Internal Waters Craft Code

January 2025

Contents

Introduction

These technical codes are published by the Merchant Shipping Secretariat of the Ministry of Shipping under the delegated authority of the Minister as given in Merchant Shipping (Non- Convention Vessel) Regulations, No.1 of 2024 published in the Gazette No 2417/16 dated 31st December 2024 .

These technical codes relate especially to the construction of a vessel, its machinery, equipment watertight integrity, stability, safety of embarked persons and to the correct operation of non-convention vessels in Sri Lankan waters

The codes are based and representative of the industry best practices and applicable standards taking into consideration the requirements peculiar to Sri Lanka

Compliance with the applicable code is mandatory for registration and operation of non-convention vessels in Sri Lanka on a commercial basis.

Whilst the Code sets minimum standards to be met for the issue of a Certificate, the Owner, or the Administration, may choose to enhance the provision of safety equipment, and this may be reflected in the Survey Record as an additional requirement.

Compliance with the Code in no way obviates the need for boats and/or Boat Operators to comply with relevant bylaws made by either the local/navigation authority or the port/harbour authority for the area in which the boat operates.

Definitions and Abbreviations

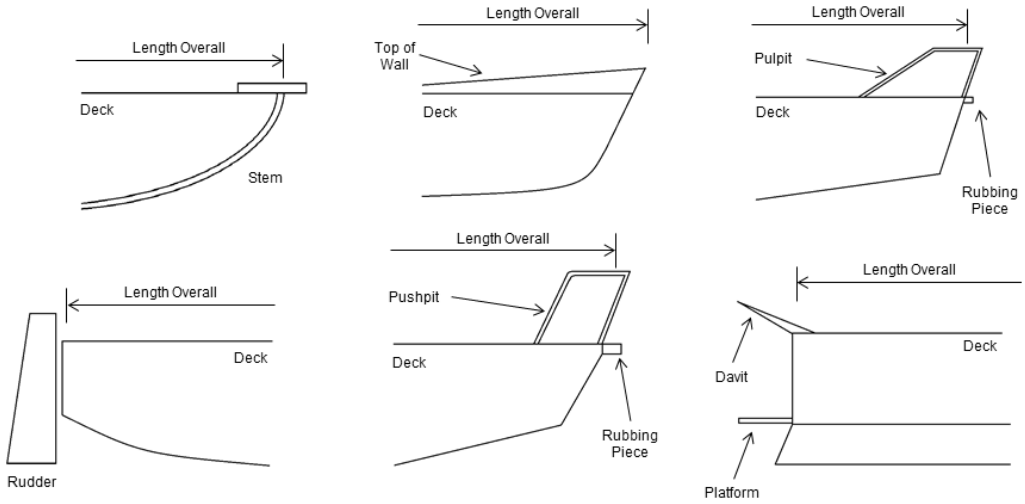
Term	Meaning
Accommodation space	A space, enclosed on all six sides by solid divisions, provided for the use of persons on board.
Approved	Means 'acceptable to' the Merchant Shipping Secretariat and does not have the same meaning as 'type approved' or 'type tested' unless otherwise specified in the Code.
Authorised person	Means a Surveyor who holds the appropriate authorisations to carry out the examinations required by the Code on behalf of the Merchant Shipping Secretariat.
Boat	A vessel of less than 24 m in length, or a vessel of less than 150gt. A boat can be a boat, air cushion vehicle, sailing craft, inflatable craft, etc.
Boat Operator	Meaning Master, Skipper, Coxswain, Commanding Officer. The person in command of the boat and all persons on board.
Boats fitted with a buoyant collar	A rigid inflatable boat, or a boat of similar hull form, where the inflatable tubes are replaced by solid, or hollow, buoyant sections.
Cargo	For the purpose of the Code means all items which are transported by the boat except fuel for the boat, ballast (either solid or liquid), consumables to be used on board, permanent outfit and equipment of the boat, stores and spare gear for the boat, crew and their personal baggage and passengers and their personal baggage, and activity related equipment.
Categorised waters	Means waters the location of which are explicitly defined in the Merchant Shipping (Categorisation of waters) Regulations No.2 of 2024, having regard for the safety of the boats which operate in those waters.
Certifying Body	A company or professional to whom the Director General Merchant Shipping has delegated the examination (survey) and certification of vessels to which the Merchant Shipping (Non- Convention Vessel) Regulations, No.1 of 2024 and Technical codes apply
Code	This Code unless another Code is specified.
Compartment	All living and working spaces within the watertight or fire-resisting boundaries on any one level which have inter-communicating access.
Competent person	Means a person who by reason of relevant professional qualifications, practical experience or expertise is nominated by the Owner to carry out specialist servicing or inspections required by the Code. For example, rigging inspections, gas system servicing and testing, inclining experiments. For fire extinguishing equipment the person shall have the necessary training, experience, access to the relevant tools, equipment and information manuals and knowledge of any special procedures recommended by the manufacturer to carry out the relevant maintenance procedures.
Conning	to conduct or direct the steering of a vessel
Control position	A conning position which is continuously manned whilst the boat is under way.

Definitions and Abbreviations

Craft	Having the same meaning as boat.
Critical Down-flooding	Is deemed to occur when openings, having an aggregate area in square metres greater than $\frac{\text{boats displacement in tonnes}}{1500}$ are immersed. Moreover, it is the angle at which the lower edge of the actual opening which results in critical flooding becomes immersed. All openings regularly used for crew access and for ventilation should be considered when determining the down flooding angle. Air pipes to tanks can, however, be disregarded. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable.
Daylight	Time from sunrise to sunset.
Decked boat	A boat with a continuous watertight weather deck which extends from stem to stern and has positive freeboard throughout, in any condition of loading of the boat. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable.
Design category	A description of the wind and sea conditions for which a boat is considered suitable for in terms of construction, stability and buoyancy
Domestic voyage	A voyage from a port in Sri Lanka to the same or another port in Sri Lanka
Efficient	In relation to a fitting, piece of equipment or material means that all reasonable and practicable measures have been taken to ensure that it is suitable for the purpose for which it is intended.
Existing Craft	Craft already in operation in Sri Lanka at the time these regulations come into force, this does not include any craft built before the entry into force date that has not been in operation in Sri Lankan waters.
Favourable weather	Means wind, sea and visibility conditions which are deemed by the Boat Operator to be safe for a small boat to operate within the limits applied to it; or, in any other case means conditions existing throughout a voyage or excursion in which the effects either individually or in combination of swell, height of waves, strength of wind and visibility cause no hazard to the safety of the boat, including handling ability. In making a judgement on favourable weather, the Boat Operator should have due regard to official weather forecasts for the service area of the boat or to weather information for the area which may be available from the National Administration or similar coastal safety organisation.
Freeboard	The distance measured vertically downwards from the lowest point of the upper edge of the weather deck to the waterline in still water or, for an open boat, the distance measured vertically downward from the lowest point of the gunwale to the waterline.
Gross Tonnage (GT)	As defined by the International Convention on Tonnage Measurement of Ships 1969 and as stated on the tonnage certificate
IMO	International Maritime Organization.
Inflatable boat	A boat which attains its form through inflatable tubes only, which are not attached to a solid hull.
Internal Waters	All water and waterways on the landward side of the baseline from which the territorial waters are measured

Definitions and Abbreviations

International voyage	Voyage outside territorial jurisdiction of SL, i.e. voyages from or to a port in the territorial waters of Sri Lanka to a port or from a port of another country
ISO	International Organization for Standardization.
Length overall	The overall length from the foreside of the foremost fixed permanent structure to the aft side of the aftermost fixed permanent structure of the boat. With regard to inflatable, rigid inflatable boats, or boats fitted with a buoyant collar, length should be taken from the foremost part of tube or collar, to the aft most part of the tube or collar.



Length	Either 96 per cent of the total length on a waterline at 85 per cent of the least moulded depth measured from the top of the keel, or the length from the foreside of the stem to the axis of the rudder stock on that waterline, whichever is the greater. In a boat designed with a rake of keel, the waterline on which this length is measured should be parallel to the design waterline.
Maximum permissible weight	The maximum total permissible weight of persons and their effects, cargo and activity related equipment, i.e. diving equipment.
MED	European Union Marine Equipment Directive.
Motor boat	A power driven boat which is not a sailing boat.
Multihull boat	Any boat which in any normally achievable operating trim or heel angle, has a rigid hull structure which penetrates the surface of the sea over more than one separate or discrete area.
National Administration	The Department of Government of the State responsible for providing, and regulating, Statutory safety Regulation in the maritime environment.
Nautical mile	A nautical mile of 1852 m.
Net tonnage (NT)	As defined by the International Convention on Tonnage Measurement of Ships 1969 and stated on the tonnage certificate
New boat	A boat not in possession of a Certificate issued prior to the date of this Code coming into force.

Definitions and Abbreviations

Nominated point of departure	The designated point of departure of the boat, as specified on the boats Certificate. Where this point lies within the Internal waters, it is to be taken as the seaward boundary of the baseline.
Non-compliances	Items or arrangements that do not meet the requirements of the Code.
Non-Convention Vessels	Vessels for which the IMO conventions do not apply, and/or vessels operating solely on domestic voyages for which the Director General of Merchant Shipping has granted exemptions from the applicable IMO conventions that apply due to the vessels GT. Where due to the GT of the vessel or area of operation parts of IMO conventions are applicable they would apply unless exemption has been granted by the DGMS
Open boat	For the application of the Code means a boat which within its length is: not fitted with a watertight weather deck; is fitted with a watertight weather deck over part of its length; or is fitted with a watertight weather deck over the whole of its length but the freeboard to the deck does not meet the minimum requirement for freeboard
Owner	The registered Owner, or the Owner or managing agent of the registered Owner or Owner, or Owner ipso facto, as the case may be.
Persons on board	Persons shall fall into one of two categories: a. Crew members. Persons carried on board the boat to provide navigation and maintenance of the boat, operation and maintenance of its machinery and systems (including weapon and radio-communication systems), and arrangements essential for propulsion and safe navigation or to provide services for other embarked persons. Crew members are expected to be well-disciplined and able-bodied, and have an excellent knowledge of the layout of the boat and its safety equipment; b. Passengers and other embarked persons. Persons embarked who are not employed or engaged in any capacity on board the boat and who do not fall into any of the other categories. Passengers and other embarked persons may include visiting dignitaries, and families.
Pilot boat	A boat employed or intended to be employed in pilotage services, and 'dedicated pilot boat' means a pilot boat of whatever size which is primarily employed in pilotage services and other occasional services undertaken such as the carriage of personnel, mail, and/or small quantities of stores to or from boats in the pilotage district.
Recess	An indentation or depression in a deck and which is surrounded by the deck and has no boundary common with the shell of the boat. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable.
Registration	The process of registering a vessel with the Merchant Shipping Secretariat of the SL Ministry of Ports and Shipping
RHIB	Rigid hulled inflatable boat having the same meaning as a RIB – a boat with inflatable tubes, attached to a solid hull. The tubes are inflated during normal craft operation.
Rigid inflatable boat (RIB)	Rigid inflatable boat having the same meaning as a RHIB – a boat with inflatable tubes, attached to a solid hull. The tubes are inflated during normal craft operation.

Definitions and Abbreviations

Safe haven	Any naturally or artificially sheltered area which may be used as a shelter by a boat under conditions likely to endanger its safety. This may be a ship from which the boat was deployed or an alternative mothership.
Sailing boat	A boat which is designed to be navigated under wind power alone and for which any motor provided is an auxiliary means of propulsion and/or which possesses a non-dimensional ratio of (sail area) divided by (volume of displacement)$^{2/3}$ of more than 7.
Ship	A waterborne vessel of more than 24m in length, or a vessel of more than 150gt
Short Range	means a vessel under 500GT, restricted to operating in area categories 4 and 5 and within 60 nautical miles of a safe haven.
Special personnel	Persons who are not members of the crew who are carried on board in connection with the special purpose of the boat, the special work being carried out aboard the boat or in its role as a support vessel. Special personnel (which may include scientific staff, trials personnel and equipment engineers, Surveyors, or persons under training) are expected to be disciplined and able- bodied, and have a fair knowledge of the layout of the boat and its safety equipment
Standards	Those recognised such as BS (British Standard), EN (European Standard accepted by the European Committee for Standardization, CEN), IEC (International Electrotechnical Commission) and ISO (International Organization for Standardization) identified in the Code should include any standards
To sea	Beyond Area Category 6,7,8 and 9 waters
Vessel	A ship or a boat as defined in these regulations.
Vessel Groups	The categorisation of a boat or ship in accordance to its intended use as defined by the Merchant Shipping (Vessel Classification and Certification) Regulations No.3 of 2024.
Void space	Any space, having no practical function on board the boat, not capable of readily collecting water under normal operating circumstances.
Watertight	Capable of withstanding a pressure head of water to a specified level, usually the damage waterline. Watertight components are to be demonstrated as capable of withstanding the declared pressure head.
Weather deck	Means the main deck which is exposed to the elements.
Weathertight	Of sufficient strength and integrity to withstand temporary immersion from green seas or spray. Weathertight closures are to be subject to a suitable test to confirm tightness.

Application and Interpretation

1.1. General

This code applies to all non-convention vessels registered and operating on a commercial basis, in the Internal Waters of Sri Lanka (SL), as categorised in the "Merchant Shipping (Categorisation of Waters) Regulations No.2 of 2024", published in the Gazette No 2417/15 dated 31st December 2024 .

1.1.1.

1.1.2. This code in its entirety does not apply to self-hire craft or leisure vessels, however the requirements in respect of safety of navigation and pollution prevention applies

1.1.3. High Speed craft are required to meet the requirements of the IMO High Speed craft code or IACS class society equivalent

1.2. Vessel Category

1.2.1. "Internal waterway non-passenger vessel" means a vessel that does not go to sea, and does not carry more than 12 passengers as part of its normal operations, including but not restricted to: -

- dry freight vessels;
- tanker vessels;
- container vessels;
- workboats, including specialist vessels such as crane barges or dredgers;
- tugs and pushers.

1.2.2. Internal waterway passenger vessel" means a vessel that does not go to sea, and carries more than 12 passengers as part of its normal operations

1.3. Design Category

1.3.1. The design category assigned to a vessel takes into consideration the standard of construction and compliance against the requirements for stability and buoyancy of the applicable design category

1.3.2. The wind and wave limits of the respective design categories are listed and summarised in the table below

The significant wave height is the mean height of the highest one-third of the waves, which approximately corresponds to the wave height estimated by an experienced observer, some waves may be double this height

Design category	Wave height	Wind force (Beaufort scale)	Wind Speed -Max gust (m/s)
A	up to, and including 7m significant (H_s)	up to 10	28
B	up to, and including 4m significant (H_s)	up to 8	21
C	up to, and including 2m significant (H_s)	up to 6	17
D	up to and including 0.5m maximum	up to 4	13

1.3.3. A boat assigned with design category "A "is considered suitable to operate in the wind and wave conditions for the category and can survive more severe conditions for a short period. Such conditions may be faced on extended voyages or in unsheltered waters exposed to wind and waves from for several hundred nautical miles

1.3.4. A boat assigned with design category "B" is considered suitable to operate in the wind and wave conditions for the category. Such conditions may be faced on offshore voyages of sufficient length or on exposed coasts.

1.3.5. A boat assigned with design category "C" is considered suitable to operate in the wind and wave conditions for the category. Such conditions may be faced on exposed inland waters, bays, inlets and estuaries and in coastal waters in moderate weather conditions

1.3.6. A boat assigned with design category "D" is considered suitable to operate in the wind and wave conditions for the category. Such conditions may be faced on sheltered inland waters and in bays, inlets, estuaries and in coastal waters in fine weather conditions

1.4. Area of Operation

The area of operation for a vessel will be assigned based on the design category of the vessel. The area categories for the waters of Sri Lankan has been defined in the Merchant Shipping (Categorisation of Waters) Regulations, No.2 of 2024 published in the Gazette No 2417/16 dated 31st December 2024 .

