

Rules for Fire Protection, Detection and Extinction for the Issue of Statutory Certificates for Ships with Reinforced Plastic, Aluminium Alloy or Wooden Hulls

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GENERAL CONDITIONS

Definitions:

"Administration" means the Government of the State whose flag the Ship is entitled to fly or under whose authority the Ship is authorized to operate in the specific case.

"IACS" means the International Association of Classification Societies.

"Interested Party" means the party, other than the Society, having an interest in or responsibility for the Ship, product, plant or system subject to classification or certification (such as the owner of the Ship and his representatives, the ship builder, the engine builder or the supplier of parts to be tested) who requests the Services or on whose behalf the Services are requested.

"Owner" means the registered owner, the ship owner, the manager or any other party with the responsibility, legally or contractually, to keep the ship seaworthy or in service, having particular regard to the provisions relating to the maintenance of class laid down in Part A, Chapter 2 of the Rules for the Classification of Ships or in the corresponding rules indicated in the specific Rules.

"Rules" in these General Conditions means the documents below issued by the Society:

- (i) Rules for the Classification of Ships or other special units;
- (ii) Complementary Rules containing the requirements for product, plant, system and other certification or containing the requirements for the assignment of additional class notations;
- (iii) Rules for the application of statutory rules, containing the rules to perform the duties delegated by Administrations;
- (iv) Guides to carry out particular activities connected with Services;
- (v) Any other technical document, as for example rule variations or interpretations.

"Services" means the activities described in Article 1 below, rendered by the Society upon request made by or on behalf of the Interested Party.

"Ship" means ships, boats, craft and other special units, as for example offshore structures, floating units and underwater craft.

"Society" or "TASNEEF" means Tasneef and/or all the companies in the Tasneef Group which provide the Services.

"Surveyor" means technical staff acting on behalf of the Society in performing the Services.

Article 1

1.1. The purpose of the Society is, among others, the classification and certification of ships and the certification of their parts and components. In particular, the Society:

- (i) sets forth and develops Rules;
- (ii) publishes the Register of Ships;
- (iii) issues certificates, statements and reports based on its survey activities.

1.2. The Society also takes part in the implementation of national and international rules and standards as delegated by various Governments.

1.3. The Society carries out technical assistance activities on request and provides special services outside the scope of classification, which are regulated by these general conditions, unless expressly excluded in the particular contract.

Article 2

2.1. The Rules developed by the Society reflect the level of its technical knowledge at the time they are published. Therefore, the Society, although committed also through its research and development services to continuous updating of the Rules, does not guarantee the Rules meet state-of-the-art science and technology at the time of publication or that they meet the Society's or others' subsequent technical developments.

2.2. The Interested Party is required to know the Rules on the basis of which the Services are provided. With particular reference to Classification Services, special attention is to be given to the Rules concerning class suspension, withdrawal and reinstatement. In case of doubt or inaccuracy, the Interested Party is to promptly contact the Society for clarification. The Rules for Classification of Ships are published on the Society's website: www.tasneef.ae.

2.3. The Society exercises due care and skill:

- (i) in the selection of its Surveyors
- (ii) in the performance of its Services, taking into account the level of its technical knowledge at the time the Services are performed.

2.4. Surveys conducted by the Society include, but are not limited to, visual inspection and non-destructive testing. Unless otherwise required, surveys are conducted through sampling techniques and do not consist of comprehensive verification or monitoring of the Ship or of the items subject to certification. The surveys and checks made by the Society on board ship do not necessarily require the constant and continuous presence of the Surveyor. The Society may also commission laboratory testing, underwater inspection and other checks carried out by and under the responsibility of qualified service suppliers. Survey practices and procedures are selected by the Society based on its experience and knowledge and according to generally accepted technical standards in the sector.

Article 3

3.1. The class assigned to a Ship, like the reports, statements, certificates or any other document or information issued by the Society, reflects the opinion of the Society concerning compliance, at the time the Service is provided, of the Ship or product subject to certification, with the applicable Rules (given the intended use and within the relevant time frame).

