



Ref. T4/3.01

MSC/Circ.1102
15 September 2003

INTERPRETATIONS OF THE 2000 HSC CODE AND SOLAS CHAPTER X

1 The Maritime Safety Committee, at its seventy-seventh session (28 May to 6 June 2003), with a view to ensuring a uniform approach towards the design, building and operation of high-speed craft constructed in accordance with the provisions of the 2000 HSC Code as well as SOLAS chapter X, approved interpretations of the provisions of the Code and SOLAS chapter X as set out in annexes 1 and 2 respectively, following the recommendations made by the Sub-Committee on Ship Design and Equipment at its forty-sixth session, the Sub-Committee on Fire Protection at its forty-seventh session and the Sub-Committee on Stability and Load Lines and on Fishing Vessels Safety at its forty-sixth session.

2 Member Governments are invited to use the annexed interpretations when applying relevant provisions of the 2000 HSC Code and SOLAS chapter X, and to bring them to the attention of all parties concerned.

ANNEX 1

INTERPRETATIONS OF PROVISIONS OF THE 2000 HSC CODE

Section 1.4.16 - Explanations to control stations

- 1 Main navigating equipment includes, in particular, the steering control and the compass, radar and direction-finding equipment.
- 2 Where in the sections of this Code relevant to fixed fire-extinguishing systems there are no specific requirements for the centralization within a control station of major components of a system, such major components may be placed in spaces which are not considered to be a control station.
- 3 Spaces containing, for instance, the following battery sources should be regarded as control stations regardless of battery capacity:
 - .1 emergency batteries in separate battery room for power supply from black-out till start of emergency generator;
 - .2 emergency batteries in separate battery room as reserve source of energy to radiotelegraph installation;
 - .3 batteries for start of emergency generator; and
 - .4 in general, all emergency batteries required in pursuance of 12.3 of the Code.

Section 1.4.53 - Devices in “service spaces” containing no cooking appliances

“Service spaces” containing no cooking appliances may contain:

- .1 coffee automat, toaster, dish washer, microwave oven, water boiler and similar appliances, each of them with a maximum power of 5 kW; and
- .2 electrically heated cooking plates and hot plates for keeping food warm, each of them with a maximum power of 2 kW and a surface temperature not above 150°C.

Section 1.4.54 - Definition of “significant wave height”

Significant wave height should be taken as "the average crest-to-trough height of the highest one third of the zero-upcrossing waves in a specified period". Alternatively, this may be expressed mathematically as four times the square-root of the area under the wave energy spectrum.

Section 1.8 - Posting of certificates

All certificates or certified copies thereof issued under the present regulation should be posted up in a prominent and accessible place in the craft*.

* This interpretation does not apply to Parties to the 1988 SOLAS Protocol.

Section 1.9.1 - Transit voyages

- 1 A transit voyage includes delivery voyages, i.e. builder's port to base port, and voyages for repositioning purposes, i.e. change of base port and/or route. This may involve long trans-ocean passage operating for periods in excess of those set out in the Code, e.g. paragraph 1.3.5. This is acceptable as the craft is not operating commercially with passengers or cargo onboard.
- 2 The craft should have a valid High-Speed Craft Safety Certificate or similar before the start of such a voyage.
- 3 The operator should plan (including such matters as manning and temporary accommodation) and ensure that the craft is capable of safely completing the transit voyage.
- 4 The master of the craft should be provided with the information necessary to operate the craft safely during the transit voyage.
- 5 The Administration should satisfy itself of the arrangements made for the safe conduct of such voyages.

Section 2.1.3.1 (including 2.6.11.1 and 2.6.11.2) - Definition of "downflooding point"

Downflooding points include all openings, irrespective of size, that would permit passage of water through a water/weathertight bulkhead or deck, e.g. opening windows. Downflooding points exclude openings kept closed to an appropriate standard of water/weathertightness at all times other than when required for access or for operation of portable submersible bilge pumps in an emergency, e.g. non-opening windows of similar strength and weathertight integrity to the structure in which they are installed.

Section 2.2 (including 2.2.7.3, 2.2.8.1.1, 2.2.8.2.2, 2.2.8.3.4 and 2.2.8.4.1) - Explanation of the term "elsewhere"

The term "elsewhere" is taken as applying to "all weathertight and watertight closures located on or below the datum".

Section 2.2.3.2.2 - Interim guidelines for high-speed craft model testing

Reference should be made to MSC/Circ.1029, the annex to which provides interim guidelines for the conduct of high-speed craft model tests with respect to this paragraph.

Section 2.2.8.2.1 - Criteria for ensuring adequate strength of machinery space openings

Conformity with the requirements of organizations recognized by the Administration in accordance with SOLAS regulation XI/1 may be considered to ensure adequate strength.

Section 2.3.4 - Application of annexes 7 and 8 to monohull and multihull craft

The table is advisory, hence the use of the term “may”. For example: it may not prove suitable for all styles of trimaran. Examination of the righting lever curve will normally reveal whether the craft has stability characteristics most like a monohull or a multihull: the former having a modest metacentric height and angle of maximum righting lever of over about 25°, whereas the latter have a large metacentric height and an angle of maximum righting lever of less than about 25°.

Section 2.6.5 - Void spaces filled with foam

Void spaces filled with foam are considered to be void spaces for the purposes of this paragraph, provided such foam fully complies with 2.6.4.

Section 2.6.6 - Meaning of the term “parallelepiped”

1 A parallelepiped is defined as “a solid contained by parallelograms” and a parallelogram is defined as “a four-sided rectilinear figure whose opposite sides are parallel”. Applying this to 2.6.7.2, the inboard face at its mid-length should be tangential to, or otherwise touching in at least two places, the surface corresponding to the specified transverse extent of penetration, as illustrated in figure 2.6.7a.

2 Side damage should not transversely penetrate a greater distance than the extent of $0.2\sqrt{\nabla}$ at design waterline, except where a lesser extent is provided for in 2.6.7.2. Refer to figures 2.6.7 b and c.

3 In cases of damage under 2.6.8 and 2.6.9, the assumed shape of damage to each section should be rectangular.

Section 2.6.7 - Assumed shape of damage

1 Reference is made to the interpretations in 2.6.6 that also relate to this clause.

2 The shape of the damage should be assumed to be a parallelepiped-shaped solid block entering the side of the craft in a transverse direction as illustrated in figures 2.6.7 a, b and c below.