1.4.1.

1.4.2. For convenience the table below maps and summarises the Waterway and areas of operation categorisation against the design categories

Waterway categorisation	Areas of Operation	Design Category
Seagoing	Area Category 0	A
Coastal Waters	Area Category 1	A
	Area Category 2	B
	Area Category 3	B
Exposed Waters	Area Category 4	C
	Area Category 5	C
Internal Waters	Area Category 6	C
	Area Category 7	C
	Area Category 8	D
	Area Category 9	D

1.4.3. The owner of the vessel will need to request in the application the intended area of operation and the application must be supported with evidence that the design criteria for the intended area of operation has been complied with, the area of operation will be stated in the survey records, certification and the registration of the craft

1.5. Standards and Equivalence

1.5.1. Designers and Builders of boats will need to pay special regard to the intended area of operation and the working conditions to which a boat will be subjected when selecting the materials and equipment to be used in its construction

1.5.2. The Builder, repairer or Owner of a boat, as appropriate, should take all reasonable measures to ensure that a material or appliance fitted in accordance with the requirements of the Code is suitable for the purpose intended, having regard to its location in the boat, the area of operation and the weather conditions which may be

encountered

1.5.3. Standards referenced throughout the Code are for reference information. When referencing the standards for use during construction, or supply of equipment, the latest edition of the standard should be used.

1.5.4. Any craft designed to the equivalent rules of an IACS class society and constructed under survey of the society would be deemed as having met the requirements of this technical code.

1.5.5. Any craft designed to the equivalent ISO standards or national standard and constructed under survey of the flag administration would be deemed as having met the requirements of this technical code

1.5.6. The Merchant Shipping Secretariat has the discretion of determining equivalence, however in case of any ambiguity or applicability the issue must be referred to the technical panel of experts appointed to maintain and amend the technical codes

1.6. Approved Equipment and Material

1.6.1. Equipment and material that is required by the Code shall be of an approved type. The Merchant Shipping Secretariat will accept equipment approvals granted by a Recognized Organization (RO) acting on behalf of the Merchant Shipping Secretariat of Sri Lanka or by the United States Coast Guard(USCG) ,Maritime Coast Guard Agency in UK(UKMCA) or Maritime administration of Japan provided, the approvals are fully in accordance with the recognized standards.

1.6.2. The Administration will also accept equipment that has been approved under the European Union Marine Equipment Directive (MED) procedures or any other recognized standards such as Sri Lanka Standards organisation and International Standard Organisation

1.7. Passenger and Crew Capacity

1.7.1. The carrying capacity of a vessel covered by this code is mainly limited by stability concerns, the total number of persons that a craft can carry is determined as the minimum of;

- The maximum number of persons with which the craft satisfied the stability criteria
- The maximum number of persons for whom life saving appliances has been provided

1.7.2. The total persons onboard is the sum of the passengers and Crew and must not exceed the maximum number as determined in section 1.7.1

1.7.3. The passenger capacity of a vessel is determined as the minimum of

- The number of passengers included in the determination of the total carrying capacity (see section 1.7.1)
- Clear deck area requirements given in section 16.2
- Seating requirements given in section 16.2

1.7.4. Vessels other than passenger vessels should not carry more than 12 passengers on any voyage. The following meanings apply:

Passenger" means any person carried in a vessel except:

(a) a person employed or engaged in any capacity on board the vessel on the business of the vessel;

(b) a person on board the vessel either in pursuance of the obligation laid upon the master to carry shipwrecked, distressed or other persons, or by reason of any circumstances that neither the

master nor the owner nor the charterer (if any) could have prevented; and

(c) a child under one year of age; and

"a person employed or engaged in any capacity on board the vessel on the business of the vessel" may reasonably include:

.1 bona-fide members of the crew over the minimum school leaving age (about 16 years) who are properly employed on the operation of the vessel;

.2 person(s) employed either by the owner or the charterer in connection with business interests and providing a service available to all passengers; and

.3 person(s) employed either by the owner or the charterer in relation to social activities on board and providing a service available to all passengers.

.4 Special personnel

1.8. Interpretation

1.8.1. Where question of application of the Code, or an interpretation of a part of the Code arises, the owner/managing agent of the vessel concerned should in the first instance seek clarification from the Certifying Body. In situations where it is not possible to resolve an issue of interpretation a decision may be obtained on written application to the Merchant Shipping Secretariat, who may consult with the technical panel of experts appointed to develop and maintain the technical codes

Inspections Certification and Maintenance

2.1. General

2.1.1. All non-convention vessels in commercial service in Sri Lankan waters are required to have a valid Certificate for the vessel issued by the Merchant Shipping Secretariat

2.1.2. A certificate will be issued by the Merchant Shipping secretariat upon completion of all items on the survey report.

2.1.3. The plans and drawings of the vessel must be submitted to an approved certifying body for appraisal.

2.1.4. The vessel must be built under survey by an approved certifying body, and upon completion of the vessel an Interim survey report must be completed and forwarded to the Merchant Shipping Secretariat.

2.2. Survey & Inspections

2.2.1. All non-convention vessels are required to have an initial survey, annual surveys, intermediate survey and a renewal survey to maintain valid certification and registration

2.2.2. All surveys & inspections are to be carried out by surveyors from an approved certifying body of by the surveyors of the Merchant Shipping Secretariat

2.2.3. Annual, intermediate and renewal surveys should be carried out within 3 months either side of the anniversary date of the initial survey compliance examination date to maintain the certification.

2.2.4. Should an annual, intermediate examination not be carried out within the permitted range, the Certificate will be automatically suspended, and the Owner notified of the suspension and the vessel will be required to undergo a renewal survey or an initial survey dependent on the condition of the craft and the elapsed time from the last survey.

2.2.5. At renewal survey the craft would need to be examined out of the water paying special attention to the exterior hull condition, through-hull valves and exterior rudder and propulsion equipment in the presence of an authorised surveyor and the survey results documented

2.2.6. Craft built of wood and similar material are required to be examined out of the water at the Intermediate survey in addition to the renewal survey. The Merchant Shipping Secretariat may at its discretion considering the age, area of operation may require out of water examinations to be at lesser interval as required

2.2.7. The Merchant Shipping Secretariat may at its discretion considering the hull construction material, age, type, service and area of operation may require out of water examinations to be at lesser interval as required.

2.2.8. Initial Survey - The Owner shall arrange for a full examination of the boat and its systems. Part of the examination shall be conducted with the boat out of the water, the following areas will need to be addressed;

- approved construction plans, and drawings must be submitted to the surveyor and the surveyor must be satisfied that the boat has been designed and built in accordance to this technical doe or equivalent standard
- For existing boats considered on the basis of safe history of boat or of design, the surveyor must be satisfied that the requirements of Structural strength are fulfilled with regard to confirmation of that safe history and supported by an appropriate structural survey and technical specification.

- The arrangements, fittings and equipment provided on the boat are to be documented on the Survey Record and should be in compliance with this code and copies of any required declarations should be retained for the boats technical file.
- Where a boat is required to have approved stability information, the Owner must be in possession of an approved Stability Information Booklet before the Certificate can be issued.
- For all other boats, the Owner should provide the information necessary to confirm that the stability of the boat meets the standard required by the Code for the permitted area of operation and intended use of the boat.
- Upon satisfactory completion of the examination and review of the documented arrangements, hull structure, machinery, fittings and equipment provided in compliance with the Code, and approval as appropriate of either the Stability Information Booklet or required stability information and the conduct of the stability test, the survey reports must be completed and finalized and the Certificate for the requested area of operation would be issued.

2.2.9. Annual Survey - The Owner shall arrange for an annual examination of the boat and its systems within 3 months either side of the anniversary date of the initial/renewal examination, at intervals not exceeding 15 months. the following areas will need to be addressed;

- In the case of a dedicated pilot boat and, under certain circumstances a boat with pilot boat endorsement, the hull and associated fittings are, additionally, to be examined out of the water, the following areas will need to be addressed
- The annual examination shall be general or partial examination of the boat, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it has been satisfactorily maintained as required by the Code and that the arrangements, fittings and equipment provided are as documented in the Survey Record.
- On satisfactory completion of the annual examination, the authorised surveyor should enter a record of the examination on the Certificate and Survey record.

2.2.10. Intermediate Survey - The Owner shall arrange for an intermediate examination of the boat and its systems at least once during the life of the Certificate, in order that the interval between successive examinations by an authorised person does not exceed three years and 3 months. The intermediate survey would replace the annual survey that is due between the 2nd and 4th year of the life of the certificate. An intermediate survey may be an out of water survey as required by clause 2.2.6 and 2.2.7. The following areas will need to be addressed

- The scope of the survey would be similar to an annual survey, unless an out of water survey is required
- In the case of an out of water survey the scope would be similar to a renewal survey

2.2.11. Renewal Survey - The Owner shall arrange for a renewal examination of the boat and its systems prior to the expiry of the current certificate. Part of the examination shall be conducted with the boat out of the water, the following areas will need to be addressed;

- Upon satisfactory completion and verification that the arrangements, fittings and equipment documented in the Survey Record, remain in compliance with the Code and that the boat and its machinery are in a sound and well maintained condition, the Certificate in force should be endorsed to indicate a 3 month extension
- Copies of the survey record and report must be submitted to the merchant Shipping Secretariat
- The Merchant Shipping Secretariat will renew the boat's Certificate if it is satisfied that the arrangements, fittings, and equipment documented in the Survey Record are in compliance with the Code.

2.3. Certification

2.3.1. A Certificate should be valid for not more than 5 years from the date of examination of the boat out of the water by the authorised person. The Certificate may be valid for a lesser period as determined by the Merchant Shipping Secretariat.

2.3.2. For a newly constructed boat, built under full construction survey for the purposes of this Code, the Certificate may begin from the final in-water compliance survey if less than 12 months from the last out of water date.

2.3.3. A signed and authenticated copy of the Certificate and the associated Survey Record is to be retained on board the boat. Where it is not reasonable to keep these aboard, they may be retained on shore, but must be made available if requested by any person in authority.

2.3.4. The renewal Certificate should be valid for not more than 5 years from the expiry of the existing Certificate, so long as the renewal examination was completed within three months prior to the expiry of the existing Certificate. If the renewal examination is conducted more than three months prior to the expiry of the existing Certificate, the Certificate should be valid for not more than 5 years from the completion date of the renewal examination

2.4. Reporting of non-compliances identified during periodical examinations

2.4.1. On completion of an examination, non-compliances will be reported to the Owner by letter/email with the action required. The nature of the non-compliances will determine whether a Certificate can be issued or endorsed at the time or whether certain corrective actions must be completed before the Certificate can be signed or endorsed. A priority will be assigned to each defect as follows:

- . Priority 1 - Critical defect

A renewal Certificate will not be issued, and an existing Certificate will be suspended. On rectification of the non- compliances the Owner shall arrange a re-inspection of the boat. The Certificate may be signed/endorsed upon satisfactory completion of the re-inspection.

- Priority 2 – Important defect

The Certificate may be signed or endorsed with a time frame specified for rectifications to be made; or

Issue of the Certificate or endorsement may be held in abeyance. Upon completion of remedial actions the Owner shall provide evidence of the completed work to the attending Surveyor within the agreed time period for action. Evidence shall be as agreed with the attending Surveyor and could include copies of Certificates, photographs or a written confirmation of actions.

If the Owner fails to provide evidence of the completed work to the attending Surveyor within the agreed time period, the Certificate will be automatically suspended.

- Priority 3 - Other non-compliances

These are most likely to be items of loose equipment that were not available at the time of examination. It is recognised that many boats are seen at maintainers' premises and the loose equipment is retained at the Boat Operator's base. In some cases operating units have spare boats to cover for maintenance periods and breakdown and interchange loose equipment between the in-service boats. The Boat Operator shall be responsible for ensuring the loose equipment is on board prior to sailing, in a serviceable condition, serviced and in date where applicable.

2.5. Repairs and Maintenance

2.5.1. The Merchant Shipping Secretariat may examine a certificated vessel at any time

2.5.2. It is the responsibility of the Owner to ensure that at all times a boat is maintained and operated in accordance with the requirements of the Code, the arrangements as documented in Survey Record and any conditions stated on the boat's Certificate

2.5.3. It is the responsibility of the Owner to ensure that the boat is maintained in accordance with manufacture's recommendations or best engineering practice. If for any reason the boat does not continue to comply with any of these requirements, the Owner should notify the Merchant Shipping Secretariat immediately.

2.5.4. Repairs or alterations to the hull, machinery or equipment that is covered by the requirements of this code and which affect the safety of the vessel shall not be made without the approval of the Merchant Shipping Secretariat, except in an emergency. Drawings or written specifications of proposed alterations should be submitted to the Merchant Shipping Secretariat and the certifying body in advance for appraisal and approval to proceed.

2.5.5. Safe working practices shall be observed in the planning and execution of any alterations, repairs or other operations involving riveting, welding, burning or other fire producing actions aboard a vessel particularly where these take place adjacent to fuel tanks or apparatus connected to the fuel tanks

2.5.6. Repairs, alterations and modifications of a major character and outfitting related thereto on existing vessels shall meet the requirements prescribed for a new vessel to such extent as the Merchant Shipping Secretariat deems reasonable and practicable. The owner shall inform the Merchant Shipping Secretariat of the proposed alterations and modifications before such alterations and modifications are carried out

2.5.7. For the purpose of the Code, the following repairs, alterations and modifications shall be recognized as being of "major character":

any changes that substantially alter the dimensions of the vessel;

any changes that substantially increase a vessel's service life; or

any conversions that alter the functional aspects of the vessel

2.5.8. In cases where the boat suffers major damage, e.g. as a result of a collision, grounding, fire or other event, the Owner must notify the Merchant Shipping Secretariat immediately, explaining the circumstances by which the boat became damaged. The nature and extent of major repairs are subject to the approval of the Merchant Shipping Secretariat

2.5.9. Minor damage, detrimental to the safety of the boat, must also be reported to the Merchant Shipping Secretariat, together with the measures proposed to effect repairs, who may take action as it may deem appropriate which may include a full or part examination of the boat.

Construction and Structural Strength

3.1. General

3.1.1. The design of the hull structure, its construction, and the materials and equipment used should be suitable for the service intended and provide adequate strength and service life for the safe operation of the vessel at its service draught and maximum speed. The design should also withstand the conditions likely to be encountered in the intended area of operation.

3.1.2. A boat which is not fitted with a weather deck along the length of the vessel would normally be restricted to Area Category 8 or 9, the Merchant Shipping Secretariat may certify such a vessel for operation in area category 6 and 7 provided that adequate reserves of buoyancy and stability for the boat to survive the consequences of swamping when loaded with the boats fuel, cargo, specialist equipment and the number of persons for which the boat is certified, is deemed to have been met

3.1.3. On vessels operating in area categories 8 and 9, a weed hatch, or rope cutters on the shaft may be fitted where there is a risk of weed and debris fouling the propeller. Where fitted, weed hatches should be at least 150mm above normal laden waterline, and watertight when the vessel is both static and in motion.

3.2. Structural Strength

3.2.1. New vessels should comply with an appropriate standard such as ISO 12215 Small Craft Hull Construction and Scantlings or to the rules of an IACS class society

3.2.2. A vessel may be built to an equivalent national standard of. safety to the standards in paragraph 3.2.1 above, provided that full information (including calculations, drawings, details of materials and construction) is submitted for appraisal and retained for reference

3.2.3. Inflatable or rigid inflatable boat, in any category, should comply with ISO 6185-1 Inflatable Boats: Boats with a maximum motor rating of 4.5kW; ISO 6185-2: Inflatable Boats: Boats with a maximum motor rating of 4,5kW to 15kW inclusive; ISO 6185-3 Inflatable Boats: Boats with a maximum motor rating of 15kW and greater, or equivalent standards. Alternatively, rigid inflatable craft or craft over 8 meters may be constructed in compliance with paragraph 3.2.1 above

3.2.4. For existing vessels, constructed before this code came into effect, the operator should be able to demonstrate a recent history of safe operation in a similar or more onerous operating category by this vessel.

