60	A-15	A-30 A-0	A-15	A-0	A-30	A-0	A-0	A-30	A-0	A-0

**SCHEDULE 3**

**FIRE INTEGRITY OF VENTILATION DUCTS**

**Ships of Classes I, II and II(A)**

1. Ventilation ducts except those in cargo spaces, shall be constructed as follows -
  - (a) ducts not less than 0.075 square metre in sectional area and all vertical ducts serving more than a single between-deck space shall be constructed of steel or other equivalent material;
  - (b) subject to the requirements of subparagraph (c) and of paragraphs 3 and 4, ducts of less than 0.075 square metre in sectional area other than vertical ducts referred to in subparagraph (a) shall be constructed of non-combustible materials; where such ducts penetrate "A" Class divisions or "B" Class divisions the fire integrity of such divisions shall be maintained; and
  - (c) ducts, not exceeding 0.02 square metre in sectional area nor 2 metres in length, need not be non-combustible provided that the following conditions are satisfied
    - (i) the ducts are constructed of suitable material having regard to the risk of fire;
    - (ii) the ducts are used only at the terminal ends of the ventilation system; and
    - (iii) the ducts are not located closer than 0.6 metre along their lengths to penetrations of "A" Class divisions or "B" Class divisions.
2. Ducts provided for the ventilation of machinery spaces of Category A, galleys, ro-ro cargo spaces or special category spaces shall not pass through accommodation spaces, service spaces or control stations unless the ducts are either -
  - (a)
    - (i) constructed of steel having a thickness of at least 3 millimetres and 5 millimetres for ducts the widths or diameters of which are up to and including 300 millimetres and 760 millimetres and over respectively and, in the case of such ducts, the widths or diameters of which are between 300 and 760 millimetres having a thickness to be obtained by interpolation; and
    - (ii) suitably supported and stiffened; and
    - (iii) fitted close to the boundaries penetrated with automatic fail-safe fire dampers, which are also capable of being closed manually; and
    - (iv) insulated to "A-60" standard from the machinery space, galley, ro-ro cargo space or special category space to a point at least 5 metres beyond each fire damper; or
  - (b)
    - (i) constructed of steel in accordance with subparagraph (a)(i) and (ii) and;
    - (ii) insulated to "A-60" standard throughout the accommodation spaces, service spaces or control stations;

3. Ducts providing ventilation to accommodation spaces, service spaces or control stations shall not pass through machinery spaces of Category A, galleys, ro-ro cargo spaces or special category spaces unless either –
  - (a) (i) the ducts where they pass through a machinery space of category A, galley, ro-ro cargo space or special category space are constructed of steel in accordance with subparagraphs 2(a)(i) and (ii); and
  - (ii) automatic fail-safe fire dampers, which are also capable of being closed manually, are fitted close to the boundaries penetrated; and
  - (iii) the integrity of the boundaries of the machinery space, galley, ro-ro cargo space or special category space is maintained at the penetrations; or
  - (b) (i) the ducts where they pass through a machinery space of Category A, galley, ro-ro cargo space or special category space are constructed of steel in accordance with subparagraphs 2(a)(i) and (ii); and
  - (ii) the ducts are insulated to “A-60” standard within the machinery space, galley, ro-ro cargo space or special category space; except that penetrations of main zone bulkheads and decks shall comply with the requirements of paragraph 7.
4. Exhaust ducts from galley ranges, where they pass through accommodation spaces or spaces containing combustible materials, and in ships constructed on or after 1st October 1994 all exhaust ducts from galley ranges shall be constructed of “A” Class divisions. Every such exhaust duct shall be fitted with -
  - (a) a grease trap readily removable for cleaning;
  - (b) an automatic fail-safe fire damper located in the lower end of the duct and in ships constructed on or after 1st October 1994 an automatic fail safe damper located in the upper end of the duct, provided that until 1st October 1997 in the case of ships **built before 1st September 1984** in lieu of the automatic fail safe fire damper in the lower end of the duct, a manual fire damper may be located at the galley boundary;
  - (c) arrangements, operable from within the galley, for shutting off the exhaust fan. In the case of a ship **constructed on or after 1st October 1994** and carrying more than 36 passengers, remote-control arrangements for shutting off the exhaust fans and supply fans, for operating the fire dampers mentioned in subparagraph (b) and for operating the fire-extinguishing system, shall be placed in a position close to the entrance to the galley. Where a multi-branch system is installed, means shall be provided to close all branches exhausting through the same main duct before an extinguishing medium is released into the system;
  - (d) a fixed means of extinguishing a fire within the duct using either carbon dioxide or a water spray system; and
  - (e) in ships constructed **on or after 1st October 1994** and on or after **1st October 1997** in a ship constructed **before 1st October 1994** and carrying more than 36 passengers, suitably located hatches for inspection and cleaning.

In addition to complying with subparagraph (b), galley ventilation ducts shall also comply with paragraph 2; except that in the case of a ship **constructed on or after 1st October 1994**, exhaust ducts from galley ranges shall comply only with subparagraph 2(b).

5. Where a ventilation duct of sectional area exceeding 0.02 square metre passes through an “A” Class bulkhead or deck, the opening in the bulkhead or deck shall be lined with a steel sleeve unless the

duct, where it passes through the bulkhead or deck, is constructed of steel. At the penetration the sleeve or duct shall comply with the following specification -

- (a) the duct or sleeve shall have a thickness of at least 3 millimetres over a length of 900 millimetres and as far as possible one half of that length shall be on each side of the bulkhead or deck; the duct or sleeve shall be insulated so as to maintain the standard of fire integrity of the bulkhead or deck; and
  - (b) every duct shall be fitted with a fire damper which is capable of being closed manually from each side of the division; in every duct of sectional area exceeding 0.075 square metre the fire damper shall also operate automatically; the operating position shall be readily accessible and be marked in red light-reflecting colour; the damper shall be fitted with a visible indicator showing whether the damper is in the open or shut position; fire dampers are not required, however, where ducts pass through spaces surrounded by "A" Class divisions without serving those spaces, provided that those ducts have the same fire integrity and insulation value as the division which they pierce; where divisions have differing "A" Class standards the ducts shall be of the higher standard.
6. Where a ventilation duct of sectional area exceeding 0.02 square metre passes through a "B" Class division, the opening shall be lined with a steel sleeve of 900 millimetres in length unless the duct, where it passes through the division, is constructed of steel. One half of this length shall as far as possible be on each side of the division.
7. Where, of necessity, a ventilation duct passes through a main vertical zone bulkhead, a failsafe automatic closing fire damper shall be fitted adjacent to the bulkhead. The damper shall also be capable of being manually closed from each side of the bulkhead. The operating position shall be readily accessible and marked in a red light-reflecting colour. The duct between the bulkhead and this damper shall be of steel or other equivalent material and be insulated to a standard that will ensure the effectiveness of the division in resisting fire is not impaired. The damper shall be fitted with a visible indicator at each operating position showing whether the damper is in the open or shut position.
8. **In ships constructed on or after 1st October 1994** and carrying more than 36 passengers, ventilation ducts which cannot be readily dismantled shall where practicable be provided with suitably located hatches for inspection and cleaning.

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