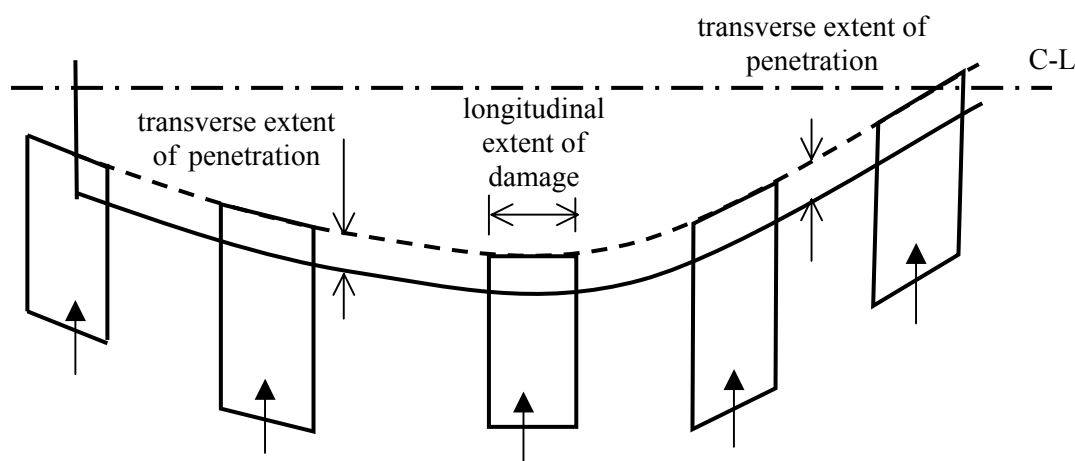


Figure 2.6.7a

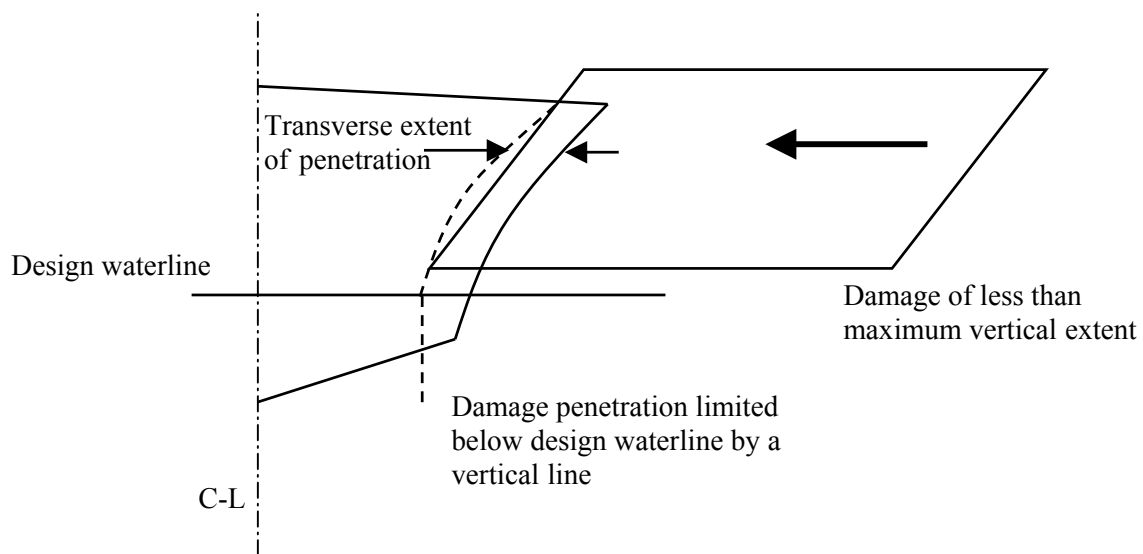


Figure 2.6.7 b

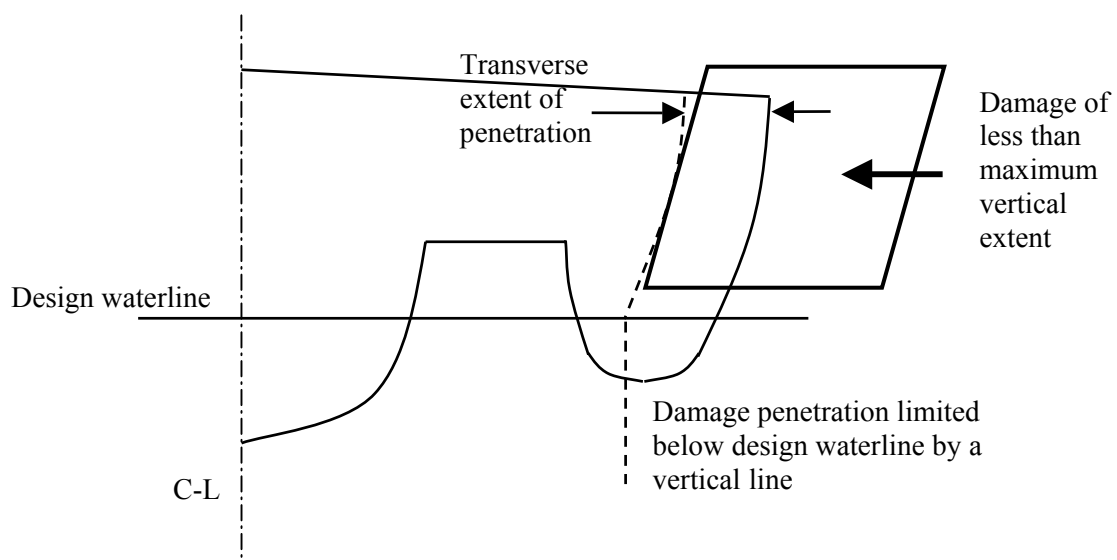


Figure 2.6.7 c

Section 2.6.7 - The “periphery” of the craft

1 In general, the periphery of the craft is considered to only be the surface of the shell encompassed by the outboard surface of the outermost hull at any given section, if considering a multihull.

2 Since damage to the “periphery” at the forward and aft ends of blunt-ended craft are not adequately covered by consideration of side damage using the above general interpretation of “periphery”, the following assumed extents of damage should be applied in such cases as illustrated in figure 2.6.7d:

- .1 at the fore end, damage to the area defined as A_{bow} in 4.4.1, the aft limit of which being a transverse vertical plane, provided that this area need not extend further aft from the forward extremity of the craft's watertight envelope than the distance defined in 2.6.7.1; and
 - .2 at the aft end, damage to the area aft of a transverse vertical plane at a distance $0.2 \nabla^{1/3}$ forward of the aft extremity of the watertight envelope of the hull.
- 3 The provisions of 2.6.6 in relation to damage of lesser extent remain applicable to such damage.