3.2.5. The craft shall be fitted with suitable attachment points and internal support of sufficient strength for lifting launching and recovery and transport and hold down arrangements.

3.2.6. The design, materials, and construction of masts, posts, yards, booms, bowsprits, and standing rigging on a sailing vessel should be suitable for the intended service. The hull structure should be adequately reinforced to ensure sufficient strength and resistance to plate buckling

3.3. Decks

3.3.1. The watertight weather deck where fitted should extend from stem to stern and have positive freeboard throughout, in any condition of loading of the boat.

3.3.2. The weather deck may be stepped, recessed or raised provided the stepped, recessed or raised portion is of watertight construction.

3.3.3. Decks should be suitable for the intended cargo with consideration given to payload and lashing/tie down points.

3.3.4. A recess in a weather deck should be of watertight construction and have means of drainage capable of efficient operation when the boat is heeled to 10 degrees. Such drainage is to have an effective area, excluding grills and baffles, of at least 20 cm^2 for each cubic metre of volume of recess below the weather deck

3.3.5. For sailing boats, means of drainage should be capable of efficient operation when the boat is heeled to 30 degrees.

3.3.6. Alternative arrangements for the size and drainage of a recess may be accepted provided it can be demonstrated that, with the boat upright and at its deepest draught, the recess drains from a swamped condition within 3 minutes, or the cockpit or recess should comply with ISO 11812 (Small craft- Watertight and Quick Draining Cockpits) for the relevant design category or other standard accepted by the Merchant Shipping Secretariat.

3.3.7. If a recess is provided with a locker which gives direct access to the interior of the hull, the locker should be fitted with weathertight covers. In addition, the covers to the locker should be permanently attached to the boats structure and fitted with efficient locking devices to secure the covers in place

3.4. Watertight Bulkheads

3.4.1. The strength of a watertight bulkhead and the effectiveness of any alternative means should be adequate for the intended purpose and to the satisfaction of the Merchant Shipping Secretariat.

3.4.2. Watertight bulkheads must extend to the weather deck, steps or recesses in the bulkhead are generally not permitted and where fitted must be of the same watertight standard as the bulkhead

3.4.3. When pipes, cables, etc. penetrate watertight bulkheads, they should be provided with valves and/or watertight glands, as appropriate.

3.4.4. A doorway fitted in a watertight bulkhead should be constructed so as to be watertight from both sides and be kept closed at sea, unless opened for access only, at the discretion of the Skipper. A notice should be fitted to both sides of the door: 'To be kept closed at sea, open for access only'. Sliding watertight doors, where fitted, are to be provided with suitable safety provision to avoid injury to personnel by closure of the door.

3.4.5. For new boats with a waterline length greater than 15 m and operating in Area Category 6 and 7 a watertight collision bulkhead and watertight bulkheads at each end of the machinery space should be fitted. The collision bulkhead is to be positioned such that the distance from the forward perpendicular shall be equal to or more than 5% and equal to or less than 3 m + 5% of the length (L) of the vessel

3.4.6. For new boats with a waterline length greater than 24 m and operating in Area Category 8 and 9 a watertight collision bulkhead and watertight bulkheads at each end of the machinery space should be fitted. The collision bulkhead is to be positioned such that the distance from the forward perpendicular shall be equal to or more than 5% and equal to or less than 3 m + 5% of the length (L) of the vessel

Watertight and Weathertight Integrity

4.1. Weathertight Integrity

4.1.1. A vessel should be constructed so that in the most extreme conditions expected in the area of operation, openings do not allow ready ingress of water, which might threaten the safety of the vessel and those onboard

4.1.2. Open boats – should comply with bilge pumping or draining provisions set out in Section 9, and freeboard as set out in Section 5 and Annex 3. Open boats may be operated only in area categories 8 and 9, and in areas categories 6 and 7 at the discretion of the Merchant Shipping Secretariat

4.2. Water Freeing arrangements/Deck Drainage

4.2.1. A vessel should be constructed so that in the most extreme conditions expected in the area of operation, openings do not allow ready ingress of water, which might threaten the safety of the vessel and those onboard

4.2.2. Decked vessels, in a decked vessel, which complies with the freeboard provisions of Section 5 and Annex 3 of this Code, efficient provision is to be made to clear the deck of water which may be taken onboard. Where water may get trapped, the vessel should have a minimum of two efficient freeing ports – one fitted port and one starboard.

4.2.3. These ports should each have a clear area of:

Area Category 8 and 9	65 cm^2
Area Category 7	135 cm^2
Area Category 6	225 cm^2

These figures are based on maximum expected wave heights. Smaller ports may be suitable in a vessel having only small side deck areas, in which water can be trapped, the reduced area being based on the volume of water that is likely to become so trapped.

4.2.4. Category 8 and 9 waters: in an open vessel provision should be made to clear water from any deck areas not draining into the bilge.

4.3. Hatchways & Hatches

4.3.1. A hatchway which gives access to spaces below the weather deck should be of efficient construction and be provided with efficient means of weathertight closure

4.3.2. A cover to a hatchway should be hinged, sliding or permanently secured by other equivalent means to the structure of the boat and be provided with sufficient locking devices to enable it to be positively secured in the closed position. This is not intended to apply to small technical spaces where the hatch would normally remain closed at sea

4.3.3. A hatchway with a hinged cover which is located in the forward portion of the boat should normally have the hinges fitted to the forward side of the hatch, as protection of the opening from boarding seas. A hatch with the hinges on the after side of the hatch should be secured closed at sea and be provided with a suitable blank. This is not intended to apply to small technical spaces drained directly overboard, e.g. anchor lockers

4.3.4. Hatches which are used for escape purposes should be capable of being opened from both sides

4.3.5. In general, hatches should be kept secured closed at sea. Where operational needs exist for specified hatches to

be open at sea for lengthy periods these hatches shall be:

- kept as small as practicable, but never more than 1 m2 in plane area at the top of the coaming;
- located on the centre line of the boat or as close thereto as practicable;
- fitted such that the access opening is at least 300 mm above the top of the adjacent weather deck at side.

4.4. Doorways and Companionways

4.4.1. A doorway located above the weather deck which gives access to spaces below should be provided with a weathertight door. The door should be of efficient construction, permanently attached to the bulkhead, not open inwards and have efficient means of closure which can be operated from either side

4.4.2. A doorway should be located as close as practicable to the centre line of the boat. However, if hinged and located in the side of a house, the door should be hinged on the forward edge. Doors using articulated systems should be specially considered, in order to provide an equivalent arrangement

4.4.3. A doorway which is either forward or side facing should be provided with a coaming, the top of which is at least 300 mm above the weather deck. A coaming may be portable provided it can be permanently secured to the structure of the boat and can be locked in position whilst at sea. An aft facing door shall be provided with a sill which may be less than 300 mm

4.4.4. A companion hatch opening from a cockpit or recess which gives access to spaces below the weather deck should be fitted with a coaming or washboard, the top of which is at least 300 mm above the sole of the cockpit or recess

4.4.5. When washboards are used to close a vertical opening they should be so arranged and fitted that they will not become dislodged.

4.4.6. The maximum breadth of the opening of a companion hatch should not exceed 1 m

4.5. Skylights

4.5.1. A skylight should be of efficient weathertight construction and should be located on the centre line of the boat, or as near thereto as practicable, unless it is required to provide a means of escape from a compartment below deck

4.5.2. A skylight on the weather deck, which gives access to spaces below, shall be fitted with a coaming, the top of which is at least 150mm (6 inches) above the deck

4.5.3. When a skylight is an opening type it should be provided with efficient means to ensure it can be secured in the closed position

4.5.4. When a skylight is provided as a means of escape it must be capable of being opened from both sides.

4.5.5. Unless the glazing material and its method of fixing in the frame is equivalent in strength to that required for the structure in which it is fitted, a portable 'blank' should be provided which can be efficiently secured in place in event of breakage of the glazing

4.6. Portlights and windows

4.6.1. A portlight or window to a space below the weather deck or in a step, recess, raised deck structure, deckhouse or superstructure protecting openings leading below the weather deck should be of efficient construction which provides watertight integrity (and be of strength compatible with size) for the intended area of operation of the boat.

4.6.2. A portlight or window should not be fitted in the main hull below the weather deck, unless the glazing material and its method of fixing in the frame are equivalent in strength, with regard to design pressure, to that required for the structure in which it is fitted. Alternatively, this may be satisfied by the provision of blanks

4.6.3. Portlights fitted in the hull of the boat below the level of the weather deck should be either non-opening or of a non-readily opening type, have a glazed diameter of not more than 250 mm, or equivalent area, and be in accordance with a standard recognised by the Merchant Shipping Secretariat. Portlights of the non-readily opening type must be secured closed when the boat is in navigation. Proposals to accept portlights, to a recognised standard, greater than 250 mm diameter, up to a maximum of 400 mm or equivalent area, shall be considered, with due regard to their fore and aft, and vertical positioning, by the Merchant Shipping Secretariat

4.6.4. Portlights, windows and their frames should meet the requirements of ISO 12216 - Windows, portlights, hatches, deadlights and doors - strength and tightness requirements, or equivalent national Standards or Classification Rules.

4.6.5. A portlight fitted below the weather deck and not provided with an attached deadlight should be provided with a 'blank' (the number of blanks should be sufficient for at least half of the number of such portlights of each different size in the boat), which is readily available and can be efficiently secured in place in the event of breakage of the portlight. The blank should be of suitable material and strength to the satisfaction of the Merchant Shipping Secretariat

4.6.6. Such a 'blank' is not required for a non-opening portlight which satisfies para 4.6.2

4.6.7. A window fitted in the main hull below the weather deck should meet the requirements of para 4.6.2 or be provided with a blank meeting the requirements of para 4.6.5

4.6.8. . For the wheelhouse

- windows and other openings at the operating station shall be of sufficient size and properly located to provide an adequate view for safe navigation in all operating conditions
- windows and their frames should meet the requirements of section 4.6.4, having due regard to the increased thickness of windows comprising one or more laminations in order to achieve equivalent strength;
- polarised or tinted glass should not be used in windows provided for navigational visibility (although portable tinted screens may be provided for nominated windows).

4.7. Ventilators and exhausts

4.7.1. A ventilator should be of efficient construction and, where situated on the weather deck should be provided with a readily available means of weathertight closure, consideration should be given to requirements of fire protection

4.7.2. A ventilator should be kept as far inboard as practicable and the height above the deck of the ventilator opening should be sufficient to prevent the ready admission of water when the boat is heeled.

4.7.3. A ventilator which must be kept open, e.g. for the supply of air to machinery or for the discharge of noxious or

flammable gases, should be specially considered with respect to its location and height above deck to ensure that the downflooding does not occur at all operational angles and that stability consideration in respect of downflooding angle are met

4.7.4. An engine exhaust outlet which penetrates the hull below the weather deck should be provided with means to prevent back flooding into the hull through the exhaust system. The means may be provided by system design and/or arrangement, built-in valve or a portable fitting which can be applied readily in an emergency

4.8. Air Pipes

4.8.1. When located on the weather deck, an air pipe should be kept as far inboard as possible and have a height above deck sufficient to prevent inadvertent downflooding when the boat is heeled.

4.8.2. An air pipe, of greater than 10 mm inside diameter, serving a fuel or other tank should be provided with a permanently attached means of weathertight closure. Means of closure may be omitted if it can be shown that the open end of the air pipe is afforded adequate protection by other means, which will prevent the ingress of water

4.8.3. An air pipe serving a fuel tank or other tank, where provided with a closing appliance, should be of a type which will prevent excessive pressure on the tank boundaries. Provision should be made for relieving a vacuum when tanks are being drawn from or emptied

4.9. Sea inlets and discharges

4.9.1. An opening below the weather deck should be provided with an efficient means of closure.

4.9.2. When an opening is for the purpose of an inlet or discharge below the waterline it should be fitted with a seacock, valve or other effective means of closure which is readily accessible

4.9.3. Alternative arrangements such as inlet tubes that are above the waterline (i.e. sterndrive units) may be accepted

4.9.4. When an opening is for a log or other sensor, which is capable of being withdrawn, it should be fitted in an efficient watertight manner and provided with an effective means of closure when such a fitting is removed

4.9.5. A non-metallic, or non-flush metallic fitting, log or sensor should not be fitted in machinery spaces or in any spaces in boats that operate at high speed unless located in small cofferdams designed for the purpose and with any access panels and service transits made watertight. If access is designed to be opened at sea, a test cock should be provided

4.10. Materials for valves and associated piping

4.10.1. A valve or similar fitting attached to the side of the boat below the waterline, within an engine space or other high fire risk area, should be normally of steel, bronze, copper or other non-brittle, fire-resistant material or equivalent.

4.10.2. When plastic piping or flexible pipe is used it should not contribute any additional risks or spread of fire, be of good quality and of a type suitable for the intended purpose. Plastic/non-metallic piping should only be allowed where consideration has been given to the usage of the pipe, e.g. with respect to system type (open or closed loop), system pressure, system temperature, system pipe internal fluid, location etc.,. Plastic pipes should not be used for cargo pipes carrying flammable liquids.

4.10.3. Flexible or non-metallic piping, which presents a risk of flooding, fitted in an engine space or fire risk area should be efficiently insulated against fire, or be of fire-resistant material, e.g. ISO Standard 7840 or exhaust quality rubber hosing, or a means should be provided to stop the ingress of water in the event of the pipe being damaged, operable from outside the space

4.10.4. Materials readily rendered ineffective by heat must not be used for fire main, hydrants, valves or cocks. Materials with a melting point above 1000°C may normally be accepted as meeting the above. Fittings which incorporate low melting point components may be accepted, provided they have passed a standard fire test, 800°C for 10 minutes. It should be taken into account in the test that it cannot be guaranteed that the fire main will not be flooded at all times.

Freeboard

5.1. General

5.1.1. For the purposes of this Section, where vessels are to operate in fresh water, the minimum freeboards defined within this Section are to be taken in the area of operation, as appropriate.

5.1.2. Where stability is assessed using any part of ISO 12217, freeboard is to be assigned using the appropriate part of that standard

5.1.3. Annex 3 gives simple guidance on how to measure freeboard.

5.2. Motor Vessels

5.2.1. In area Category 8 and 9

- All vessels operating in area category 9 waters, or decked vessels operating in area category 8 waters, should have a minimum freeboard to deck edge or gunwale of 250mm around the periphery of the vessel in the most onerous loading condition.
- For open vessels operating in area category 8 waters, this requirement should be increased to 400mm if they are unable to pass the swamp test as detailed in Section 6.3.8

5.2.2. In area Category 6 and 7 waters ; Minimum freeboard to downflooding, for vessels whose stability has not been assessed in conjunction with ISO 12217–1 or 3, should be not less than that determined by the following provisions.

- A vessel, other than an inflatable or rigid inflatable boat, or a boat covered by Section 2.2, when fully loaded with passengers and deadweight items to be carried (each person taken as 75kg) should be upright and:
  1) the case of a vessel with a continuous watertight weather deck in accordance with Section 3 which is neither stepped nor recessed or raised, have a freeboard to downflooding of not less than:-

     Area Category 7- 360 mm for vessels of 7 metres in length or under and not less than 630 mm for vessels of 18 metres in length or over.

     Area Category 6- 600 mm for vessels of 7 metres in length or under and not less than 1050 mm for vessels of 18 metres in length or over.

     For a vessel of intermediate length the freeboard to downflooding should be determined by linear interpolation.
  2) the case of a vessel with a continuous watertight weather deck, have a freeboard to deck measured down from the lowest point of the deck of not less than:-

     Area Category 7- 120 mm for vessels of 7 metres in length or under, and not less than 240 mm for vessels of 18 metres in length or over.

     Area Category 6- 200 mm for vessels of 7 metres in length or under, and not less than 400 mm for vessels of 18 metres in length or over.