The Society is under no obligation to make statements or provide information about elements or facts which are not part of the specific scope of the Service requested by the Interested Party or on its behalf.

3.2. No report, statement, notation on a plan, review, Certificate of Classification, document or information issued or given as part of the Services provided by the Society shall have any legal effect or implication other than a representation that, on the basis of the checks made by the Society, the Ship, structure, materials, equipment, machinery or any other item covered by such document or information meet the Rules. Any such document is issued solely for the use of the Society, its committees and clients or other duly authorised bodies and for no other purpose. Therefore, the Society cannot be held liable for any act made or document issued by other parties on the basis of the statements or information given by the Society. The validity, application, meaning and interpretation of a Certificate of Classification, or any other document or information issued by the Society in connection with its Services, is governed by the Rules of the Society, which is the sole subject entitled to make such interpretation. Any disagreement on technical matters between the Interested Party and the Surveyor in the carrying out of his functions shall be raised in writing as soon as possible with the Society, which will settle any divergence of opinion or dispute.

3.3. The classification of a Ship, or the issuance of a certificate or other document connected with classification or certificate on and in general with the performance of Services by the Society shall have the validity conferred upon it by the Rules of the Society at the time of the assignment of class or issuance of the certificate; in no case shall it amount to a statement or warranty of seaworthiness,

structural integrity, quality or fitness for a particular purpose or service of any Ship, structure, material, equipment or machinery inspected or tested by the Society.

- 3.4. Any document issued by the Society in relation to its activities reflects the condition of the Ship or the subject of certification or other activity at the time of the check.
- 3.5. The Rules, surveys and activities performed by the Society, reports, certificates and other documents issued by the Society are in no way intended to replace the duties and responsibilities of other parties such as Governments, designers, ship builders, manufacturers, repairers, suppliers, contractors or sub-contractors, Owners, operators, charterers, underwriters, sellers or intended buyers of a Ship or other product or system surveyed.

These documents and activities do not relieve such parties from any fulfilment, warranty, responsibility, duty or obligation (also of a contractual nature) expressed or implied or in any case incumbent on them, nor do they confer on such parties any right, claim or cause of action against the Society. With particular regard to the duties of the ship Owner, the Services undertaken by the Society do not relieve the Owner of his duty to ensure proper maintenance of the Ship and ensure seaworthiness at all times. Likewise, the Rules, surveys performed, reports, certificates and other documents issued by the Society are intended neither to guarantee the buyers of the Ship, its components or any other surveyed or certified item, nor to relieve the seller of the duties arising out of the law or the contract, regarding the quality, commercial value or characteristics of the item which is the subject of transaction.

In no case, therefore, shall the Society assume the obligations incumbent upon the above-mentioned parties, even when it is consulted in connection with matters not covered by its Rules or other documents.

In consideration of the above, the Interested Party undertakes to relieve and hold harmless the Society from any third party claim, as well as from any liability in relation to the latter concerning the Services rendered.

Insofar as they are not expressly provided for in these General Conditions, the duties and responsibilities of the Owner and Interested Parties with respect to the services rendered by the Society are described in the Rules applicable to the specific Service rendered.

Article 4

- 4.1. Any request for the Society's Services shall be submitted in writing and signed by or on behalf of the Interested Party. Such a request will be considered irrevocable as soon as received by the Society and shall entail acceptance by the applicant of all relevant requirements of the Rules, including these General Conditions. Upon acceptance of the written request by the Society, a contract between the Society and the Interested Party is entered into, which is regulated by the present General Conditions.

- 4.2. In consideration of the Services rendered by the Society, the Interested Party and the person requesting the service shall be jointly liable for the payment of the relevant fees, even if the service is not concluded for any cause not pertaining to the Society. In the latter case, the Society shall not be held liable for non-fulfilment or partial fulfilment of the Services requested. In the event of late payment, interest at the legal current rate increased by 1.5% may be demanded.