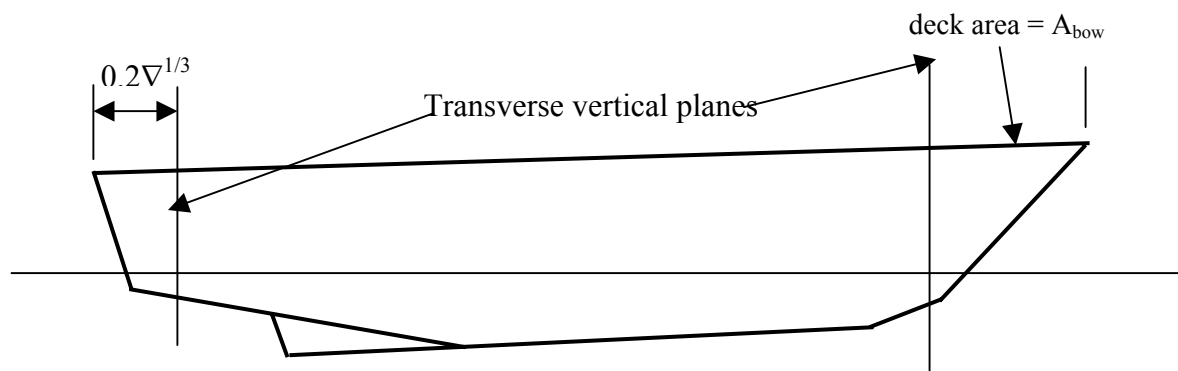


Figure 2.6.7 d

Section 2.6.8.2.2 - Assumed shape of damage

The shape of damage should be assumed to be rectangular in the transverse plane as illustrated in figure 2.6.8 below. Damage should be assumed at a series of sections within the defined longitudinal extent in accordance with figure 2.6.8, the mid-point of the damaged girth being maintained at a constant distance from the centreline throughout that longitudinal extent.

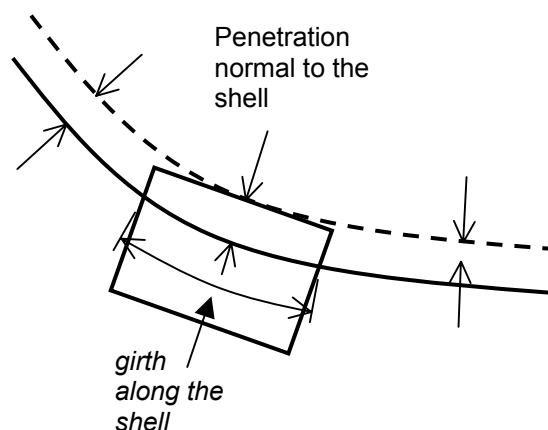


Figure 2.6.8

Section 2.6.9.1 - “All parts” of the hull(s)

The Code, in 2.6.9.1, is only considering bottom damages and therefore it should be clear that the application of damage to all parts of the hull should be only below the design waterline. “All parts” of the hull should be assumed to apply to all parts of the hull(s) below the design waterline that are not defined as vulnerable to raking damage.

Section 2.6.9.2 - Assumed shape of damage

The shape of damage should be assumed to be rectangular in the plane of the shell of the craft and rectangular in the transverse plane as illustrated in figure 2.6.8.

Section 2.6.11.1 and .2 - Downflooding

Opening windows are included for downflooding. Non-opening windows are not included for downflooding.

Section 2.7.1 - Inclining experiment "is not practical"

An accurate inclining experiment becomes impractical when the height of the centre-of-gravity (VCG or KG) is comparatively small in relation to the height of the transverse metacentre (KMT), i.e. when the metacentric height (GMT) is more than three times the KG. When this is so, small percentage errors in determining the metacentric height result in large percentage errors in centre-of-gravity height. In such situations a careful calculation of VCG may be more accurate than the results of an inclining experiment. A displacement check should be undertaken to confirm the calculated lightship characteristics, including VCG, which may be accepted if the measured lightship displacement and LCG are respectively within 2% and 1% L relative to the estimate. Similar considerations are provided for in paragraph 7.1.5 of the Intact Stability Code (resolution A.749(18), as amended).

Section 2.10 - Calculation of passenger heeling moment

For the purposes of this section:

- 1 When calculating the vertical centre-of-gravity, passengers assumed to be occupying seats should be taken as seated, with all others standing.
- 2 On the decks where assembly stations are located, the number of passengers on each should be that which generates the maximum heeling moment. Any remaining passengers should be assumed to occupy decks adjacent to those on which the assembly stations are located, and positioned such that the combination of number on each deck and total heeling moment generate the maximum static heel angle.
- 3 Passengers should not be assumed to gain access to the weather deck nor be assumed to crowd abnormally towards either end of the craft unless this is a necessary part of the planned evacuation procedure.
- 4 Where there are seats in areas occupied by passengers, one passenger per seat should be assumed, passengers being assigned to the remaining free areas of deck (including stairways if appropriate) at the rate of four per square metre.

Table 4.4.2 - Seat design

A high seat back should be sufficiently high to provide support to the rear of the skull of a seated adult against whip-lash type injuries. All other seats are considered as low seatbacks.

Section 4.7 - Means of escape

Spaces that are only entered occasionally by crew members may have only one means of escape. This sole means of escape should be independent of watertight doors.

Section 4.7.10 - Markings for exits and emergency routes

Although the arrangement of a low-location lighting system is not required, markings, if installed, should be of photoluminescent or electroluminescent material. In addition to exits, routes leading to evacuation stations and routes leading to safe areas should be marked. Markings for rescue personnel should indicate the location of the fire control plan.

Section 4.7.12 - Two unobstructed paths

Doors providing escape from a space should, if possible, be situated at opposite ends of the space. Where the doors providing escape from a space are situated in the same end of the space, the distance between those doors should be greater than the maximum length of the space.

Section 4.7.13 - Corridors, doorways and stairs

An aisle is a fore to aft passageway separating seating areas between seats. As such this paragraph does not apply to aisles. However, the width of such aisles should be such as to allow the craft to comply with the provisions of section 4.8 on evacuation. Nor does this clause apply to spaces between adjacent rows of seats, but the width of such spaces (i.e. the seat pitch) should be such as to allow the craft to comply with section 4.8 on evacuation.

Section 4.7.16 - Means of escape for special category spaces

Special category spaces used for stowage of motor vehicles should be provided with walkways leading to a safe means of escape, having a width of at least 600 mm.

Section 4.7.16 - Means of escape for machinery spaces

At least one means of escape from a machinery space should consist of either a ladder leading to a door or hatch (not being a horizontal flush-hatch) or a door located in the lower part of that space and giving access to an adjacent compartment from which a safe means of escape is provided.

Section 4.8.1 - Dimensioning of the means of escape

It is not required that the means of escape be dimensioned taking into account the additional number of persons that could use it in the event of an accident in an adjacent zone.

Section 4.8.2 - Evacuation procedure

Reference should be made to MSC/Circ.1001 – Interim guidelines for a simplified evacuation analysis of high-speed passenger craft, as amended.

Section 6.1.3 - Explanation of ‘design loads’

The intent of 6.1.3 is that under any operating load up to the breaking strength of the anchor cable or mooring lines, the loads on the bitts, bollards, etc. will not result in damage to the hull structure that will impair its watertight integrity. A strength margin of at least 20% above the minimum specified breaking strength of the relevant cable or warp should be allowed.

Section 7.3 - Insulation values of spaces with special characteristics of two or more groupings

Where a space has the special characteristics of two or more space groupings, the structural fire protection time of the divisions should be the highest for the space groupings concerned. For example, the structural fire protection time of the divisions of emergency generator rooms should be of the highest value for the space when the space is considered as being a control station (D) and a machinery space (A).