     For a vessel of intermediate length, the freeboard should be determined by linear interpolation. The raised portion(s) of the watertight weather deck should extend across the full breadth of the vessel and the average freeboard to deck over the length of the vessel should comply with .4 below for a vessel with a continuous watertight weather deck.
  3) in the case of an open boat, have a clear height of side – eg. the distance between the waterline and the lowest point of the gunwale* – of not less than

Area Category 7- 240mm for vessels 7 metres in length or under, and not less than 480mm for vessels 18 metres in length or over.

Area Category 6-400mm for vessels 7 metres in length or under, and not less than 800mm for vessels 18 metres in length or over.

For a vessel of intermediate length, the clear height should be determined by linear interpolation.

* The clear height of the side should be measured to the top of the gunwale or capping, or to the top of the wash strake if one is fitted above the capping.

4) for vessels complying with points 1 and 2 above, the freeboard to deck edge should, in general, be not less than 50% of the required freeboard to downflooding.

5.3. Inflatable boats in all Categories

5.3.1. The freeboard of an inflatable boat, or rigid inflatable boat, should be not less than 300mm measured from the upper surface of the buoyancy tubes, and not less than 250mm at the lowest part of the transom. With the inflatable boat, or rigid inflatable boat, in the following conditions, and with the drainage socks (if fitted) tied up:

- the inflatable boat or rigid inflatable boat with all its equipment,
- the inflatable boat or rigid inflatable boat with all its equipment, engine and fuel, or replaced by an equivalent mass,
- the inflatable boat or rigid inflatable boat with all its equipment, fuel, cargo, activity related equipment – e.g. diving equipment – and the number of persons which it is to carry, so arranged that a uniform freeboard is achieved at the side buoyancy tubes; and
- the inflatable boat or rigid inflatable boat with all its equipment, fuel, activity related equipment – e.g. diving equipment – and the number of persons which it is to carry, and the inflatable boat re-trimmed as necessary to represent a normal operating condition.

5.3.2. The minimum freeboards recorded during the tests, and the permissible maximum weight which can be carried, should be recorded.

5.3.3. For inflatable boats or rigid inflatable boats, which do not meet the above freeboard provisions, may still be acceptable provided it can be demonstrated that the boat is self-draining when moving ahead, and has a substantial reserve of buoyancy.

Stability

6.1. General

6.1.1. For the purposes of this Section, where vessels are to operate in fresh water, the stability tests defined within this Section are to be conducted in the area of operation, as appropriate, where vessels operate both in sea water and fresh water, the stability tests must be conducted in fresh water.

6.2. Motor Vessels

6.2.1. A vessel should be tested in the fully loaded condition (which should correspond to the freeboard assigned) to ascertain the angle of heel and the position of the waterline which results when all persons which the vessel will carry are assembled along one side of the vessel. (The helmsman may be assumed to be at the helm.) Each person may be substituted by a mass of 75kg for the purpose of the test. Annex 3 gives guidance on how to carry out a simple heel test.

6.2.2. The vessel has an acceptable standard of stability if the test shows that

- the angle of heel does not exceed 7 degrees, and
- in the case of a vessel with a watertight weather deck extending from stem to stern, the freeboard to downflooding is not less than

  100mm for vessels operating in area category 9

  175mm for vessels operating in area category 8

  275mm for vessels operating in area category 7

  375mm for vessels operating in area category 6,

  and additionally, the freeboard to deck is not less than 75mm at any point.
- the angle of heel may exceed 7 degrees, but should not exceed 10 degrees, if the least freeboard to downflooding in the heeled condition is in accordance with section 5 of the Code for the upright condition.

6.2.3. In all cases, the maximum permissible weight of passengers derived from the tests conducted should be recorded for reference. Vessel loading should be restricted by the position freeboard mark and maximum permissible weight, and thus for the purposes of this test, attention should be paid to any activity related equipment where this may be significant, e.g. diving equipment

6.2.4. It should also be demonstrated that an open boat, when operating in area categories 6 and 7 waters, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons which it will carry, and a mass equivalent to its engine and full tank of fuel

6.2.5. Vessels complying with ISO 12217-1 Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres, or ISO 12217-3 Small craft - Stability and buoyancy assessment and categorisation - Boats of hull length less than 6m, may as an alternative to 6.2.1 to 6.2.4 above, be assigned an area of operation as follows;

In Area Category 8 and 9 waters, ISO 12217 Design Category D applies.

In Area Category 6 and 7 waters, ISO 12217 Design Category C applies

6.3. Inflatable Boats or Boats Fitted with a Buoyant Collar

6.3.1. The heel test provisions stated previously are not appropriate for an inflatable boat, rigid inflatable boat or those vessels with a buoyant collar. Unless a boat to which this Code applies is completely in accordance with a standard production type (refer to relevant part of BS/EN/ISO 6185-1,2,3:2001), for which a certificate of approval has been provided for the tests, the tests detailed below should be carried out.

6.3.2. The tests should be carried out on vessels floating in still water.

6.3.3. The Intact and Damage tests should be carried out with all the vessel's equipment, fuel, cargo, activity related equipment e.g. diving equipment – and number of persons which it will carry. The engine, equipment and cargo maybe replaced by an equivalent mass. Each person may be substituted by a mass of 75kg for the purpose of the tests

6.3.4. Intact Stability tests

- The maximum number of persons which a boat will carry should be crowded to one side, with half this number seated on the buoyancy tube. This procedure should be repeated with the persons seated on the other side and at each end of the inflatable boat, rigid inflatable boat or vessel with a buoyant collar. For the purposes of these tests, the cargo may be assumed to be in its normal stowage position. In each case, the freeboard to the top of the buoyancy tube should be recorded. Under these conditions, the freeboard should be positive around the entire periphery of the boat

6.3.5. Damage Tests – Inflatable Boats

- The tests will be successful if, for each condition of simulated damage, the persons for whom the inflatable boat or rigid inflatable boat is to be certificated are supported within the inflatable boat or rigid inflatable. The conditions are
  - with forward buoyancy compartment deflated (both sides if appropriate).
  - with the entire buoyancy, from the centreline at the stem to the transom, on one side of the inflatable boat or rigid inflatable boat deflated.

6.3.6. Purely inflatable boats failing to meet Section 6.3.5 may be specially considered taking into account operational service limitations.

6.3.7. Person recovery stability test

- Two persons should recover a third person from the water into the inflatable boat or rigid inflatable boat or vessel with a buoyant collar. The third person should feign to be unconscious and be facing away from the inflatable boat or rigid inflatable boat so as not to assist the rescuers. Each person involved should wear an approved lifejacket. The stability of the inflatable boat or rigid inflatable boat should remain positive throughout the recovery

6.3.8. Swamp Test (for Category 6 and 7 waters only)

- It should also be demonstrated that an inflatable boat, or rigid inflatable boat or vessel with a buoyant collar, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons which it will carry, and a mass equivalent to its engine and full tank of fuel
- In the swamped condition, the inflatable boat, rigid inflatable boat or vessel with a buoyant collar, should not be seriously deformed.
- A practical means of draining the boat should be demonstrated at the conclusion of this test. This should not include the use of electric bilge pumps

6.4. Sailing Vessels

6.4.1. The stability of a vessel should be determined by the methods detailed below, and its area of operation should be dependent upon the standard, which it is shown to achieve.

6.4.2. Vessels without external ballast keels

- Method 1: Vessels complying with ISO 12217-2:2002 Sailing boats of hull length greater than or equal to 6 metres or ISO 12217-3:2002 Small craft - Stability and buoyancy assessment and categorisation - Boats of hull length less than 6m, may as an alternative, after verification of the stability assessment, be considered safe to operate in an area of operation as follows:

  In Area category 8 and 9 waters, ISO 12217 Design Category D applies.

  In Area category 6 and 7 waters, ISO 12217 Design Category C applies.
- Method 2: It should be demonstrated that the vessel has a minimum range of stability, depending on its length, as determined from the following formula:

  Area Category 8 and 9 waters

  Minimum range of stability (degrees) = 90 + 60 x (6 - LOA)/25

  Area Category 6 and 7 waters

  Minimum range of stability (degrees) = 90 + 60 x (18 - LOA)/25
- In all cases the minimum required angle is not to be taken as less than 90 degrees
- Sailing dinghies not assessed using ISO 12217-2:2002 - Small non-decked boats generally in the range of 2.5 to 6 metres in length which are not capable of being mechanically propelled - and small unballasted sailing dayboats are to be capable of being righted by their crew after an inversion

6.4.3. Vessels fitted with external ballast keels, the stability assessment of a vessel may be made by any one of the following methods:

- Method 1: Vessels complying with ISO 12217-2:2002 Sailing vessels - Non-sailing boats of hull length greater than or equal to 6 metres' or (ISO 12217-3:2002 Small craft - Stability and buoyancy assessment and categorisation) - Boats of hull length less than 6m, may as an alternative, after verification of the stability assessment, be assigned an area of operation as follows:

  In Area category 8 and 9 waters, ISO 12217 Design Category D applies.

  In Area category 6 and 7 waters, ISO 12217 Design Category C.
- Method 2: by the 'Sail Training Operational Stability (STOPS)' Numeral developed by the Royal Yachting Association (RYA) of the United Kingdom

  Notes:

  i) For vessels fitted with one or more top-weight items, examples of which are given below, the ballast ratio should be modified as follows:

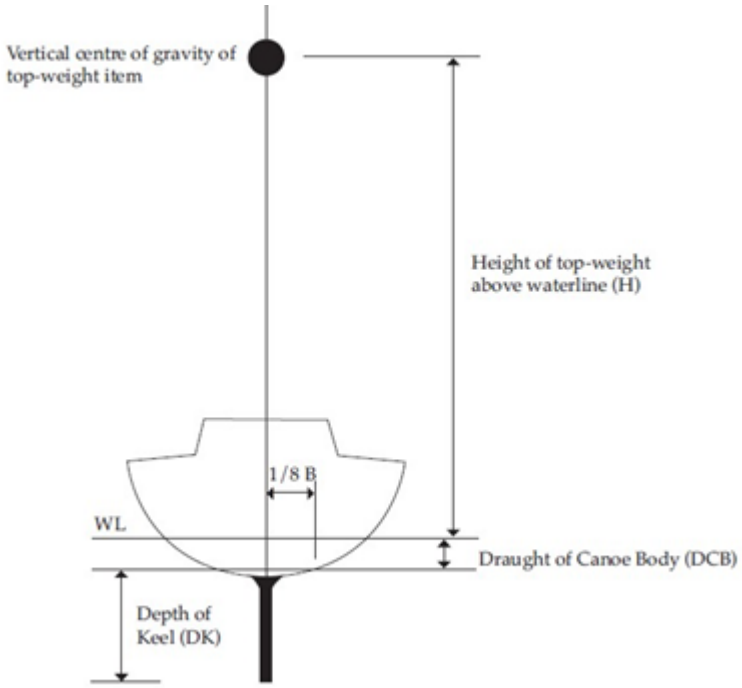
  ii) Moments are to be taken about the vertical centre of gravity, which is assumed to be at the waterline. The heeling moments attributed to the top-weight items are resolved, and the ballast weight is reduced, using the formula below.

  $$CBW = TW \times H / (DCB + DK/2)$$

  Noting that:

  CBW is the correction to the ballast weight.
  TW is the weight of the top-weight items being considered.
  H is the height of the vertical centre of gravity above the waterline.
  DCB is the draught of the canoe body, taken by measuring the maximum draught at 1/8 of the full beam from the centreline in way of the transverse Section, at greatest beam.
  DK is the depth of the keel, taken as the distance between the draught of the canoe body and the bottom of the keel.

The dimensions above are illustrated in Figure 2 below.



Examples of top-weight items are given below:

in-mast or behind-mast roller furling mainsail; roller furling headsail

a radar antenna mounted higher than 30% of the length of the vessel above the waterline.

The vessel should achieve a STOPS3 numeral of 11 or higher

A "SSS" numeral calculated by the Royal Ocean Racing Club (RORC) will be accepted in place of a STOPS numeral, provided that it includes a self- righting factor based on an inclining experiment and shown on a valid International Rating Certificate (IRC) or International Measurement System (IMS) rating certificate.

6.4.4. Alternatively, it should be demonstrated by test or calculation that an open sailing boat, when fully swamped, is capable of supporting its full outfit of it is to carry

6.4.5. Sailing Multihull Vessels

- All sailing multihull vessels are to be assessed by the full application verified or performed, as required, of ISO 12217–2:2002 Small craft - Stability and buoyancy assessment and categorisation – Part 2: Sailing boats of hull length greater than or equal to 6 metres, or ISO 12217 Part 3: Small craft - Stability and buoyancy assessment and categorisation - Boats of hull length less than 6m. After verification of the stability assessment, vessels may be assigned an area of operation as follows:

  In Area Category 8 and 9 waters, ISO 12217 Design Category D applies.

  In Area Category 6 and 7 waters, ISO 12217 Design Category C applies.

Machinery

7.1. General

7.1.1. Machinery, fuel tanks and associated piping systems and fittings should be fit for purpose and be of a design and construction adequate for the service for which they are intended. Moving parts, hot surfaces and other hazards should be installed and protected so as to minimise danger to persons during normal movement about the vessel. Materials should be fire resistant or otherwise protected from fire. Plastic fittings at the Hull are not recommended.

7.1.2. A vessel should be provided with a fuel tank of sufficient capacity for the main engines, and its area of operation. All fuel tanks vents should be fitted with a flame gauze as required by BS/EN/ISO 10088, and carried to at or above tank filling plate level and where there should be no danger from escaping fuel or vapour.

7.1.3. Where the machinery is in its own dedicated compartment and remote from the operator, means should be provided to isolate a source of fuel, which may feed a fire. A valve or cock, which can be shut from a position outside the engine space should be fitted in the fuel-feed pipe, as close to the fuel tank as possible. Where the machinery is situated directly below the operator, and within easy reach for control and isolation in event of emergency, these conditions need not apply. Petrol tanks for outboards motors should have quick connection shut off devices.

7.1.4. Measures should be taken to prevent spillage and build-up of flammable vapours in any part of the vessel, including bilges during fuelling.

7.1.5. Vessels should have an efficient and reliable starting mechanism. Where the means of starting is by battery, charging facilities for the battery should be available.

7.1.6. In area category 6 and 7 waters where the sole means of starting is by battery, there should be a duplicate battery connected to the starter motor by a "change over switch" so that either battery or other means of obtaining power can be used to start the engine

7.1.7. All inflatable boats, boats fitted with buoyant collar, and open boats that achieve planing speed, when fitted with remote throttle controls, should be fitted with a kill cord, to be used at all times during navigation.

7.1.8. All engines fitted shall meet the local emissions criteria.

7.2. Diesel Engines

7.2.1. A vessel fitted with either an inboard or an outboard diesel engine should be provided with an efficient engine suitable for marine use and with sufficient fuel tankage for its area of operation. Where a vessel is fitted with a fuel tank that has a sight glass, self- closing valves should be fitted to prevent spillage in the event of a breakage.