- 4.3. The contract for the classification of a Ship or for other Services may be terminated and any certificates revoked at the request of one of the parties, subject to at least 30 days' notice to be given in writing. Failure to pay, even in part, the fees due for Services carried out by the Society will entitle the Society to immediately terminate the contract and suspend the Services.

For every termination of the contract, the fees for the activities performed until the time of the termination shall be owed to the Society as well as the expenses incurred in view of activities already programmed; this is without prejudice to the right to compensation due to the Society as a consequence of the termination.

With particular reference to Ship classification and certification, unless decided otherwise by the Society, termination of the contract implies that the assignment of class to a Ship is withheld or, if already assigned, that it is suspended or withdrawn; any statutory certificates issued by the Society will be withdrawn in those cases where provided for by agreements between the Society and the flag State.

Article 5

- 5.1. In providing the Services, as well as other correlated information or advice, the Society, its Surveyors, servants or agents operate with due diligence for the proper execution of the activity. However, considering the nature of the activities performed (see art. 2.4), it is not possible to guarantee absolute accuracy, correctness and completeness of any information or advice supplied. Express and implied warranties are specifically disclaimed.

Therefore, except as provided for in paragraph 5.2 below, and also in the case of activities carried out by delegation of Governments, neither the Society nor any of its Surveyors will be liable for any loss, damage or expense of whatever nature sustained by any person, in tort or in contract, derived from carrying out the Services.

- 5.2. Notwithstanding the provisions in paragraph 5.1 above, should any user of the Society's Services prove that he has suffered a loss or damage due to any negligent act or omission of the Society, its Surveyors, servants or agents, then the Society will pay compensation to such person for his proved loss, up to, but not exceeding, five times the amount of the fees charged for the specific services, information or opinions from which the loss or damage derives or, if no fee has been charged, a maximum of AED5,000 (Arab Emirates Dirhams Five Thousand only). Where the fees charged are related to a number of Services, the amount of the fees will be apportioned for the purpose of the calculation of the maximum compensation, by reference to the estimated time involved in the performance of the Service from which the damage or loss derives. Any liability for indirect or consequential loss, damage or expense is specifically excluded. In any case, irrespective of the amount of the fees charged, the maximum damages payable by the Society will not be more than AED5,000,000 (Arab Emirates Dirhams Five Millions only). Payment of compensation under this paragraph will not entail any admission of responsibility and/or liability by the Society and will be made without prejudice to the disclaimer clause contained in paragraph 5.1 above.

- 5.3. Any claim for loss or damage of whatever nature by virtue of the provisions set forth herein shall be made to the Society in writing, within the shorter of the following periods: (i) THREE (3) MONTHS from the date on which the Services were performed, or (ii) THREE (3) MONTHS from the date on which the damage was discovered. Failure to comply with the above deadline will constitute an absolute bar to the pursuit of such a claim against the Society.

Article 6

- 6.1. These General Conditions shall be governed by and construed in accordance with United Arab Emirates (UAE) law, and any dispute arising from or in connection with the Rules or with the Services of the Society, including any issues concerning responsibility, liability or limitations of liability of the Society, shall be determined in accordance with UAE law. The courts of the Dubai International Financial Centre (DIFC) shall have exclusive jurisdiction in relation to any claim or dispute which may arise out of or in connection with the Rules or with the Services of the Society.

- 6.2. However,

- (i) In cases where neither the claim nor any counterclaim exceeds the sum of AED300,000 (Arab Emirates Dirhams Three Hundred Thousand) the dispute shall be referred to the jurisdiction of the DIFC Small Claims Tribunal; and
- (ii) for disputes concerning non-payment of the fees and/or expenses due to the Society for services, the Society shall have the

right to submit any claim to the jurisdiction of the Courts of the place where the registered or operating office of the Interested Party or of the applicant who requested the Service is located.

In the case of actions taken against the Society by a third party before a public Court, the Society shall also have the right to summon the Interested Party or the subject who requested the Service before that Court, in order to be relieved and held harmless according to art. 3.5 above.