Section 7.3.1 - Separating partial bulkheads of spaces

If a space is divided by partial bulkheads into two (or more) smaller areas such that they form enclosed spaces, then the enclosed spaces should be surrounded by bulkheads and decks in accordance with tables 7.4-1 and 7.4-2, as applicable. However, if the separating bulkheads of such spaces are at least 30% open, then the spaces may be considered as the same space.

Section 7.3.1 - Acceptance of cabinets

Cabinets having a deck area of less than 2 m² may be accepted as part of the space they serve, provided they have open ventilation to the space and do not contain any material or equipment that could be a fire risk.

Section 7.3.2 - Prevention of heat transmission, details of insulation

1 To prevent heat transmission at intersections and terminal points, the insulation of the deck or bulkhead should be carried past the intersection or terminal point for a distance of at least 450 mm in the case of steel and aluminium structures (refer to figures 7.3-1 and 7.3-2).

2 If a space is divided by a deck or bulkhead and the fire insulation required for each space is different, the insulation with the higher structural fire protection time should continue on the deck or bulkhead with the insulation of the lesser structural fire protection time for a distance of at least 450 mm.

3 In the event the lower part of the fire insulation has to be cut for drainage, the construction should be in accordance with the structural details shown in figure 7.3-3.

Table 7.4-1 - Ventilation openings

Ventilation openings may be accepted in entrance doors to public toilets, provided they are positioned in the lower portion of the door and fitted with closable grilles operable from outside the space and made of non-combustible or fire-restricting material.

Section 7.4.1.3 - Appendages not intended to be of fire-restricting or non-combustible material

This paragraph is only intended to apply to the main structure of the craft. Appendages such as air propellers, air ducts to propellers, transmission shafts, rudders and other control surfaces, struts, spars, flexible skirts, etc., are not intended to be of fire restricting or non-combustible material, therefore 7.4.1.3 should not apply to them.

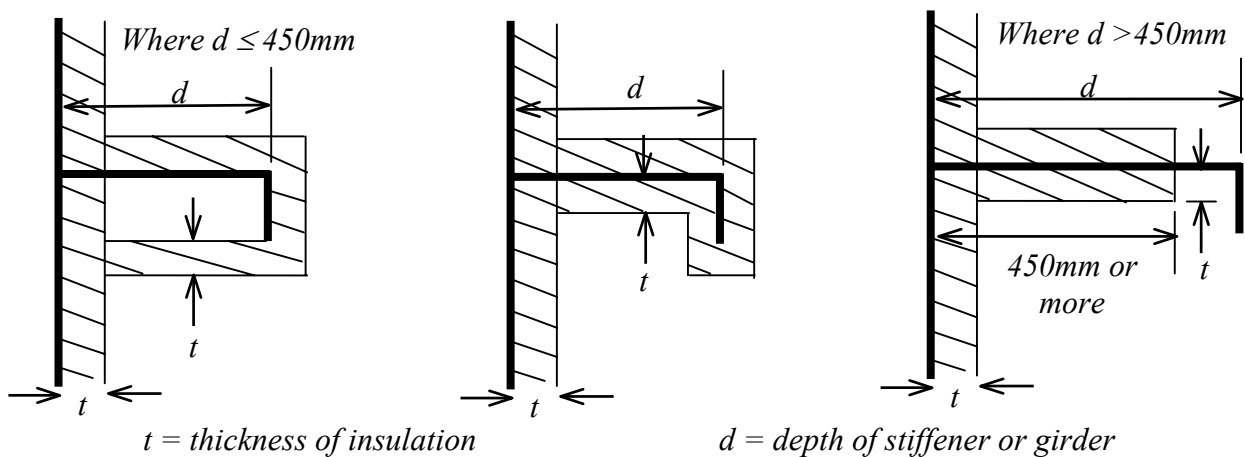


Figure 7.3-1

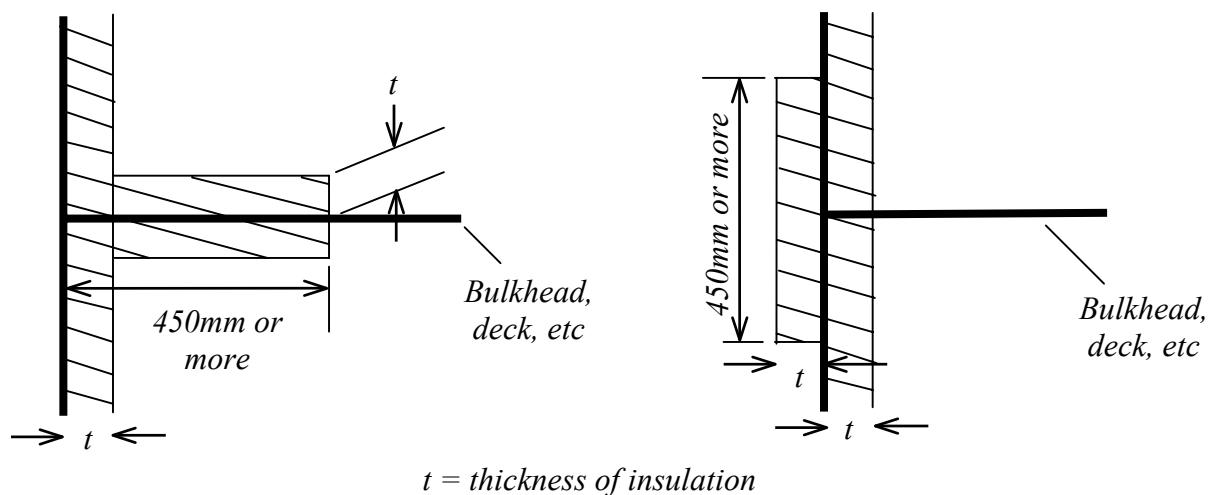


Figure 7.3-2

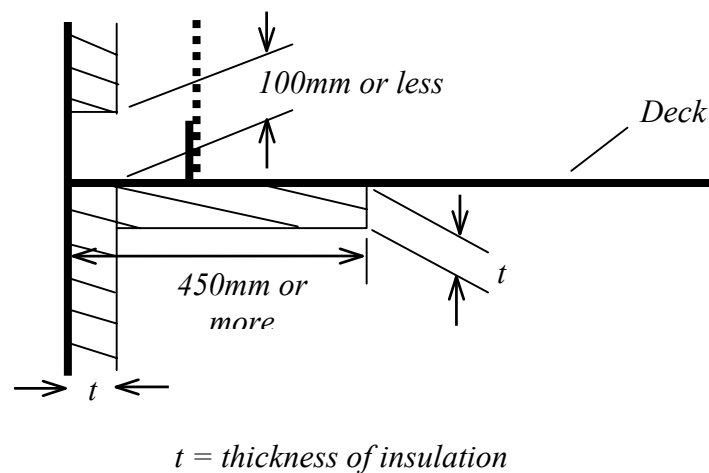


Figure 7.3-3

Section 7.4.2.1 - Structures in contact with seawater

Structures in contact with seawater should be insulated to the required standard to a level 300 mm below the waterline in the craft lightweight condition.