7.2.2. When storing diesel fuels in portable tanks or containers, consideration should also be given to the following:

- a secure and robust storage unit ,cupboard, bin, cabinet etc. should be provided which is metal and fitted with a means to contain leaks/spills from containers and with direct overside drainage of any spillage;
- the storage unit should be located on deck away from direct sources of heat, and should be fire-resistant;
- containers should be stored upright and secured, such that they are not likely to shift or fall over

with movement of the vessel;

- the unit should be suitably labelled according to contents (eg materials stored, hazards signs, no smoking/ignition sources etc);
- storage should be suitably distanced from potential sources, or situations where build up of vapours may occur;
- diesel type fuels should be stored separately from LPG;
- storage locations should not restrict or impede normal movement of people about the vessel or be on escape routes
- the storage unit should house both full and empty spare fuel containers (empty containers will contain liquid dregs and vapours

7.3. Petrol Engines

7.3.1. Petrol engines should be a suitable outboard type.

7.3.2. The engine, its fuel systems and tanks should comply with ISO10088 Permanently installed fuel systems and fixed fuel tanks, and the following:

- Fuel tank filling pipes should be arranged so as to ensure that any overflowing fuel will not be discharged into the vessel, including the bilges. Filling pipes should be adequately supported and connected to the fuel tank with leakproof joints. Flexible filling pipes should be suitable for use with petrol and meet the fire resistance test of ISO 7840 Small Craft Fire resistant fuel hoses (as amended), or equivalent;
- Fuel tanks should be properly secured and be installed as low as is practicable. They should be constructed of a non-corrosive material suitable for use with petrol. Fuel tanks should have a fire resistance of 30 minutes in accordance with BS 476- 20 Fire tests on building material and structures. Methods for determination of the fire resistance of elements of construction (General Principles) and have sustained a pressure test of 0.25 kgf/sq cm;
- All fuel tank joints and seams should be efficiently welded, brazed or close rivetted;
- No fixed petrol fuel tank of more than 2.5.litres should be installed within 1 metre of any engine or heating appliance, unless insulated and protected by an efficient baffle of fire resistant material;
- Glass or plastic fuel sight gauges should not be used. Fuel level indicators, if fitted, should be of a type which do not allow fuel to escape in the event of damage. Fuel tank dipsticks, when fitted, should only be used via gas-tight fittings;
- All fuel tank connections should be readily accessible for inspection;
- Fuel tanks should be effectively bonded by a low resistance metallic conductor to their deck filling plate, and also be effectively bonded to an earth point in direct contact with the water surrounding the hull
- The fuel supply should be drawn through the top of the fuel tank, or as near the top of the tank as possible. Only in the case of a gravity feed system should there be a connection from a cock or valve screwed directly in near the bottom of the tank, so that damage to the valve or fuel line cannot dump petrol into the machinery space
- Fuel tank balance pipes should not be used in petrol or paraffin engine installations
- All fixed fuel feed pipes should be of a metallic material suitable for use with petrol and/ or paraffin.
- Flexible fuel pipes should be of a material suitable for use with petrol and/or paraffin and meet the fire resistance requirements of BS/EN/ISO 7840 Small Craft fire resistant fuel hoses, or equivalent.
- All fuel pipes should be adequately supported to minimise vibration and strain, and fixed clear of exhaust systems and heating apparatus.
- All fuel pipe connections should be made with efficient screwed, compression, cone, brazed or

flanged joints. Soft solder joints should not be used.

- All fuel filters should be suitable for marine use and be of fire resistant quality.
- Carburettors (other than down-draught type) should be fitted so as to allow any overflowing fuel to drain into a spirit tight metal drip tray – the top of which should be covered with a flame-arresting copper or brass gauze which is mesh-soldered all around the tray. The tray should be removable, or fitted with a cock for emptying.
- A flame trap or air filter should be fitted to the air intake of any engine

7.3.3. A vessel may be fitted with a small auxiliary engine (usually not more than 5 horse power) manufactured with an integral fuel tank, provided a safety warning sign is displayed with details of the appropriate precautions to be taken when filling the fuel tank.

7.3.4. Vessels should supply fuel to the engine from either:

- (other than inflatable boats) a permanently installed fuel tank constructed to an appropriate standard and, in the case of vessels fitted with a weather- tight deck, should have arrangements such that spillage during fuel handling will drain directly overboard; or
- a portable tank of 27 litres or less in capacity complying with an appropriate standard.

7.3.5. A suitable hydrocarbon gas detector should be fitted in any enclosed location where an accumulation of hydrocarbon vapours is likely to occur – e.g. under or adjacent to the fixed tank. The detector components in the vapour area should not be capable of causing ignition.

7.3.6. Spare portable petrol containers should not be carried onboard unless it is judged to be essential to assure the safe completion of a voyage or excursion. Should this be the case, the containers should be fit for purpose and soundly constructed. They should be clearly marked as containing petrol, and should normally be stowed either:

- on the deck where they can be readily jettisoned, and where spillage will drain directly overboard; or
- in a fire-resistant deck locker with overside drainage.

7.3.7. When spare petrol is carried on-board in portable containers, for any purpose, the quantity should be kept to a minimum, the containers should be clearly marked and should normally be stowed on the weather deck where they can readily be jettisoned and where spillage will drain directly overboard.

7.3.8. In small vessels where Section 7.3.6 is not practicable, a 5-litre container of petrol may be stowed in a deck locker which meets the requirements of Section 7.3.9

7.3.9. Alternatively it may be stowed in a deck locker or protective enclosure which meets the following requirements:-

- vapour tight to the vessel's interior;
- not openable from the vessel's interior; and
- adequately drained overboard and ventilated to atmosphere.
- When storing petrol fuels in portable tanks or containers, consideration should also be given to the following:
- a secure and robust storage unit ,cupboard, bin, cabinet etc. should be provided, which is metal and fitted with a means to contain leaks/spills from containers and with direct overside drainage of any spillage;
- the storage unit should be located on deck away from direct sources of heat, and should be fire-resistant;
- containers should be stored upright and secured, such that they are not likely to shift or fall over

with movement of the vessel;

- the unit should be suitably labelled according to contents (eg materials stored, hazards signs, no smoking/ignition sources etc);
- storage should be suitably distanced from potential sources, or situations where build up of vapours may occur. (Note: petrol vapour is heavier than air);
- petrol type fuels should be stored separately from LPG;
- storage locations should not restrict or impede normal movement of people about the vessel or be on escape routes;
- the storage unit should house both full and empty spare fuel containers (empty containers will contain liquid dregs and vapours).

7.4. Electrically Powered Propulsion

7.4.1. An electrically powered propulsion engine may be used provided;

- the installation complies with the provisions of Section 10 of this Code in so far as they are applicable, and
- to The Institution of Electrical Engineers (IEE) Regulations for the electrical and
- electronic equipment of vessels as is appropriate to the size of the installation.
- the arrangement of batteries, including in particular their stowage and adequate ventilation, should comply with the IEE regulations – Section 15.
- a manually operated master switch, which can be operated from the steering position, should be fitted. It should be capable of cutting off the electrical supply to the propulsion motor.
- the connection from the battery charger on board the vessel to the charging point ashore should be by means of a 3-core flexible cable of adequate current carrying capacity, suitably constructed and graded, complying with the slash-proof category of BS/EN/ 6030-2, IEC60309-2, Plugs, socket outlets and couplers for industrial purposes - Dimensional interchangeability requirements for pin and contact tube accessories. The battery charging panel of the vessel should be adequately ventilated and have a positive switch and an indication light to show when charging of the vessel's batteries is taking place.
- the battery charging arrangement should incorporate control of the battery compartment exhaust ventilation fan, if fitted, so that the fan is automatically switched ON when battery charging commences and continues for one hour after charging is completed.
- the motor and controller compartments should be adequately ventilated.

7.4.2. Small electrically powered outboards may be used in the event of an emergency

7.5. Fuel Tank Shut offs

7.5.1. Directly at tank outlets the pipe work for the distribution of liquid fuels shall be fitted with a shutoff device that can be operated from the deck. This requirement shall not apply to tanks mounted directly on the engine

Steering and Propulsion Systems

8.1. Steering Systems

8.1.1. A vessel should be provided with an effective means of steering.

8.1.2. The control position should be located so that the person steering the vessel has a clear view for safe navigation.

8.1.3. When steering gear is fitted with remote control, arrangements should be made for emergency steering in the event of failure of the control system.

8.1.4. Emergency arrangements may take the form of a tiller to fit to the head of the rudder stock, or a steering oar as appropriate, taking into account the nature of the operation of the vessel concerned

8.1.5. Existing boats with 5 years' satisfactory service history may be considered of adequate standard after examination by the attending Surveyor

8.2. Rudder Systems

8.2.1. As appropriate to the boat, the rudder and rudder stock construction materials, design in total (including tiller head attachments, bearings and pintles) and the supporting structures should be adequate for the operating conditions of the boat. Recognised design standards should be used.

8.2.2. Construction and fittings should be to an appropriate standard, to the satisfaction of Merchant Shipping Secretariat.

8.3. Propeller System

8.3.1. As appropriate to the boat, propeller line shaft(s) construction materials and design in total (including shaft brackets, propeller securing, bearings, sterntube and thrust block) and supporting structures should be adequate for the operating conditions for the boat. Recognised design standards should be used.

8.3.2. Construction and fittings should be to an appropriate standard, to the satisfaction of Merchant Shipping Secretariat.

8.4. Waterjets

8.4.1. As appropriate to the boat, waterjet line shaft(s) construction materials and design in total (including waterjet unit, steering buckets, bearings, shaft, couplings and thrust block) and supporting structures should be adequate for the operating conditions for the boat. Recognised design standards should be used.

8.4.2. Construction and fittings should be to an appropriate standard, to the satisfaction of Merchant Shipping Secretariat.

Vessel Systems

9.1. Bilge Pumping / Draining

9.1.1. All vessels should be fitted with a powered or hand- operated bilge pumping system adequate for the size of the vessel, so that any compartment can be drained. Auto start bilge pumps are recommended, provided they are inspected regularly. To prevent water pollution from oily bilges, a holding tank with sufficient capacity must be fitted.

9.1.2. In area categories 8 and 9, small open vessels may carry one or more buckets or bailers instead of a bilge pump.

9.1.3. To prevent pollution, compartments containing potential pollutants should not be fitted with auto-start bilge pumps. No fixed bilge pump should draw from an oil tight area beneath any engine or gearbox.

9.1.4. When fitted pump capacities should meet the following minimum requirements:

- 10 litres per minute for boats of 6 m in length or less;
- 15 litres per minute for boats of between 6 and 12 m in length;
- 30 litres per minute for boats of 12 m in length or greater,

9.2. Bilge Alarms

9.2.1. Consideration should be given to the fitting of bilge alarms in compartments likely to accumulate bilge water (excluding void spaces), and where the rising water would not be obvious to the skipper, or where propulsion machinery is fitted in an unmanned, enclosed, watertight compartment.

9.2.2. If fitted, the alarm should provide an audible warning, and preferably a visual warning also, at the control position.

Electrical and Control Systems

10.1. General

10.1.1. The electrical installation is to be such as to minimise the risk of fire and electrical shock. Tanks, machinery or other metallic objects, which do not have good electrical continuity with the water surrounding the vessel, should have special earthing arrangements to reduce such risks. Cables should meet a recognised small craft standard suitable for the intended use. BS/EN/ISO 10133 Electrical systems –Extra-low- voltage d.c. installations and BS/EN/ISO 13297 Electrical systems – Alternating current installations.

10.1.2. Electrical equipment should be suitable for use in a marine environment with due consideration of humidity, temperature and vibration. Special consideration should be given to the choice and installation of electrical equipment that could be subjected to large vibration and impact loadings.

10.1.3. As far as practicable, electrical equipment should not be installed in a space where petroleum vapour or other hydrocarbon gas is likely to accumulate. Where equipment is installed in such a space it should comply with a recognised standard for prevention of ignition of a flammable atmosphere. Refer to BS/EN28846 (ISO 8846) (Amendment 1) Electrical devices – Protection against ignition of surrounding flammable gas.

10.1.4. Where lighting within a vessel is provided by a centralised electrical system, an alternative source of lighting (which may include suitable torches if practical) should be provided, sufficient to:

- enable people to make their way to the open deck
- deploy life saving appliances safely
- Illuminate man-overboard rescue equipment and rescue areas
- permit work on essential machinery.

10.1.5. Consideration should be given to the design and placement of lighting in order to preserve the night vision of Navigation Watchkeepers.

10.1.6. Existing boats with 5 years' satisfactory service history may be considered of adequate standard after examination by the attending Surveyor.

10.2. Control systems

10.2.1. Where a control system is installed:

- It shall operate machinery and systems in a safe, controlled and stable manner throughout the machinery's/systems' defined operational limits and shall recover automatically in a safe manner after a loss of power supply.
- It shall not be possible for any item of machinery to be controlled from more than one location at one time.
- Appropriate indication and feedback shall be provided to confirm that the system has responded to operator demands. The status of automatic control systems shall be indicated.
- It shall be possible to disable the automatic or remote-control operation of machinery and systems to allow inspection and maintenance tasks to be safely performed on the machinery and systems.

10.2.2. Where a system is controlling essential functions (e.g. power and steering):

- It shall be provided with a continuous electrical supply. An audible and visual alert shall be initiated in the event of the failure of any of the power supplies.
-

- It shall fail to a safe known state or not prevent any manual or reversionary mode.

10.2.3. Where an alert system is installed it shall inform operators as soon as reasonably practicable of deviations from normal operation of machinery and systems

10.2.4. Software is to be developed in accordance with a defined standard appropriate for the identified hazards and the evidence of compliance to the standard is to be submitted for consideration

10.3. Systems

10.3.1. DC systems should be two-conductor except that single-conductor systems are acceptable for engine circuits comprising engine-mounted equipment which have a return connection made at the engine itself

10.3.2. AC systems should normally be two-wire insulated for single phase, or three or four wire three-phase system, with insulated neutral in the case of a four-wire system. Alternative arrangements with earthing of neutral conductor may be specially considered.

10.3.3. A single-phase AC or two-wire DC system in which there is no intentional connection of the circuit to earth (an insulated system) should be provided with double pole switches, except that single pole switches may be used in the final sub-circuit

10.3.4. Single pole switches are only acceptable when used in the 'live' (+) conductor in a system with one pole earthed. Fuses should not be installed in an earthed conductor.

10.3.5. All circuits, except the main supply from the battery to the starter motor and electrically driven steering motors, should be provided with electrical protection against overload and short circuit (i.e. fuses or circuit breakers should be installed). The rating of over current protection devices should not exceed the rated current capacity of the conductor being protected. Short circuit protection should be suitable for the total rated current of the consumers in the circuit protected. Where a single outboard engine is installed, spare fuses should be carried to enable the engine to be started in the event of a damaged fuse.

10.3.6. Steering circuits, the loss of which would lead to steering failure, should have an overload alarm in lieu of overload protection (this does not apply to auto-pilot motors).

10.3.7. AC circuits supplying domestic consumers and socket outlets should be provided with earth leakage protection with maximum trip setting of 30 mA.

10.4. Shore supply

10.4.1. Shore supply circuits should be provided with earth leakage protection with maximum trip setting of 30 mA

10.4.2. Shore supply systems should be protected against overloads and short circuits, with protection on all insulated poles.

10.4.3. Shore supply systems should be protected against overloads and short circuits, with protection on all insulated poles.

10.4.4. On metal boats, shore supply systems should be fitted with efficient galvanic isolation.

10.4.5. On all boats consideration should be given to the efficient bonding of metal components in contact with sea

water to minimise galvanic corrosion

10.5. Batteries

10.5.1. Battery system requirements

- The battery terminals should be protected against accidental contact with metallic objects.
- Battery charging systems should be fitted with circuitry to prevent overcharging.
- A battery cut-out switch should be provided for all systems. It is preferred that this switch acts as an isolator, i.e. it is double pole, however, single pole is acceptable on the positive conductor. If a battery change-over switch is fitted and is provided with an 'off' position, this may serve as the cut-out switch also.
- Batteries supplying essential services (emergency lighting, steering systems, navigation and communications equipment) should be located in a position not likely to flood in normal operations or in the event of minor damage.
- In the case of a sailing boat, batteries should be of the sealed type to prevent electrolytic loss in the event of a knockdown or immersion.
- Lithium Ion batteries may be accepted subject to special consideration

10.5.2. Batteries should be firmly secured in position

10.5.3. Where the maximum charging power output exceeds 0.2 kW the batteries should be located in a well-ventilated space. Where the charging capacity exceeds 2.0 kW it should be located in a well- ventilated, dedicated compartment within the vessel or on the open deck.