Article 7

- 7.1.** All plans, specifications, documents and information provided by, issued by, or made known to the Society, in connection with the performance of its Services, will be treated as confidential and will not be made available to any other party other than the Owner without authorization of the Interested Party, except as provided for or required by any applicable international, European or domestic legislation, Charter or other IACS resolutions, or order from a competent authority. Information about the status and validity of class and statutory certificates, including transfers, changes, suspensions, withdrawals of class, recommendations/conditions of class, operating conditions or restrictions issued against classed ships and other related information, as may be required, may be published on the website or released by other means, without the prior consent of the Interested Party. Information about the status and validity of other certificates and statements may also be published on the website or released by other means, without the prior consent of the Interested Party.
- 7.2.** Notwithstanding the general duty of confidentiality owed by the Society to its clients in clause 7.1 above, the Society's clients hereby accept that the Society may participate in the IACS Early Warning System which requires each Classification Society to provide other involved Classification Societies with relevant technical information on serious hull structural and engineering systems failures, as defined in the IACS Early Warning System (but not including any drawings relating to the ship which may be the specific property of another party), to enable such useful information to be shared and used to facilitate the proper working of the IACS Early Warning System. The Society will provide its clients with written details of such information sent to the involved Classification Societies.
- 7.3.** In the event of transfer of class, addition of a second class or withdrawal from a double/dual class, the Interested Party undertakes to provide or to permit the Society to provide the other Classification Society with all building plans and drawings, certificates, documents and information relevant to the classed unit, including its history file, as the other Classification Society may require for the purpose of classification in compliance with the applicable legislation and relative IACS Procedure. It is the Owner's duty to ensure that, whenever required, the consent of the builder is obtained with regard to the provision of plans and drawings to the new Society, either by way of appropriate stipulation in the building contract or by other agreement.
- In the event that the ownership of the ship, product or system subject to certification is transferred to a new subject, the latter shall have the right to access all pertinent drawings, specifications, documents or information issued by the Society or which has come to the knowledge of the Society while carrying out its Services, even if related to a period prior to transfer of ownership.

Article 8

- 8.1.** Should any part of these General Conditions be declared invalid, this will not affect the validity of the remaining provisions.

INDEX

SECTION 1: GENERAL AND DOCUMENTATION

1	GENERAL	1
1.1	Application	1
2	DOCUMENTATION TO BE SUBMITTED	1
2.1	General.....	1

SECTION 2: REQUIREMENTS APPLICABLE TO PASSENGER SHIPS

1	GENERAL AND APPLICATION	2
2	FIRE PUMPS, FIRE MAIN, FIRE HOSES AND NOZZLES	2
2.1	General.....	2
2.2	Diameter and pressure of the fire mains	3
2.3	Number and position of hydrants	3
2.4	Fire mains and hydrants	3
2.5	Fire hoses	3
2.6	Nozzles.....	3
3	FIRE-EXTINGUISHING ARRANGEMENTS	3
3.1	Machinery spaces	3
3.2	Passenger accommodation, service spaces and control stations.....	4
3.3	Spare charges	4
4	FIREMAN'S OUTFITS	4
5	MISCELLANEOUS ITEMS	4
6	GALLEYS ARRANGEMENT	4
6.1	General.....	4
6.2	Open Flame Gas installations	5
6.2.1	Stowage of Gas Containers	5
6.2.2	Containers and attachments	5
6.2.3	Fittings and Pipework	5
6.2.4	Appliances	5
6.2.5	Ventilation.....	6
6.2.6	Gas Detection.....	6
6.2.7	Emergency Action	6

INDEX

7	MAIN VERTICAL ZONES.....	6
8	BULKHEADS WITHIN MAIN VERTICAL ZONES.....	6
9	FIRE RESISTANCE OF BULKHEADS AND DECKS SEPARATING ADJACENT SPACES OF REINFORCED PLASTIC SHIPS.....	6
9.1	Ships having a length less than 12 m.....	6
9.2	Ships having a length not less than 12 m.....	6
10	FIRE RESISTANCE OF BULKHEADS AND DECKS SEPARATING ADJACENT SPACES OF WOODEN SHIPS.....	7
11	MEANS OF ESCAPE	7
12	PENETRATIONS AND OPENINGS IN FIRE-RESISTANT DIVISIONS	7
13	PROTECTION OF STAIRWAYS AND LIFTS IN ACCOMMODATION AND SERVICE SPACES	8
14	WINDOWS AND SIDESCUTTLES.....	8
15	FIXED FIRE DETECTION AND FIRE ALARM SYSTEMS.....	8
16	VENTILATION SYSTEM	8