Section 7.4.3.2 - Surface protection of insulation

The fire insulation in such spaces may be covered by metal sheets (not perforated) or by vapour proof glass cloth accurately sealed at the joint.

Section 7.4.3.3 - Furniture and furnishings in public spaces and crew accommodation

Fire test procedures referenced in the FTP Code (resolution MSC.61(67), as amended by resolution MSC.101(73)), and MSC/Circs.916, 964, 1004, 1008 and 1036 should be applied to items and materials covered by this paragraph as follows:

- .1 case furniture (FTP Code, annex 1, parts 1 and 10);
- .2 frames of all other furniture (FTP Code, annex 1, parts 1 and 10);
- .3 draperies, textiles and other suspended textile materials (FTP Code, annex 1, part 7);
- .4 upholstered furniture, e.g. passenger seating (FTP Code, annex 1, part 8);
- .5 bedding components (FTP Code, annex 1, part 9); and
- .6 deck finish materials (FTP Code, annex 1, parts 2 and 6).

Section 7.4.3.3.1 - Types of case furniture

Different possible types of case furniture are: desks, wardrobes, dressing tables, bureaux and dressers.

Section 7.4.3.4 - Low-flame spread surfaces

- 1 This section does not apply to items and materials referred to in 7.4.3.3.
- 2 Consistent with 7.9.3.4 and clauses 1 and 5.1 of annex 2 to the FTP Code, partitions, windows and sidescuttles made of glass are considered to be non-combustible and to comply with the requirements for low-flame spread surfaces.

Section 7.4.4.1 - Public spaces accommodated on two levels

Where stairways are fitted in a public space consisting of only two decks, the following conditions should be met:

- .1 all levels are used for the same purpose;
- .2 the area of the opening between the lower and upper part of the space should be at least 10% of the deck area between the upper and lower part of the space;
- .3 the design should be such that persons within the space should be generally aware, or could easily be made aware of, a developing fire or other hazardous situation located within that space;
- .4 sufficient means of escape are provided from both levels of the space directly leading to an adjacent safe area or compartment; and
- .5 the whole space is served by one section of the sprinkler system.

Section 7.4.4.3 - Location of draught stops

Draught stops are not required in public spaces with open ceilings (perforated ceilings) where the opening is 40% or more and the ceiling is arranged in such a way that a fire behind the ceiling can be easily seen and extinguished.

Section 7.5.2 - Use of aluminium in lubricating oil sump tanks

The use of aluminium in lubricating oil sump tanks for engines, or in lubricating oil filter housings fitted integral with the engines, is accepted.

Section 7.6.1 - Accessibility, marking and indication of ventilation controls

The controls should be easily accessible as well as prominently and permanently marked and should indicate whether the shut-off is open or closed.

Section 7.6.3.2 - Meaning of 'lower end' and 'upper end' of the duct in galley range ducts

'Lower end of the duct' means a position at the junction between the duct and the galley range hood.

Section 7.6.3.4 - Means of closing for multi-branch systems in galley range ducts

The means for closing the ends of multi-branch systems should be remote controlled from a position close to the remote controls listed in this regulation.

Section 7.6.3.5 - Location of hatches for inspection and cleaning in galley range ducts

- 1 One hatch should be provided close to the exhaust fan.
- 2 In the galley exhaust duct the grease will accumulate more in the lower end. Therefore, hatches should be fitted also in this part of the duct. For interpretation of 'lower end' see that for section 7.6.3.2.

Section 7.6.4 - Accessibility of dampers

Fire and smoke dampers should be easily accessible. Where they are placed behind ceilings or linings, they should be provided with an inspection door on which a plate is fitted, providing the identification number of the damper. Such plates with identification numbers should also be placed on any required remote controls.

Section 7.6.6 - Means of closing fire and smoke dampers

Manual closing may be achieved by mechanical means of release or by remote operation of the fire or smoke damper by means of a fail-safe electrical switch or pneumatic release (i.e. spring-loaded, etc.).

Section 7.7 - Requirements for fixed fire-extinguishing systems not required by 7.7 of the Code

Where a fixed fire-extinguishing system not required by 7.7 of the Code is installed, it should meet the requirements of this section.

Section 7.7.1 - Control stations not normally occupied

Control stations not normally occupied (e.g. emergency generator rooms) need not be provided with manually operated call points.

Section 7.7.1.1.4 - Definition of section

A section is a group of fire detectors and manually operated call points as displayed at the indicating unit(s) required by this paragraph.

Section 7.7.1.1.9 - Extension of detector sections

The same section of detectors may serve spaces on more than one deck if such spaces are located in the fore or aft end of the craft or they are so arranged that they constitute common spaces on different decks (e.g. fan rooms, galleys, public spaces, etc.).

Section 7.7.1.1.10 - Restriction of loops

For fire detection systems with remotely and individually identifiable fire detectors, the requirement set out in this section is considered met when a loop covering accommodation spaces, service spaces and control stations does not include machinery spaces of a major fire hazard.

Section 7.7.1.1.14 - Acceptable activating arrangements

The following arrangement may be acceptable:

- .1 to activate a paging system;
- .2 to activate the fan stops;
- .3 to activate the closure of fire doors;
- .4 to activate the closure of fire and smoke dampers; and
- .5 to activate the sprinkler system.

Section 7.7.1.1.15 - Installation of loops and definitions

1 A loop should not pass through a space twice. Where this is not practical (e.g. for large public spaces), the part of the loop which by necessity passes through the space for a second time should be installed at the maximum possible distance from the other parts of the loop.

2 Definitions:

- .1 *Loop*: electrical circuit linking detectors of various sections in a sequence and connected (input and output) to the indicating unit(s).
- .2 *Zone address identification capability*: a system with individually identifiable fire detectors.

Section 7.7.1.2.3 - Location of detectors

Distances smaller than 0.5 m from bulkheads may be accepted in corridors, lockers and stairways.

Section 7.7.3 - Remote control of the system

The system should be remotely controlled in such a way that it is fully serviceable from the operating compartment without any intervention of personnel outside that space in normal conditions.

Section 7.7.3.2.3 - Construction of pipelines passing through accommodation

Pipelines may pass through accommodation spaces, provided they are of substantial thickness and their tightness is verified with a pressure test, after their installation, at a pressure head not less than 5 N/mm². In addition, pipelines passing through accommodation areas should only be joined by welding and should not be fitted with drains or other openings within such spaces. Pipelines should not pass through refrigerated spaces.

Section 7.7.3.2.5 - Location of closing devices

Openings that may admit air to, or allow gas to escape from, a protected space should be capable of being closed from outside the protected space.

Section 7.7.3.2.6 - Consideration of volume of air receivers when calculating the quantity of extinguishing medium

The volume of starting air receivers converted to free air volume should be added to the gross volume of the machinery space when calculating the necessary quantity of extinguishing medium. Alternatively, a discharge pipe connected to a safety valve may be fitted, provided it leads directly to the open air.