10.5.4. Where there is environmentally-friendly technology used – e.g. in solar powered vessels – these should comply with current industry best practice and currently recognised safety standards. Where vessels use natural ventilation of battery spaces, and there is a proven record of safe operation, a risk assessment should confirm that there is little risk to life.

10.5.5. Attention should be paid to any battery-operated safety critical equipment to ensure continuous operation in the event of an emergency – e.g. a spare battery and charging facilities where necessary. Safety critical equipment includes, but is not necessarily limited to, communications and navigation lights.

10.5.6. Batteries used to power an emergency outboard motor can be charged ashore when no charging facility is provided onboard

Life Saving Appliances, Escape, Evacuation and Rescue

11.1. Lifebuoys

11.1.1. Lifebuoys and holders shall comply with harmonized standards BS EN 14144:2003 'Lifebuoys Requirements & tests' and BS 14145:2003 'Holders for Lifebuoys'.

11.1.2. There shall be at least two lifebuoys on vessels of less than 24m in length and four lifebuoys on vessels of 24m or more in length, at least one of which shall be located by the wheelhouse.

11.1.3. Cargo vessel requirements

- Quoits or floating rescue strops may be used as an alternative to lifebuoys on area categories 8 and 9 waters and on vessels with restricted space
- For area category 6 and 7 waters, at least one of the lifebuoys shall be fitted with a buoyant line and if operating at night, the lifebuoy should also be fitted with a battery powered light which will not be extinguished in water.

11.1.4. Passenger vessel requirements

- In area categories 8 and 9 waters, at least one of the lifebuoys shall be fitted with a buoyant line of at least 18m in length. If operating at night, the lifebuoy should also be fitted with a battery powered light which will not be extinguished in water.
- In area categories 6 and 7 waters, a minimum of two lifebuoys shall be fitted with a buoyant line of at least 18m in length. If operating at night the lifebuoys should also be fitted with a battery powered light which will not be extinguished in water

11.2. Lifejackets and buoyant apparatus

11.2.1. Lifejackets can be of a solid buoyancy or inflatable type, and should comply with BS/EN 396: Life Jackets and personal buoyancy aids of 150N, or BS/EN 399: Life Jackets and personal buoyancy aids of 275N. Lifejackets relying entirely on oral inflation are not appropriate for emergency use, unless they are inflated at all times during operation

11.2.2. Where vessels operate at night, lifejackets should be fitted with lights

11.2.3. Cargo vessel requirements

- In area category 6, 7 and 8 water there shall be one life jacket per persons on board member plus one spare; this requirement is also recommended for category 9 waters.

11.2.4. Passenger vessel requirements

- In area categories 9 waters, lifejackets for use in an emergency are not required. Exceptionally, where vulnerable passengers are carried, a risk assessment should be carried out to establish whether, and in what circumstances, lifejackets or buoyant apparatus should be available to assist in the event of an evacuation.
- In area categories 6, 7and 8 waters, vessels should carry enough lifejackets for all persons on board for use in the event of an emergency

11.3. Liferafts

11.3.1. Liferafts are to be of an approved type (SOLAS or non-SOLAS, including open reversible) or built to the International Sailing Federation (ISAF), Offshore Special Regulations (OSR) Appendix A Part 2 requirements. A liferaft need not be fitted with an insulated floor or canopy.

11.3.2. The liferaft equipment is to be to of an approved standard and comprise of a "SOLAS B PACK" as follows: -

- one buoyant rescue quoit with buoyant line;
- two non-folding safety knives with buoyant handle secured to the liferaft by a line and stowed in a pocket on the upper buoyancy tube adjacent to the painter;
- one buoyant bailer plus lanyard;
- two sponges;
- one sea anchor permanently attached to the liferaft for ready deployment when the liferaft inflates;
- two buoyant paddles;
- one first aid outfit in a waterproof case;
- one whistle or equivalent sound signal;
- one waterproof electric torch suitable for Morse signaling;
- two red hand flares;
- one repair outfit for repairing punctures in buoyancy compartments; and
- one topping-up pump or bellows

11.3.3. For each liferaft, the equipment which is not attached to the liferaft may be either packed into the liferaft by the liferaft manufacturer and the contents listed on the certificate for the liferaft or listed and stowed in a suitable protective grab bag which is sited in a prominent position for ready transfer to the liferaft in an emergency

11.3.4. A liferaft may be either: -

- preferably stowed on the weather deck in an open space in an approved fibre reinforced plastic (FRP) container and fitted with a float free arrangement (Hydrostatic Release Unit) so that the liferaft floats free and inflates automatically; or alternatively
- stowed in a FRP container or in a valise in a readily accessible and dedicated weathertight locker or enclosure opening directly onto the weather deck.

11.3.5. On cargo and passenger vessels operating in area categories 6 & 7, vessels should carry a liferaft(s) with capacity to accommodate the total number of persons onboard

11.4. Instructions

11.4.1. An instruction manual should be carried for onboard maintenance of the life-saving appliances. The manual may be kept ashore by the operator in the case of an open boat. It is to include the following where applicable:

- Check list for use when carrying out inspections.
- Maintenance and repair instructions (including a list of replaceable parts and sources for spare parts, and a log of records of inspection and maintenance).
- Schedule of periodic maintenance.

11.5. Maintenance

11.5.1. All life saving appliances should be serviced at the manufacturer's recommended service station at recommended intervals.:

11.6. Other equipment

11.5.2. The following shall be on board:

- A heaving line;
- An appropriate first aid kit suitable for crew and passengers, should be carried and stored in an accessible place kit

11.7. Tenders (Dinghies)

11.7.1. If a tender is carried, it should be marked with its carrying capacity and the name of the vessel.

Fire Protection, Fire Safety Appliances and Systems

12.1. General

12.1.1. Machinery space boundaries constructed of steel require no additional fire protection. However, surfaces on the opposite side of the machinery space should only be coated with finishes which have a Class 1 surface spread of flame rating when tested in accordance with standards in Annex 7. Also, due consideration should be given to insulation of steel machinery space boundaries where contiguous with accommodation, stores or other fire risk or sensitive spaces, and the fitting of fire dampers at machinery vent boundaries

12.1.2. Boats constructed in aluminium should be insulated in way of the hull, bulkheads and deck boundaries in machinery spaces and areas of high fire risk to B-15 standard and prevent the passage of smoke and flame for 15 minutes when tested in accordance with the procedure shown in the IMO International Code for application of Fire Test Procedures, FTP Code Annex 1 Part 3.

12.1.3. Builders of aluminium boats should pay particular attention to areas of the hull/decks/bulkheads where high heat items pass through (e.g. exhaust outlet) that may lead to cracking or hardening of the structure due to the increased ambient temperature which leads to changes to the structure on a molecular level. It is known that painting aluminium can lead to problems with pitted corrosion below the paint

12.1.4. Boats constructed in FRP should have hull, bulkheads and deck boundaries in machinery spaces and other high risk fire areas that prevent the passage of smoke and flame for 15 minutes and tested in accordance with the procedure shown in the IMO International Code for application of Fire Test Procedures, FTP Code Annex 1 Part 3 or as given in annex 6 "Fire Test for FRP"

12.1.5. Fire resistance of FRP may be achieved by the use of woven roving glass layers or additives, which must be added strictly in accordance with the manufacturer's requirements, to the resin. Intumescent polyester, epoxy, vinyl ester or phenolic resin surface coatings may also be used provided that it can be demonstrated that the coating can protect the structural integrity of the bulkhead or structure. Solvent borne intumescent paints are not acceptable

12.1.6. Where insulation is fitted to provide an equivalent level of fire protection, the insulation should be fitted to the hull, bulkheads and decks in their entirety and need not be fitted on the hull sides lower than 300 mm below the waterline. Insulation that has been approved to meet A-15 standards (with steel) will be considered to meet this standard.

12.1.7. Machinery compartment boundaries should be of an adequate standard, such that a fire fighting medium released or injected into the compartment can be retained sufficiently to extinguish a fire.

12.1.8. Sound proofing insulation within the machinery compartment should be non-combustible (not readily ignitable can be accepted in existing vessels) and be impervious to impregnation by oil or oil vapour.

12.1.9. Suitable means are to be provided so that a machinery compartment may be kept clean, and able to contain any oil spillage for discharge to a disposal facility ashore. Oily water should not be discharged overboard.

12.1.10. LPG installations should comply with ISO 10239: Small Craft – Liquefied Petroleum Gas (LPG) systems. Installations should be inspected annually by a competent person.

12.1.11. It is recommended that fire resistant or fire-retardant materials are used for furnishings and fittings.

12.1.12. On any vessel, where an area is identified as posing a fire risk to either passengers or crew (e.g. galleys, sleeping accommodation), fire detection equipment shall be installed to protect that area.

12.1.13. The fire detectors should be appropriate to the hazard identified (generally smoke detectors) and should give an audible warning that can be heard in the space concerned and in the control position when the vessel is in operation.

12.2. Means of Escape

12.2.1. The means of escape should be such that a single hazardous event will not cut off all possible escape routes. Two means of escape should be provided in:

- each compartment used for sleeping or rest; and
- other compartments used for accommodation affected by a fire risk, and
- machinery spaces affected by a fire risk except:

  those spaces visited only occasionally , and where the single access gives ready escape, at all times, in the event of fire; or

  those spaces where any person entering and moving about the space is within 5 metres of the single entrance, at all times.

12.2.2. In existing vessels which have only a single means of escape from accommodation spaces, efficient fire detectors should be provided as necessary to give early warning of a fire emergency that could cut off that single means of escape.

12.2.3. A passenger vessel should be provided with an efficient escape route or routes, taking into account the passengers to be carried and any restrictions on use of the routes.

12.3. Fire Fighting Appliances

12.3.1. In a non-decked or partially decked vessel without engine, cookers, heating, lighting or other fuel burning appliances, no fire extinguisher is necessary.

12.3.2. Any inboard engine space should be fitted with a fixed fire extinguishing system which is remotely operated (whether manually or automatically) from outside that space. Such a system may consist of a portable fire extinguisher arranged to discharge into the space, operable without entering the space, eg through a fire hole. This should be suitable for the size of the engine space, but should have a minimum rating of 5A/34B (shown on the extinguisher).

12.3.3. In area category 9 waters, vessels with an outboard engine should carry a suitable fire extinguisher

12.3.4. In area category 6, 7 and 8 waters, a vessel of more than 6m in length should carry a hand-powered or power driven fire pump with sea and hose connections capable of delivering one jet of water to any part of the vessel through a hose and nozzle, or at least one multi- purpose fire extinguisher to a recognised standard with a minimum fire rating of 13A/113B, or smaller extinguishers giving the equivalent fire rating. These should be kept outside the engine space. In addition to the provisions of 12.3.2 above, one or more fire buckets with lanyards should be provided. Buckets may be of metal, plastic or canvas and suitable for intended use.

12.3.5. In addition, for all vessels other than those covered by 12.3.1, there should be at least one multi-purpose fire

extinguisher to a recognised standard with minimum fire rating of 5A/34B provided at each exit from accommodation spaces to the open deck. In no case should there be less than two such extinguishers.

12.3.6. If there is a galley or cooking area, a fire blanket of a recognised standard should be provided and located between the door and stove.

12.3.7. Portable fire extinguisher shall be of an approved type meeting the requirements of BS EN3 Series: 1996 and have a rating of at least 13A/113B. For vessels under 6m, a rating of 13A/70B is acceptable and maintained in good condition

12.3.8. The extinguishing substance used in the portable fire extinguishers required by section 1 shall be suitable for at least the fire category that is most likely to occur within the area for which the extinguishers is intended

12.3.9. The extinguishing substance on board vessels whose electrical systems have a service voltage of more than 50 V shall also be suitable for fighting electrical fires. The instructions for use shall be clearly set out on each portable extinguisher

12.3.10. The extinguishing substance may not be halon or contain a product which is likely to release toxic gases during use, such as carbon tetrachloride. Portable fire extinguishers using CO2 may only be used to fight fires at specific locations such as control panels, kitchens; the quantity of CO2 should not constitute a health hazard.

12.3.11. Extinguishers that are sensitive to freezing or to heat shall be installed or protected in such a way that their proper functioning is always guaranteed

12.3.12. Fire extinguishers shall be serviced at the manufacturer's recommended service intervals by an approved service agent.

12.3.13. If extinguishers are installed in such a way that they are out of sight the panel covering them shall be identified by an appropriate international symbol

12.3.14. Summary table of required minimu fire extinguishers

In the wheelhouse:	1 portable fire extinguisher
Close to each means of access to the deck and accommodation	1 portable fire extinguisher
Close to each means of access to service premises that are not accessible from the accommodation, and which contain heating, cooking or refrigeration equipment using solid or liquid fuels	1 portable fire extinguisher
At each entrance to the engine room and boiler rooms	1 portable fire extinguisher
At suitable points in engine rooms and boiler rooms such that no position in the space is more than 10 metres away from an extinguisher,	1 portable fire extinguisher
By the galley	1 fire blanket

12.4. Fire Detection

12.4.1. In boats where the total installed power (propulsion and electrical generation) is greater than 750 kW efficient fire detectors should be fitted in the engine space(s).

12.4.2. In a boat carrying 12 or more passengers, efficient fire detectors should be fitted in the engine space(s) and spaces containing open flame devices

12.4.3. On any boat, where an area is identified as posing a fire risk to either passengers or crew (e.g. galleys, sleeping accommodation), fire detection equipment shall be installed to protect that area

12.4.4. The fire detectors should be appropriate to the hazard identified and should give an audible warning that can be heard in the space concerned and in the control position when the boat is in operation

Communications Equipment and Systems

13.1. General

13.1.1. Communications equipment should be carried for the following purposes, as applicable to the area of operation as determined and agreed with the merchant shipping secretariat

- Navigation: in some areas, there will be local requirements laid down by the harbour authority or navigation authority;
- Emergency communications with local emergency services.

13.1.2. The local navigation authority and local rescue services should be consulted in order to establish the most effective form of communication, whether VHF or other means. Emergency procedures for establishing contact in an emergency should be prepared. It should be noted that a mobile phone may be sufficient in some areas, but if mobile phone coverage is poor, alternative means should be agreed.

13.1.3. Mobile phones or portable VHF should be contained in a waterproof pouch or be waterproof in their own right.

13.1.4. A card(s) giving a clear summary of the distress communications, urgency and safety procedures is to be displayed in full view of the radio operating position or where mobile communications equipment is carried. It should be in a prominent place where it can be easily reached in the event of an emergency.

13.1.5. In area categories 6 and 7 as a minimum a VHF radio communication set with Digital Selective Calling (DSC)to be provided

Navigation Lights and Equipment

14.1. General

14.1.1. Vessels should comply with the requirements of the International Regulations for Preventing Collisions at Sea, 1972 (Collision Regulations)

14.1.2. Where it can be demonstrated to the Merchant Shipping Secretariat that, for a particular vessel, full compliance with the Collision Regulations is impracticable, proposals for an equivalent arrangement may be considered.

14.1.3. A vessel which operates only between sunrise and sunset is not required by the international regulations to carry navigation lights. However, in areas where there is a risk of collision in poor visibility, it is advisable to use navigation lights.

14.1.4. Vessels operating through tunnels should also carry a white spotlight or headlight.

14.1.5. Sound signalling equipment should comply with the Regulations. A vessel of less than 12 metres in length is not obliged, unless required by local byelaws, to carry the sound signalling equipment required by the Regulations on the condition that some other means of making an efficient sound signal is provided

14.2. Navigational Equipment

14.2.1. In area category 6 and 7 waters suitable navigation equipment should be carried for the area of operation. This should include an efficient magnetic compass, which is suitably adjusted and provided with a deviation card where appropriate.

14.2.2. Alternatively, a fluxgate compass with suitable electrical back-up supply may be fitted. Where a fluxgate compass incorporates a capability to measure magnetic deviation by undertaking a calibration routine, and where the deviation figures are recorded within the device, a deviation card

14.3. Miscellaneous Equipment

14.3.1. Appropriate local navigation authority publications when available must be carried.

14.3.2. In all vessels, a water-resistant torch and a suitable boat hook should be provided.

14.3.3. An emergency response plan should be carried detailing procedures for calling emergency services, ambulance, fire brigade and coast guard etc..