SECTION 3: REQUIREMENTS APPLICABLE TO CARGO SHIPS

1	GENERAL.....	9
2	SHIPS CONSTRUCTED OF REINFORCED PLASTICS.....	9
2.1	Field of application	9
2.2	Suppression of fire and explosion - Detection and alarm	9
2.3	Suppression of fire and explosion.....	9
2.4	Suppression of fire and explosion - Fire- extinguishing	10
2.5	Suppression of fire and explosion - Structural integrity	10
3	SHIPS CONSTRUCTED OF ALUMINIUM ALLOYS	10
3.1	Field of application	10
3.2	Suppression of fire and explosion - Detection and alarm	10
3.3	Suppression of fire and explosion - Containment of fire	10
3.4	Suppression of fire and explosion - Fire- extinguishing	11
3.5	Suppression of fire and explosions - Structural integrity	11

INDEX

4	WOODEN SHIPS	11
4.1	Field of application	11
4.2	Suppression of fire and explosion - Detection and alarm	11
4.3	Suppression of fire and explosion - Containment of fire	11
4.4	Suppression of fire and explosion - Fire- extinguishing	12
4.5	Suppression of fire and explosions - Structural integrity	12

SECTION 4: REQUIREMENTS APPLICABLE TO FISHING VESSELS

1	GENERAL AND APPLICATION	13
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APPENDIX 1: SPECIFIC REQUIREMENTS FOR FIRE DETECTION SYSTEMS

1	FIXED FIRE DETECTION AND FIRE ALARM SYSTEMS	14
1.1	Engineering specifications	14
1.1.1	General requirements.....	14
1.1.2	Sources of power supply	14
1.1.3	Component requirements.....	14
1.1.4	Installation requirements	14
1.1.5	System control requirements.....	15

APPENDIX 2: SPECIFIC REQUIREMENTS FOR SPRINKLER SYSTEMS

1	AUTOMATIC SPRINKLER SYSTEMS	17
1.1	Engineering specifications	17
1.1.1	General.....	17
1.1.2	Sources of power supply	17
1.1.3	Component requirements.....	17
1.1.4	Installation requirements	18
1.1.5	System control requirements.....	18

Section 1: General and documentation

1 GENERAL

1.1 Application

1.1.1

These Rules contain requirements relevant to fire protection, detection and extinction which Tasneef applies to ships with reinforced plastic, aluminium alloy or wooden hulls when it is requested to issue statutory certificates to:

- a) cargo ships with the restrictions specified in Sec 3, [1];
- b) passenger ships with the restrictions specified in Sec 2, [1];
- c) fishing vessels;

unless the application of specific rules is required by the Administration.

1.1.2

For the issue of the Seaworthiness Certificate or the Safety Certificate to ships flying the flag, the specific Tasneef Rules apply.

1.1.3

In particular, Sec 1 applies to all ships except otherwise stated in these Rules, Sec 2 applies to passenger ships, Sec 3 applies to cargo ships excluding tankers, and Sec 4 applies to fishing vessels.

2 DOCUMENTATION TO BE SUBMITTED

2.1 General

The Interested Parties are to submit to Tasneef the documents listed in Tab 1.