Section 7.7.3.2.7 - Warning of release of extinguishing medium to ro-ro spaces and other spaces where personnel can enter

- 1 Ro-ro spaces and other spaces where personnel can be expected to enter and where the access is facilitated by doors or hatches should be provided with an automatic warning for the release of the extinguishing medium.
- 2 The pre-discharge alarm should be automatically activated (e.g. by opening of the release cabinet door).
- 3 Reference is made to the Code on Alarms and Indicators, 1995 (resolution A.830(19)).

Section 7.7.3.2.10 - Separation of spaces

Two spaces can be considered as separated spaces where divisions comply with tables 7.4-1 and 7.4-2, as appropriate, or the divisions are of steel construction.

Section 7.7.3.2.12 - Means for checking the quantity of medium in containers

- 1 Means for checking the quantity of medium in containers should be so arranged that it is not necessary to move the containers completely from their fixing position. This may be achieved for instance by providing hanging bars above each bottle row for a weighing device or by using suitable surface indicators.
- 2 Surface indicators containing radioactive material should be of a type accepted by the Administration.

Section 7.7.3.2.14 - Location, accessibility, use and ventilation of CO₂ - storage spaces

1 Spaces for storage of the cylinders or tanks for extinguishing gas should not be used for other purposes. Access to these spaces should be possible from the open deck; spaces situated below the deck should be directly accessible by a stairway or ladder from the open deck. The space should be located no more than one deck below the open deck.

2 Spaces where the entrance from the open deck is not provided, or which are located below deck, should be fitted with mechanical ventilation. The exhaust duct (suction) should lead to the bottom of the space. Such spaces should be ventilated with at least 6 air changes per hour.

Section 7.7.4 - Portable fire extinguishers

Reference should be made to resolution A.602(15) on Revised Guidelines for marine portable fire extinguishers.

Section 7.7.4 - Mass and capacity of portable fire extinguishers

1 The mass of portable fire extinguishers should not exceed 23 kg.

2 Each powder or carbon dioxide extinguisher should have a capacity of at least 5 kg and each foam extinguisher a capacity of at least 9 litres.

Section 7.7.4 - Equivalents of portable fire extinguishers

Reference is made to ISO 7165:1999 - Fire protection equipment - Portable fire extinguishers - Performance and construction.

Section 7.7.4 - Examination and testing of portable fire extinguishers

1 Fire extinguishers should be examined annually by a competent person.

2 Each fire extinguisher should be provided with a sign indicating that it has been examined.

3 Fire extinguisher cylinders and propellant bottles should be hydraulic pressure tested every 10 years.

Section 7.7.4 - Type and location of portable fire extinguishers

1 Carbon dioxide fire extinguishers should not be placed in accommodation spaces. In control stations and other spaces containing electrical or electronic equipment or appliances necessary for the safety of the craft, fire extinguishers should be provided with extinguishing media which are neither electrically conductive nor harmful to the equipment and appliances.

2 Fire extinguishers should be ready for use and located in easily visible places such that they can be reached quickly and easily at any time in the event of a fire. In addition, the fire extinguisher should be located such that their serviceability is not impaired by the weather, vibration or other external factors. Portable fire extinguishers should be provided with devices to identify whether they have been used.

Section 7.7.5.1 - Independently driven pumps

Independently driven pumps are pumps powered by independent sources of power.

Section 7.7.5.3 - Drainage of fire mains and shutting off fire main branches

Fire mains should be capable of being drained. Valves should be installed in the main so that fire main branches can be isolated when the main is used for purposes other than fire-fighting.

Section 7.7.5.4 - Location of hydrants

One hydrant should be located in the vicinity and outside of each entrance to a machinery space.

Section 7.7.5.5 - Length of fire hoses

Fire hoses should have a length of:

- .1 at least 10 m;
- .2 not more than 15 m in machinery spaces; and
- .3 not more than 20 m for other spaces and open decks.

Section 7.7.5.5 - Additional hoses and nozzles when carrying dangerous goods

Ships carrying dangerous goods should be provided with 3 additional hoses and 3 additional nozzles.

Section 7.8.1.1 - Vehicle decks located totally within ro-ro spaces

Vehicle decks located totally within ro-ro spaces may be accepted without structural fire protection, provided these decks are not part of, or do not provide support to, the craft's main load-carrying structure and provided satisfactory measures are taken to ensure that the safety of the craft, including fire-fighting abilities, integrity of fire resisting divisions and means of evacuation, is not affected by a partial or total collapse of these internal decks.

Section 7.8.2 - Fixed fire-extinguishing systems

1 Reference should be made to resolution A.123(V) on Recommendation on fixed fire-extinguishing systems for special category spaces; and complementary devices for fire-extinguishing systems including instructions for maintenance and operation.

- 2 The pumps should be capable of maintaining:
 - .1 half the total required application rate with any one pump unit out of function, for category A craft; and
 - .2 the total required application rate with any one pump unit room out of function, for category B craft.
- 3 Fixed fire-extinguishing systems should fulfil the following requirements:
 - .1 the valve manifold should be provided with a pressure gauge and each of the valves should be marked;
 - .2 instructions for maintenance and operation of the installation should be set up in the room where the valves are located; and
 - .3 the piping system should be provided with a sufficient number of drainage valves.

Section 7.8.3.1 - Fixed fire detection systems, if fitted, in special category spaces

The fire detection system, excluding manual call points, may be switched off with a timer during loading/unloading of vehicles to avoid "false" alarms.

Section 7.8.4.1.1 - Construction of water fog applicators

A water fog applicator may consist of a metal L-shaped pipe, the long limb being approximately 2 m in length and capable of being fitted to a fire hose, and the short limb being approximately 250 mm in length and fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle.

Section 7.8.4.1.3 - Location of portable fire extinguishers including suitability and capacity

Fire extinguishers in special category spaces should be suitable for A and B class fires. The extinguishers should have a capacity of 12 kg dry powder or equivalent.

Section 7.8.4.1.3 - Weight and capacity of fire extinguishers

- 1 The weight of portable fire extinguishers should not exceed 23 kg.
- 2 Each powder or carbon dioxide fire extinguisher should have a capacity of at least 5 kg and each foam extinguisher a capacity of at least 9 l.

Section 7.8.5.1 - Ventilation system

Reference is made to MSC/Circ.729 on Design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces.

Section 7.8.6 - Size of pumping and drainage arrangements

- 1 Pumping and drainage arrangements should be such as to prevent the accumulation of water on any such decks.
- 2 In respect of scuppers and drainage pumps, the following should be complied with:
 - .1 when calculating the amount of water, the capacity of both the water spraying system pumps and required number of fire hose nozzles should be taken into account;
 - .2 the drainage system should have a capacity of not less than 125% of the capacity specified in paragraph 2.1 above; and
 - .3 bilge wells should be of sufficient holding capacity and should be arranged at the side shell of the ship at a distance from each other of not more than 40 m in each watertight compartment.