14.3.4. For non-metallic hulls operating in area category 6 & 7 waters, radar reflectors or transponders should be fitted in order to enhance radar visibility. These should be approved to current IMO performance standards, or other means. On small vessels, where it is not practicable for an efficient radar reflector to be fitted, they should not operate in fog, and if visibility starts to deteriorate they should return to their mooring.

14.3.5. A sailing vessel should carry appropriate means of clearing rigging for use in the event of dismasting

14.3.6. Two red hand flares and two smoke signals shall be provided for operation on area category 6 and 7 waters; rocket flares are recommended for area category 6 waters and may be required on the advice of the navigation authority.

Anchors & Cables

15.1.1. In Area categories 6 and 7 waters and in tidal or flowing water, a suitable anchor and cable or equivalent should be carried, maintained and rigged ready for use. Only where the particular operating patterns dictate may the anchor be left unready, e.g. pilot boat duties the requirements are given in the tables below

Anchors and cables – for boats up to 15 m

	Anchor mass		Anchor cable diameter			
Mean length (*See* Note 4) (metres)	Main Anchor (kg)	Spare Anchor (kg)	Main chain (mm)	Main rope (mm	Spar e chain	Spare rope (mm)
6	8	4	6	12	6	10
7	9	4	8	12	6	10
8	10	5	8	12	6	10
9	13	5	8	12	6	10
10	16	6	8	12	6	10
11	19	7	8	12	6	10
12	22	9	8	14	8	12
13	25	10	10	14	8	12
14	28	12	10	14	8	12

Anchors and cables – for boats over 15 m

Loaded displacement	Anchor main	Anchor spare	Anchor cable diameter
(tonnes)	(kg)	(kg)	(mm)
25	30	30	10
50	40	40	12
75	50	50	12
100	75	75	13,5
125	90	90	13,5
150	100	100	13,5
175	125	125	16
200	130	130	17,5
225	150	150	17,5
250	180	180	17,5
275	225	225	17,5
300	230	230	17,5
350	240	240	17,5
400	245	245	17,5
450	250	250	19
500	255	255	19
550	260	260	19
600	265	265	19
650	270	270	20
700	300	300	20
750	360	360	20

Notes

1. Chain cable diameter given is for short link chain. Chain cable should be sized in accordance with EN 24 565:1989 (covering ISO 45651986 and covered by BS 7160:1990 - Anchor chains for small craft), or equivalent.
2. The rope diameter given is for nylon construction. When rope of another construction is proposed, the breaking load should be not less than that of the nylon rope specified in the table.
3. When anchors and cables are manufactured to imperial sizes, the metric equivalent of the anchor mass and the cable diameter should not be less than the table value.
4. For the purposes of this Section, mean length is defined as: (Length + length on waterline)/2

15.1.2. For boats of unusual or non-conventional boat form (including pontoon barges) the anchor and cable size should be to the satisfaction of the Merchant Shipping Secretariat

15.1.3. Stainless steel and aluminium anchors will be separately considered dependent upon the test loads for which the anchor has been designed

15.1.4. When an anchor mass is more than 30 kg, an efficient mechanical means should be provided for handling the anchor.

15.1.5. There should be a strong securing point on the foredeck or equivalent structure and where appropriate a fairlead or roller at the stem head

15.1.6. The length of anchor cable attached to an anchor should be appropriate to the area of operation but generally should be not less than 4× the boat's mean length or 30 m, whichever is the longer, for each of the main and kedge anchors. (For a definition of mean length, see Note 4 of Table Anchors and cables – for boats over 15 m)

15.1.7. The cable for main anchors and for kedge anchors may be of chain or rope. When the anchor cable is of fibre rope or wire, there should be not less than 10 m or 20 per cent of the minimum required cable length, whichever is the greater, of chain between the rope and the anchor. Where the anchor cable is wire then proposals to substitute the chain tail by an anchor and/or chain of enhanced mass will be considered to the satisfaction of the Merchant Shipping Secretariat, with special attention paid to the anchor performance, i.e. catenary

15.1.8. Anchoring systems incorporating a windlass should have the bitter end of the cable secured to the boat's structure and capable of being released in an emergency

15.1.9. Anchor steel wire rope is to be fitted with thimbles at both ends

15.1.10. In still water, appropriate mooring arrangements should be provided. Mooring lines of adequate length for all possible moorings (including in an emergency) should be carried. The vessel should be fitted with bollards or cleats of adequate strength

15.1.11. Provision is to be made for the secure storage of the anchor and its cable

15.1.12. A boat should be provided with a towline of not less than the length and diameter of the spare anchor cable. The towline may be the warp for the second anchor. Where practicable, the towline should be buoyant.

Accommodation Facilities

16.1. General

16.1.1. Accommodation should provide suitable conditions and facilities for those persons on board according to the duration of stay

16.1.2. Where overnight accommodation is provided a bunk or cot should be provided for each person on board. On sailing boats at least 50 per cent of those provided should be fitted with lee boards or lee cloths

16.1.3. Excessive noise and vibration should be limited within accommodation spaces, and as far as practicable in accordance with relevant international standards.

16.1.4. Furniture and heavy items of equipment, such as batteries, cooking appliances etc., should be securely fastened in place to prevent movement. This is not necessary for ordinary furniture on area category 8 and 9 waters, where the risk of severe vessel movement is low

16.1.5. Stowage lockers containing heavy items are to have lids or doors with secure fastening

16.1.6. Means of escape from accommodation spaces should be free from obstruction, and clearly marked for their purpose unless they are obvious

16.1.7. Enclosed spaces which persons may enter should be effectively ventilated. Due regard should be paid to ISO 10239 Small Craft – Liquefied Petroleum gas (LPG) systems or BS5482- 3 Domestic Butane and Propane gas burning installations in boats, yachts and other vessels, for gas installations, requiring permanently open vents for open flame devices. For other types of fuel burning appliances refer to the manufacturer's recommendations for ventilation

16.1.8. Sufficient handholds and grab-rails should be fitted within the accommodation, for the safety of passengers when moving around the accommodation. In area category 8 & 9 waters, this will mainly be limited to the side of stairs

16.1.9. An adequate supply of fresh drinking water should be provided and piped to convenient positions throughout the accommodation spaces

16.1.10. In addition, an emergency (dedicated reserve) supply of drinking water should be carried at the rate of 2 litres per person on board

16.2. Passenger Spaces

16.2.1. Passenger spaces shall be provided on not more than two decks including the top of the deckhouse, subject to meeting stability requirements

16.2.2. Passenger spaces do not include:

- Crew accommodation
- Toilets
- Companionways/stairways/means of escape
- Any passageway between bulkheads less than 750mm wide.

- Areas permanently occupied by safety equipment and other vessel related operational equipment.
- Areas designed for the safe operation of the vessel i.e.

  Machinery/navigation/mooring.

  Vehicle carrying spaces.

  Open deck vehicle carrying spaces.

  Access routes to such spaces

16.2.3. For open deck spaces the clear deck area shall be measured between points within which the Merchant Shipping Secretariat considers the area fit for the safe and proper accommodation of passengers. It should also be considered whether the bow or stern area is a suitable place for passengers to be permitted to occupy

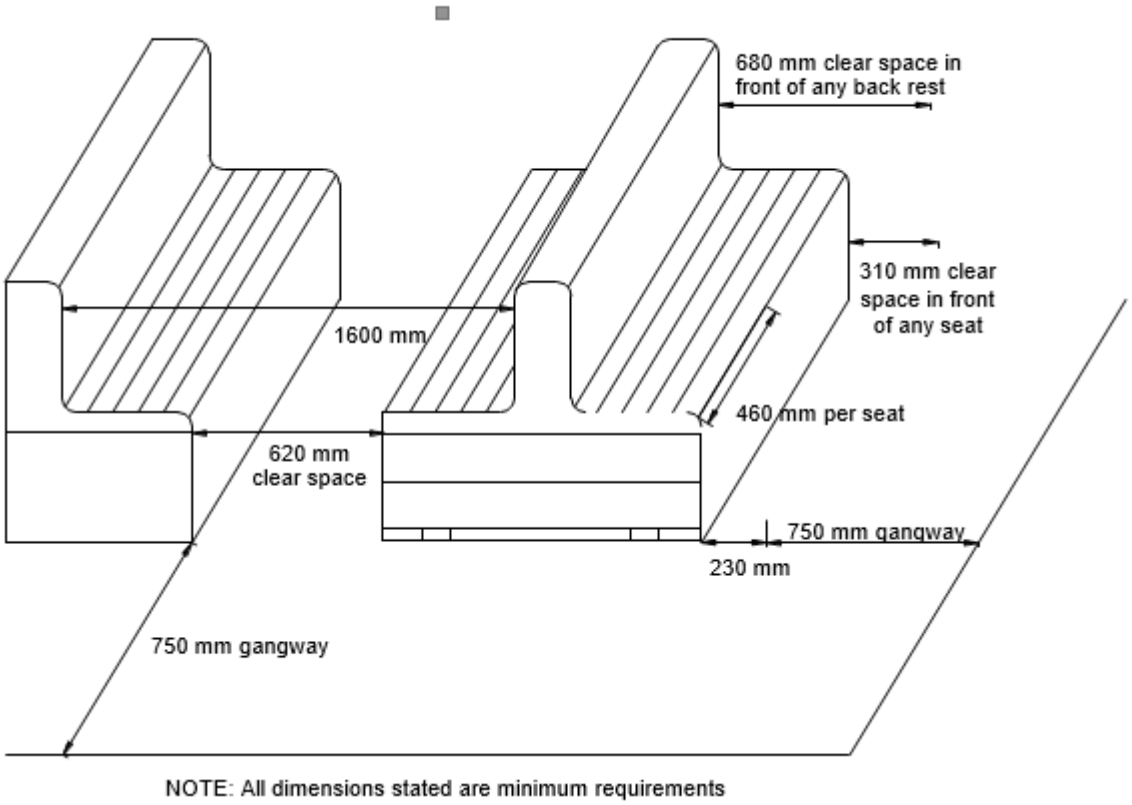
16.2.4. Clear deck area for both open and enclosed spaces means the area which remains after that occupied by all encumbrances, such as hatchways, skylights, companionways, casings, ventilators, navigating space, luggage lockers and lifesaving appliances carried on the open deck or in lockers has been deducted. Tables and seating are included within the clear deck area

16.2.5. The number of passengers allowed for a passenger space;
- Located below the main deck is the clear deck area in square metres divided by 0.85
- Located on the main deck is the clear deck area in square metres divided by 0.6
- Located on tops of the deckhouses is the clear deck area in square metres divided by 0.85

16.2.6. On craft operating on voyages of 30 minutes or less duration the number of seats provided for passengers could be reduced by 50 %, on all other voyages every passenger must be provided with a seat

16.2.7. Craft operating on overnight voyages must provide sleeping accommodation

16.2.8. Minimum seat dimensions;



NOTE: All dimensions stated are minimum requirements

- Suitable clear space shall be allowed for access, assembly and escape, with a minimum width of 750mm being provided.
- A length of 460mm measured horizontally along the front of each seat shall be allowed for the accommodation of seated passengers.
- When any space in front of a seat is required for access, the space within 230mm of the front of the seat shall not be taken into account when measuring the width of the access.
- The distance between any part of the back rest of any seat and the back rest of the seat facing it, shall not be less than 1600mm.
- There shall be a clear space of at least 680mm in front of the backrest of any seat measured from the centre of each seat and a clear space of at least 310mm in front of any part of that seat.
- There shall be a clear space of at least 620mm between any part of the front of a transverse seat, and any part of any other seat which faces it.
- The number of passengers accommodated by bench seating is found by dividing the length in metres of each continuous fixed seat by 0.46, the measurementsbeing taken along the inner edge of the seats. Buoyant apparatus may be used for seating provided the seating dimensions specified above are satisfied.

16.3. Galley

16.3.1. Where overnight accommodation is provided a galley should be provided for the provision of hot meals

16.3.2. A galley where fitted should be provided with a means for cooking and a sink and have adequate working surface for the preparation of food

16.3.3. Where food is provided in the form of ration packs, a suitable boiler or food warmer will be acceptable

16.3.4. For sailing boats, when a cooking appliance is gimballed it should be protected by a crash bar or other means to prevent it being tilted when it is free to swing, and a strap, portable bar or other means should be provided to allow the cook to be secured in position, with both hands free for working, when the boat is rolling. A means should be provided to lock the gimbal mechanism to prevent movement.

16.3.5. There should be secure storage for food in the vicinity of the galley

16.4. Toilet facilities

16.4.1. For vessels where the duration of the voyage is longer than six hours adequate toilet facilities, separated from the rest of the accommodation, should be provided for persons on board

16.4.2. In general, there should be at least one flushing marine toilet and one wash hand basin for every 12 persons

16.5. Protection of Personnel

16.5.1. A deckhouse used for the accommodation of persons must be constructed of adequate strength to withstand the forces of weather and sea to which it will be subjected in use. Refer to Chapter 2 Procedures, Examination, Certification and Maintenance

16.5.2. A suitable certified carbon monoxide (CO) alarm (e.g. BS EN 50291-2) should be fitted where CO could accumulate and pose a risk to health. Boat users should be aware that CO may not always originate from internal sources or even from your own boat. The occupants of neighbouring boats are at risk when moored near boats emitting high concentrations of CO

16.5.3. To protect persons from falling overboard, and where proper working of the vessel is not impeded, areas where passengers are frequently on deck should be enclosed. Alternatively, guardrails or guard wires to a height of at least 1000mm should be fitted.

16.5.4. In area category 8 and 9 waters, where passengers remain seated throughout the trip, and no other contributory risks are identified, this height may be reduced, except around access points to and from the vessel. Where a vessel has narrow side decks, a handrail should be provided on the side or roof of the vessel. On the foredeck, a centreline handrail may be more workable.

16.5.5. When application of such measures would impede the proper working of the vessel, alternative arrangements should be made which provide an equivalent level of safety; for guidance see ISO 15085: Man overboard prevention and recovery.

16.5.6. In a non-decked vessel, a safe location within the vessel is to be provided for all persons onboard. If vulnerable passengers may move around open or narrow decks, a risk assessment is recommended to determine whether personal protective equipment (lifejackets, harnesses) should be worn.

16.5.7. In area category 6 and 7 waters, if crew members need to move around exposed decks for the safe operation of the vessel, two safety harnesses should be provided, together with a means for securing lifelines. These could also be used in a man-overboard situation to prevent the rescuer falling overboard. A risk assessment is recommended if passengers may move around open or narrow decks to determine whether other personal protective equipment (e.g. lifejackets) should be provided.

16.5.8. The surface of a working deck should be non-slip. In an inflatable boat or rigid inflatable boat the upper surface of the inflated buoyancy tube is to be provided with a non-slip finish.

16.6. Prevention of Pollution

16.6.1. The vessel should comply with local bylaws relating to the discharge of waste water. All rubbish should be disposed of at designated and suitable facilities ashore

16.6.2. Crew and passengers shall be made aware of the garbage disposal requirements by posters and placards and regular trainings shall be carried out in this regard

16.6.3. 1A vessel with toilet facilities shall be fitted with a holding tank of suitable size to accommodate the total number of persons on board for the duration of the voyage.

16.6.4. No sanitation system capable of discharging sewage overside should be fitted in the vessel unless it is capable of being sealed or rendered inoperable.

16.6.5. Sealed sanitation systems should comply with the requirements of BS MA101 Specification for toilet retention and re-circulation systems for the treatment of toilet waste on small craft or equivalent.

16.6.6. An oil-tight tray made of metal or other suitable material should be fitted beneath every engine and gearbox so as to prevent leakage of oil escaping into any part of the vessel or overside. The sides of the tray should be carried as high as practicable. A tray is not needed if oil-tight structural members are fitted fore and aft of the engine. No fixed bilge pump should draw from an oil-tight area.

16.6.7. All oily waste shall be retained on board for proper disposal ashore.

16.6.8. All shore discharge records (Garbage, oil and sewage) shall be supported by discharge certificates obtained from the Marine Environment Protection Authority and shall be retained on board

Annexures

Annex 1 – Internal Waters Craft Code Certificate

Certificate Number

Democratic Socialist Republic of Sri Lanka

INTERNAL WATERS CRAFT CODE SAFETY CERTIFICATE

This certificate shall be supplemented by the Record of Equipment and Survey Report
Issued under the provisions of the Merchant Shipping (Non-Convention Vessel) Regulations No 1 of 2024 and the Merchant Shipping (Vessel Classification and Certification) Regulations No.3 of 2024

.....
Name of Certifying Body

Type of Vessel : *...RIB / Motor / Sail / Motor or Sail Catamaran*.....
Vessel Group : .....

Operational Area Category	6	7	8	9
Assigned				

Particulars of Vessel

Name of Vessel: Distinctive Numbers:
Registration Number: Port of Registry
IMO Number (If Available) Date of Build*:

* Date on which the Keel was laid or at similar stage of construction or where applicable date on which work for conversion or an alteration or modification of a major character was commenced

This is to certify

1) That the vessel has been surveyed in accordance with the requirements of the Internal Waters Craft Code 2025
2) That the survey showed that the condition of the structure, subdivision, structural fire protection, machinery, vessels equipment and systems, lifesaving appliances and equipment, firefighting appliances and equipment, navigational equipment, radio installations and in all other respects, the vessel has complied with the relevant requirements of the code.
3) That the maximum number of persons on board the vessel should not exceed ..... and the maximum number of passengers on board should not exceed.....
4) That an Exemption certificate has/has not been issued

This certificate is valid until: Issued at :

Date of issue Signature of authorized official seal or stamp of certifying body

Annual / Intermediate Survey endorsements

This is to certify that the vessel has been surveyed in accordance to the survey requirements of the code for the type of survey as given Type of Survey Place of Survey Date of Survey Signed Seal or stamp of Certifying Body
This is to certify that the vessel has been surveyed in accordance to the survey requirements of the code for the type of survey as given Type of Survey Place of Survey Date of Survey Signed Seal or stamp of Certifying Body
This is to certify that the vessel has been surveyed in accordance to the survey requirements of the code for the type of survey as given Type of Survey Place of Survey Date of Survey Signed Seal or stamp of Certifying Body

Annexures

This is to certify that the vessel has been surveyed in accordance to the survey requirements of the code for the type of survey as given

Type of Survey

Place of Survey

Date of Survey

Signed Seal or stamp of Certifying Body

Annexures

Annex 2 – Record of Equipment & Survey Report

	Democratic Socialist Republic of Sri Lanka Merchant Shipping Secretariat	Certification Number:
	Record of Equipment Internal Waters Craft Code	Expiration Date:

1.0 Particulars of vessel

Name of Vessel	Distinctive Numbers:	
Registration Number:	Port of Registry	
IMO Number (If Available)	Date of Build*:	
Builders Name and Address	Yard Number	Hull Material
Vessel Group:	LOA	Breadth
Vessel Type RIB ☐ Motor ☐ Sail ☐ Motor/Sail Catamaran ☐		
Assigned Operational Areas		
Total number of persons on board	Maximum number of Passengers	
This vessel shall be manned with the following personnel: -		

* Date on which the Keel was laid or at similar stage of construction or where applicable date on which work for conversion or an alteration or modification of a major character was commenced

2.0 Record of Equipment

Code Ref	Description	Provided
11.3	Total number of Liferafts (Total number of persons accommodated)	
11.1	Total number of Lifebuoys	
11.1.3	Number of Lifebuoys with buoyant line	
11.1.3	Number of Lifebuoys with buoyant line and light	
11.1.4	Number of Lifebuoys with buoyant line (18m length)	
11.1.4	Number of Lifebuoys with buoyant line (18m length) and light	
11.1	Number of Lifebuoys without attachments	
11.2	Total number of Life jackets (Type)	
11.2	Number of child Life jackets (Type)	
11.2.2	Number of Life jackets (Type) with lights	
11.7	Tenders (Rescue boat)	
12.3	Fixed Fire extinguishing system (Type)	
12.3	Number of portable fire extinguishers	
12.3.4	Fire Pumps (Hand / power driven)	
12.3.4	Number of Fire hoses with spray nozzles	
12.3.6	Fire Blanket	
12.3.4	Fire Buckets with lanyards	
13.1.5	VHF radio	

Annex 3 – GUIDANCE ON FREEBOARD MEASUREMENT FOR MOTOR VESSELS AND STABILITY ASSESSMENT (HEEL TEST)

Freeboard Measurement

1. The boat should be tested with the maximum number of persons (passengers and crew) onboard, in the fully loaded condition i.e. with full tanks, full stores etc. The persons and equipment should be positioned as to represent the "in service" condition of the boat. The boat should be at its normal working trim and have no angle of heel. If so required, each person may be represented by a weight of 75kg. Arrangements should be made in order to allow a person outside of the vessel to take all measurements.

2. In this condition the freeboard of the boat should be measured in accordance with paragraphs 5.2 or 5.3 of section 5 in the main text.
   - In the case of vessels operating in area category 8 and 9 waters, the measurement is the freeboard from the surface of the water to the lowest part of the deck, or top of gunwale if on an open boat.
   - In the case of a vessel operating in area category 6 and 7 waters, the measurement is freeboard to down flooding. The down flooding point is defined as the lowest point around the periphery at which water can enter the vessel's interior or bilge. For instance, this could be a machinery space ventilator, or could be the deck level where there is a companionway leading below. Where a down flooding opening is fully protected by a higher coaming, the downflooding height is measured to the lowest point of that coaming.

Stability Assessment (Heel test)

1. Having measured the freeboard, a heel test should be carried out. Battens should be fitted to the outboard sides of the boat, at amidships or at the portion of least freeboard where this is not at amidships. The distance, in millimetres, between the battens should be measured and recorded.

2 When the boat has been loaded with weights as described in paragraph 1, the waterline (port and starboard) is to be recorded by marking the battens at the waterline. Each batten should also then be marked with lines representing angles of heel of plus or minus 7°. This can be calculated as follows, which correspond to waterlines of:

plus or minus 12.3 x Distance between battens/ 200 (millimetres)

3. The number of persons for which the vessel is to be tested, are to be transferred to one side of the vessel. Persons are to be situated at the furthest outboard position that they may practically achieve. For example this would be inside the gunwale on an open boat, or at the railings of a decked vessel, where persons would normally be situated outside. For vessels with narrow side decks, that are used for brief transiting purposes, these need not be assumed occupied during the heeling test.

4. The waterlines at this angle of heel should be marked on the battens. In order to achieve a heel angle of less than 7°, this marking should be within the bounds of the previously marked waterlines on the battens. See diagram above.

5. Steps 3 and 4 should then be repeated, with the persons transferred to the other side of the boat.

6. Should the vessel exceed 7° heel to either side, and should the operator not wish to reduce passenger or crew numbers, the stability may be assessed using 6.2.2 of the Code. Battens should be further marked for heeled waterlines at 10°, corresponding to:

plus or minus 17.6 x Distance between battens / 200 (millimetres) 200

from the original upright waterline. The vessel should then be heeled again as per Steps 3, 4 and 5. The heeled waterlines are to marked and verified to be within the 10° limits. Additionally the freeboard (either to deck or downflooding as appropriate) should be measured in the heeled condition, and is to meet the requirements of Step 2 of Freeboard Measurement while in that condition.

Annex 4 – Specific Operational Requirements for Passenger vessels

SAFETY BRIEFING

1. Before the commencement of any voyage the skipper should ensure that an accurate count of passenger numbers is made and it is the skippers responsibility to ensure that the vessel is not overloaded.

2. Before the commencement of any voyage the skipper should ensure that all persons onboard are briefed on emergency procedures, the location of emergency exits, and, if carried, on the stowage and use of personal safety equipment, such as life-jackets, thermal protective aids and lifebuoys. The nominated first aider should also be introduced.

3. In addition, the skipper should brief at least one other person who will be going on the voyage or trip regarding the following, as applicable:-
   - Location of liferafts and the method of launching;
   - Procedures for the recovery of a person from the water;
   - Location and use of fire-fighting equipment;
   - Procedures and operation of communications equipment;
   - Location of navigation and other light switches;
   - Method of starting, stopping, and controlling the main engine; and
   - . Method of navigating to a suitable place of safety

Safety cards will be considered to be an acceptable way of providing the above information.

Annex 5 – Beachcraft Guidelines

General

1 Variations to the standards recommended by the Code may provide equivalent standards of safety, taking into account specific local conditions which are certain to exist. This Annex is intended to assist in assessing equivalence for small vessels with a very limited area of operation, which may be unable to meet the certain of the recommended standards laid down by the Code. It provides Local Authorities performing licensing for beach/harbour operations, with a checklist of operational safety management practices for their consideration.

2 Variations may be either a direct alternative to a measure specified in the Code or a reduced measure based upon factors that compensate for the reduction.

3 Although not an exhaustive list, factors which may be considered include:

- restricted area of operations [in an area where operating conditions are the least severe that may be expected within the relevant Category of Waters];
- a guaranteed control of the vessel which restricts operations to conditions such that there is a very low risk of an accident;
- the certainty of readily available means of emergency rescue;
- operations wholly within constant sight of the supervising body and means of emergency rescue;
- seasonal operations only, excluding monsoon periods or some lesser period, or favourable weather restrictions;
- vessels operating in close proximity to one another and equipped to provide efficient safety back-up to each other in an emergency;
- provision/wearing of additional (special) individual personal survival equipment/clothing which will protect lives in an emergency;
- enhanced communications between the vessel(s) and constantly attended shore base with readily available emergency rescue craft at the base;
- the nature of the sport or pleasure activity involves very low risk of participants accidentally entering the water or causing the vessel to capsize;
- inherent safety of the vessel by design, test and experience, (not applicable as an equivalent for stability standards or a specified level of life saving equipment);
- the ratio of suitably trained crew to the number of other persons onboard;
- the number of safety craft provided to protect the vessels operating commercially for sport or pleasure;
- enhanced provisions for distress alert and rescue;
- means provided for “dry” rescue from a vessel in emergency situations.

Annexures

Guidelines for the Safe Operation of Commercially Operated Pleasure Craft Used for Leisure Activities from a Beach or Harbour

1 Where the operator wishes to operate a vessel under alternative arrangements, for the provision of activities involving the towing of persons such as water-skiing, parascending, etc. the following guidelines should be followed.

2 This is not considered an exhaustive list, nor are they relevant to all situations.

- All boats should adopt appropriate safety standards for the relevant Category of Waters.
- If recommended life saving appliances, cannot for practical reasons be carried on the vessel, suitable equivalencies from the section above must be employed.
- All tows should be considered part of the towing vessel and are to be fit for purpose
- Boats are to be capable of accommodating all persons they are intended to support including those contained on board the tow, if applicable.
- Towing craft should have a minimum crew of two at all times – one to drive, and navigate, the other to watch the tow.
- Craft should be fitted with an engine stop cord, to be used at all times.
- Operating procedures, and equipment where applicable, are to be in place for recovery of persons from the water, including measures to avoid injury from the boat and machinery.
- For vessels fitted with conventional propellers, consideration should be given to the fittingof a propeller guard, especially where recovery of persons is commonplace.
- Children under the age of 8 should be accompanied by an adult at all times, including when on a tow.
- Inflatable tows should be capable of supporting 110% of the maximum manufacturers weight limit, with any one separate inflatable compartment punctured or deflated.
- In area category 6 and 7 waters, lifejackets are to be worn at all times. For operations where buoyancy aids may be considered more practical, their use may be accepted based on equivalencies stated in section 1 above.
- Towlines should be approximately 25 to 30 metres long. A method of quick release in the event of an emergency is to be available.
- Parascending lines, harnesses and parachutes are to be inspected daily by the operator, and maintained in accordance with the manufacturers recommendations.
- Operating areas and any associated channels for slow speed transit to and from the shore, should be clearly marked.
- Operating areas, trading dates and daily hours for operation are to be defined.

3 Additionally the operator will:

- hold a nationally recognised qualification for the activity concerned, i.e. water sports instructors certificate.
- hold a Local Authority licence/concession to operate, where applicable.
- maintain visual contact with the vessels at all times, and provide a means of immediate rescue in the event of an accident.

- ensure that vessels and associated equipment are maintained in proper state;
- report and record to the Local Authority, where applicable, all incidents which have, or could have led to injury.
- ensure a procedure is in place for immediate contact with the emergency services in the event of an accident or incident.

Annex 6 – Fire Test Procedure for FRP

Heat source

The heat source for the fire test should be provided by a butane or propane fuelled Bunsen or Tirril burner with a nominal 9,525 mm (3/8 inch) inside diameter tube adjusted to give a pre-mixed air/gas flame of 38,1 mm (1,5 inch) length. The minimum temperature measured in the centre of the flame with a calibrated thermocouple pyrometer must be 843.33°C (1550°F).

Specimen

The specimen should be 500 mm × 500 mm. The edges of the specimen should be housed in a steel frame sufficiently to prevent them igniting during the test. The specimen should be cured for at least 7 days at ambient temperature or 1 day at ambient temperature and 16 hours at 40°c before testing. The lay-up of the panel should be representative of the structure being considered.

Test procedure

The specimen should be oriented vertically in a draft free location. The flame should impinge on the centre of the specimen with the flame normal to its surface. The surface of the specimen affected by the fire risk should be exposed to the flame at a set distance of 19.1 mm (¾ inch) from the end of the burner tube. The flame should not burn through the specimen within 15 minutes.

Annex 7 – Ignitability Test for Combustible Material

1. Test specimens

1.1 One specimen is to be prepared.

1.2 The specimen is to be a minimum of 150 mm × 150 mm and of the thickness which is used on the boats, together with any facing with which it is normally covered.

2. Conditioning of test specimens

2.1 The conditioning atmosphere should have a temperature of 20 ± 20°C and relative humidity of 65 ± 2 per cent.

2.2 The specimen should be laid flat, in the conditioning atmosphere for a period of 24 hours, or for a sufficiently longer period in order to ensure that the mass of the specimen shows no progressive change greater than 0,25 per cent when it is determined at intervals of 2 hours.

3. Atmosphere for testing

3.1 The test is to be conducted in an atmosphere the same as for conditioning the specimen, or within 2 minutes of removal from the conditioning atmosphere.

3.2 Appropriate measures should be taken to prevent draughts in the vicinity of the testing equipment when testing is in progress.

4. Testing procedure

4.1 Source of ignition

The source should be obtained by using a burner consisting of a copper tube having a length of 150mm and inside and outside diameters of 5mm and 6mm respectively connected by a plastic or rubber tubing to a gas tap supplying natural gas. The copper tube is to have no opening for the supply of air.

4.2 Height of flame

Before the test takes place the burner flame is to be adjusted to a height of 32mm.

4.3 Test procedure

4.3.1 Place the specimen horizontally on a metal tripod stand with the upper surface of the specimen facing downwards (i.e. with normally exposed face on underside) such that the height of this surface of the specimen is approximately 8 mm below the top of the burner flame. Apply the burner flame at right angles to the plane of the specimen in the centre of specimen. After one minute the burner flame is to be removed clear of the specimen and the time in seconds to extinction of any flaming is to be recorded.

4.3.2 The test in paragraph 4.3.1 is to be repeated after any flaming or smoldering has ceased and the temperature of the specimen has returned to normal except that the centre of the burner flame is to be positioned at the midpoint of any edge of the specimen. Again the time in seconds to extinction of any flaming after the removal of the burner is to be recorded.

5. Pass criteria

An insulation is deemed to be ‘not readily ignitable’ when any flaming of the test specimen ceases within 20 seconds of the removal of the burner