Section 7.8.7.1 - Degree of protection for electrical equipment

- 1 For equipment above a height of 450 mm above the deck, the degree of protection for electrical equipment required by this section should have an enclosure having an ingress protection of at least IP 55 as defined in IEC Publication 529 - Classification of degree of protection provided by enclosures, or by apparatus for use in zone 2 areas as defined in IEC Publication 79 - Electrical apparatus for explosive gas atmospheres (temperature class T 3).
- 2 For equipment at or below a height of 450 mm above deck, the electrical equipment referred to in this section should be certified "safe type" and wiring, if fitted, and should be suitable for use in zone 1 areas as defined in IEC Publication 79 - Electrical apparatus for explosive gas atmospheres - (gas group II A and temperature class T 3).

Section 7.8.7.2 - Degree of protection for electrical equipment in exhaust ventilation ducts and exhaust fans

- 1 The electrical equipment referred to in these regulations should be certified "safe type" and wiring, if fitted, and should be suitable for use in zone 1 areas as defined in IEC Publication 79 - Electrical apparatus for explosive gas atmospheres (gas group II A and temperature class T 3).
- 2 Exhaust fans should be of a non-sparking type in accordance with IACS Unified Requirement F 29, as revised.

Section 7.8.8.1 - Vehicle decks without structural fire protection

Vehicle decks located totally within ro-ro spaces may be accepted without structural fire protection provided these decks are not part of the craft's main load-carrying structure and provided satisfactory measures to ensure that the safety of the craft, including fire fighting abilities and integrity of fire resisting divisions, are not affected by a partial or total collapse of these internal decks.

Section 7.9.3.4 - Open spaces

"Open spaces" as referred to in 7.9.3.4 of the Code is interpreted as excluding grouping E in tables 7.4-1 and 7.4-2.

Section 7.10.1.2 - Construction of water fog applicators

A water fog applicator might consist of a metal L-shaped pipe, the long limb being approximately 2 m in length and capable of being fitted to a fire hose, and the short limb being approximately 250 mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle.

Section 7.10.2 - Storage of fire-fighter's outfits and marking of location

The storage of fire-fighter's outfits and personal equipment should be permanently and clearly marked.

Section 7.10.3.1.1 - Fire-fighter's protective clothing

Reference is made to ISO 6942:2002 - Protective clothing - Protection against heat and fire - Evaluation of materials and material assemblies when exposed to source of radiant heat.

Section 7.10.3.1.4 - Fire-fighter's safety lamp

Electric safety lamps intended to be used in hazardous areas should be of an explosion-proof type. Reference is made to IEC Publication 60079 - Electrical apparatus for explosive gas atmospheres (gas group II A and temperature class T 3).

Section 7.10.3.1.5 - Fire-fighter's hand axe

The handle of the axe should be provided with high-voltage insulation.

Section 7.10.3.2.2 - Spare charges and recharging of air cylinders for breathing apparatus

Two spare charges suitable for use with the apparatus should be provided for each required apparatus.

Section 7.10.3.3 - Fireproof lifeline for breathing apparatus

Each breathing apparatus should be provided with a flexible fireproof lifeline approximately 30 m in length. The lifeline should be subjected to a test by static load of 3.5 kN for 5 min.

Section 7.11.1.3 - Safe evacuation from the alternative safe area

Safe evacuation from the alternative safe area should be completed within the structural fire protection time for areas of major fire hazard.

Section 7.13.1 - Fixed sprinkler system

A stairway open at one deck should be considered part of the space to which it is open and, consequently, should be protected by a sprinkler system, if provided.

Section 7.17.1 - Requirements for carriage of dangerous goods

Reference is made to the IMDG Code, General introduction, sections 17 and 18:

- .1 Reference is made to section 17 of the General Introduction to the International Maritime Dangerous Goods Code (IMDG Code) for operational measures in association with the requirements of this regulation.
- .2 Reference is made to section 18 of the General Introduction to the International Maritime Dangerous Goods Code (IMDG Code) for a definition of the term "limited quantities".

Section 7.17.2.2 - Meaning of "purpose built container spaces"

A purpose built container space is a cargo space fitted with cell guides for stowage and securing of containers.

Section 7.17.2.3 - Extended meaning of "ro-ro cargo spaces"

Ro-ro cargo spaces include special category spaces and vehicle deck spaces.

Section 7.17.3.1 - Water supplies for open-top container cargo spaces in ships

1 The water spray system required by paragraphs 9.2, 9.3 and 9.4 of the Interim guidelines for open-top containerships (MSC/Circ.608/Rev.1) will also satisfy the requirement for dangerous goods.

2 The amount of water required for fire-fighting purposes in the largest hold should allow simultaneous use of the water spray system plus four jets of water from hose nozzles (MSC/Circ.608/Rev.1).

Section 7.17.3.1.2 - Required capacity of water supply for fire-extinguishing

The total required capacity of the water supply should satisfy SOLAS regulations II-2/19.3.1.2 and II-2/19.3.1.3 (if applicable), simultaneously calculated for the largest designated cargo space. The capacity requirement for SOLAS regulation II-2/19.3.1.2 should be met by the total capacity of the main fire pump(s) not including the capacity of the emergency fire pump, if fitted. If a drencher system is used to satisfy SOLAS regulation II-2/19.3.1.3, then the drencher pump should also be taken into account in this total capacity calculation.

Section 7.17.3.1.3 - Size of pumping and drainage arrangements

- 1 Reference is made to resolution A.123(V) on Recommendation on fixed fire-extinguishing systems for special category spaces.
- 2 With respect to drainage and pumping arrangements, reference is made to SOLAS regulation II-2/20.6.1.4.1.3.
- 3 The quantity of water referred to in this regulation should be not less than 5 l/min/m² of the horizontal area of cargo spaces.

Section 7.17.3.1.4 - Acceptance of high expansion foam systems in case of dangerous goods

A high expansion foam system, complying with SOLAS regulation II-2/10.4.1.1.2, is acceptable, except if cargoes dangerously react with water (see the IMDG Code).

Section 7.17.3.2 - Sources of ignition

Reference is made to the International Standard IEC Publication 60092-506: Electrical installations in ships - Part 506: Special features - Ships carrying specific dangerous goods and materials hazardous only in bulk.

Section 7.17.3.4 - Ventilation requirements for individual cargoes and open-top container cargo holds

If adjacent spaces are not separated from cargo spaces by gastight bulkheads or decks, ventilation requirements should apply as for the cargo space itself, required under SOLAS regulation II-2/19.3.4.2 and its interpretations.

Section 7.17.3.4 - Requirements for individual cargoes

- 1 Cargoes liable to give off vapours or gases which can form an explosive mixture with air (see the BC Code, Appendix B, e.g. IMO Class 4.3 materials):

Two separate fans should be permanently fitted or being of a portable type adapted for being permanently fitted prior to loading and during voyage. The fans should be either explosion proof or arranged such that the escaping gas flow is separated from electrical cables and components. The total ventilation should be at least six air changes per hour, based upon the empty space. Ventilation should be such that any escaping gases cannot reach living spaces on or under deck.
- 2 Cargoes liable to spontaneous combustion (only applicable to Seed Cake (b) and (c)):

Two separate fans should be permanently fitted or being of a portable type adapted for being permanently fitted prior to loading and during voyage. The fans should be either explosion proof or arranged such that the escaping gas flow is separated from electrical cables and components. The total ventilation should be at least six air changes per hour, based upon the empty space. Ventilation should be such that any escaping gases cannot reach living spaces on or under deck.

- 3 For open-top container ships:

Power ventilation should be required only for the lower part of the cargo hold for which purpose ducting is required. The ventilation capacity should be at least two air changes per hour based on the empty hold volume below weather deck.

Section 7.17.3.4.2 - Degree of protection of exhaust fans and use of wire mesh guards

- 1 Exhaust fans should be of non-sparking type in accordance with IACS Unified Requirement F 29, as revised.
- 2 The purpose of "suitable wire mesh guards" is to prevent foreign objects from entering into the fan casing. The standard wire mesh guards should have a size of 13 mm x 13 mm.

Section 7.17.3.5 - Arrangements of bilge drainage systems for cargo spaces

- 1 If the bilge drainage system for cargo spaces is additional to the system served by pumps in the machinery space, the capacity of the system should be not less than 10 m³/h per cargo space served. If the additional system is a common system, the capacity need not exceed 25 m³/h. The additional bilge system need not be arranged with redundancy. Whenever flammable or toxic liquids are carried, the bilge line into the machinery space should be isolated either by fitting a blank flange or by a closed lockable valve.
- 2 If bilge drainage of cargo spaces is arranged by gravity drainage, the drainage should be either lead directly overboard or to a closed drain tank located outside the machinery spaces. The tank should be provided with vent pipe to a safe location on the open deck.
- 3 Enclosed spaces outside machinery spaces containing bilge pumps serving cargo spaces intended for carriage of flammable or toxic liquids should be fitted with separate mechanical ventilation giving at least six air changes per hour. Electrical equipment in the space should comply with the IACS Unified Interpretation SC 79. If the space has access from another enclosed space, the door should be self-closing.
- 4 Drainage from a cargo space into bilge wells in a lower space is only permitted if that space satisfies the same requirements as the cargo space above.

Section 7.17.3.6.1 - Type and suitability of protective clothing

- 1 When selecting the protective clothing, the danger of the chemicals according to the class and liquid or gaseous state should be taken into account.
- 2 The required protective clothing is for emergency purposes.
- 3 For solid bulk cargoes the protective clothing should satisfy the equipment requirements specified in Appendix E of the BC Code for the individual substances. For packaged goods the protective clothing should satisfy the equipment requirements specified in emergency procedures (EmS) of the Supplement to IMDG Code for the individual substances.

Section 7.17.3.6.2 - Spare bottles for breathing apparatus

Spare charges for the breathing apparatus should be provided as required in SOLAS regulation II-2/10.10.2.5.

Section 7.17.3.8 - Fixed fire-extinguishing system

1 Reference is made to IMO resolution A.123(V) on Recommendation on fixed fire-extinguishing systems for special category spaces.

2 With respect to pumping and drainage arrangement, reference is made to SOLAS regulations II-2/20.6.1.4 and 20.6.1.4.1.3.

Table 7.17-2 - Certification of special dangerous goods

The terminology “solid dangerous goods in bulk” covers only those cargoes listed in Appendix B of the Bulk Cargo Code, except cargoes of Materials Hazardous in Bulk. Other solid dangerous goods in bulk may only be permitted subject to acceptance by the Administrations involved.

Tables 7.17-2 and 7.17-3 - Class

The term “Class” refers to the classification of dangerous goods as specified in the IMDG Code.

Section 7.17.4 - Document of compliance

1 Reference is made to MSC/Circ.1027 - Document of compliance with the special requirements for ships carrying dangerous goods under the provisions of SOLAS regulation II-2/19 of SOLAS regulation II-2/19 of SOLAS 74, as amended.

2 The terminology “solid dangerous goods in bulk” covers only those cargoes listed in Appendix B of the Bulk Cargo Code, except cargoes of Materials Hazardous in Bulk. Other solid dangerous goods in bulk may only be permitted subject to acceptance by the Administrations involved.

3 There are no special requirements in the above- mentioned SOLAS regulation II-2/19 for the carriage of dangerous goods of classes 6.2 and 7 or for the carriage of dangerous goods in limited quantities, as stated in chapter 3.4 of the IMDG Code.

Section 8.1.10.10 - Marine evacuation system (MES)

Mini-slides should be subject to the requirements for MES unless they are used as an alternative means of embarkation to survival craft arrangements that are both covered by 8.7.5 and have been demonstrated to meet the required evacuation time. The definition of MES does not therefore include a device fitted to the craft (e.g. mini-slide) which need not be deployed in order to meet the requirements of 4.8.

Section 8.4.2 - Muster lists

Attention is drawn to the advice given in the Guidelines for passenger safety instructions on ro-ro passenger ships (MSC/Circ.681).

Section 10.2.4.8 - Safe positions for discharge of air and overflow pipes and relief valves

1 Air and overflow pipes and relief valves should discharge to a position where there is no risk of fire or explosion from the emergence of oils and vapour and should not lead into crew spaces, passenger spaces, special category spaces, ro-ro spaces (other than open ro-ro spaces), machinery spaces or similar spaces.

2 The requirement to provide overpressure protection should be applied only to filling pipes served by pumps on board.

Section 10.2.4.9 - Material of oil fuel pipe valves

For valves fitted to oil fuel tanks and which are under static pressure-head, steel or modular cast iron may be accepted. However, ordinary cast iron valves may be used in piping systems where the design pressure is lower than 0.7 N/mm^2 and the design temperature is below 60°C .

Section 13.12.1 - Fitting of autopilots

High-speed craft employed on short routes in enclosed waters are not required to be fitted with an autopilot. This is because the length and nature of the crossing together with the amount of traffic they may encounter means that an autopilot would not be used. Reference is also made to 13.1.2 of the Code.

Chapter 15 - Operating compartment layout

Reference should be made to:

- .1 ISO 8468:1990 Ship's Bridge Layout and Associated Equipment – Requirements and Guidelines; and
- .2 Guidelines on ergonomic criteria for bridge equipment and layout (MSC/Circ.982).

Annex 10, Section 3.4 - Same strength and stiffness

“Same strength and stiffness” should be interpreted as “equivalent strength and stiffness”.

ANNEX 2**INTERPRETATION OF PROVISION OF SOLAS CHAPTER X****Regulation 2.2 - Interpretation of “major character”**

The following repairs, alterations and modifications should be recognized as being of a “major character”:

- .1 any change that substantially alters the dimensions of a high-speed craft

Example:

Lengthening by adding new mid-body; new mid-body should comply with 2000 HSC Code;

- .2 any change that substantially alters the passenger accommodation

Example:

Vehicle deck converted to passenger accommodation; new accommodation should comply with the 2000 HSC Code; and

- .3 any change that substantially increases the service life of a high-speed craft

Example:

Renewal of passenger accommodation on one entire deck; renewed accommodation should comply with the 2000 HSC Code.