Table 1: Documentation to be submitted

No.	I/A (1)	Document (2)
1	A	Structural fire protection, showing the method of construction, the purpose of the various spaces of the ships, the fire rating of bulkheads and decks, the means of closing of openings in "A" and "B" class divisions and the draught stops
2	A	Natural and mechanical ventilation systems showing the penetrations on "A" class divisions, location of dampers, means of closing, arrangements of air conditioning rooms
3	A	Means of escape and, where required, the relevant size
4	A	Automatic fire detection systems and manually operated call points
5	A	Location of fire pumps and fire main (with indication of pump head and capacity), hydrant and fire hoses
6	A	Arrangement of fixed fire-extinguishing systems (2)
7	A	Fire-fighting mobile equipment and firemen's outfits
8	A	Electrical diagram of the fixed fire-extinguishing systems and fire pumps
9	A	Electrical diagram of power control and position indication circuits for fire doors
10	I	General arrangement plan
<p>(1) A: to be submitted for approval, in four copies I : to be submitted for information, in two copies.</p> <p>(2) Plans are to be schematic and functional and to contain all information necessary for their correct interpretation and verification such as:</p> <ul style="list-style-type: none"> • service pressures; • capacity and head of pumps and compressors, if any; • materials and dimensions of piping and associated fittings; • volumes of protected spaces, for gas and foam fire-extinguishing systems; • surface areas of protected zones for automatic sprinkler and pressure water-spraying, low expansion foam and powder fire-extinguishing systems; • capacity, in volume and/or in mass, of vessels or bottles containing the extinguishing media or propelling gases, for gas, automatic sprinkler, foam and powder fire-extinguishing systems; • type, number and location of nozzles of extinguishing media for gas, automatic sprinkler, pressure water-spraying, foam and powder fire-extinguishing systems. <p>All or part of the information may be provided, instead of on the above plans, in suitable operation manuals or in specifications of the systems.</p>		

Section 2: Requirements applicable to passenger ships

1 GENERAL AND APPLICATION

1.1

1.1.1

Ships with aluminium alloy hulls are to comply with the requirements of Directive 2002/25/EC of 5 March 2002, as far as applicable.

1.1.2

Ships with reinforced plastic or wooden hulls, engaged on voyages laid down for Class B, C or D ships, as defined in Article 4 of the European Union Directive 98/18/EC adopted by the Council on 17 March 1998, are to satisfy the following:

- the ships are to have a gross tonnage generally not exceeding 200;
- the spaces intended for accommodation are, in general, to be arranged above the weather deck and on no more than two decks;
- no cabins are to be available for passengers; for the crew, cabins are only to be available if adjacent to the navigation bridge;
- the carriage of vehicles or goods is not allowed;
- the arrangement of stores within the accommodation block is to be limited to those having a deck area not exceeding 4 m². Storage of paints or other flammable liquids is not allowed;
- Class B and C ships are to be engaged on voyages in restricted areas having a duration not exceeding one hour from a place of refuge.

For ships operating in the Venetian Lagoon, Tasneef will establish the extent of the application of the requirements of this Section in relation to the constructional characteristics of the ships.

2 FIRE PUMPS, FIRE MAIN, FIRE HOSES AND NOZZLES

2.1 General

2.1.1

The fire main is to be provided with metallic piping. Fire pumps, hoses and nozzles are to comply with the requirements of Tab 1. The capacity of the main fire pump is not to be less than 2/3 of the required capacity of bilge pumps when used for the drainage of bilges.

2.1.2

When hand fire pumps are used, their capacity is in any case not to be less than 25 l/min.

2.1.3

Emergency pumps are to be power driven and their source of power is to be independent of the one for the main fire pump. Emergency pumps are to have seawater inlets separated from the inlet of the main fire pump and such seawater inlets together with the pumps to which they are connected are to be located in a space different from the one where the main fire pump and the relevant seawater inlet are fitted. The emergency fire pump is to have a capacity not less than 80% of the capacity of the main fire pump.

Table 1

Number of passengers	Number of fire pumps required
Less than 50	At least one pump, that may be a hand pump
Greater than 50 but not greater than 149	At least one pump mechanically driven (it may be driven by the propulsion machinery)
Greater than 149	<ul style="list-style-type: none"> • One main pump mechanically driven (it may be driven by the propulsion machinery) • One emergency pump

Section 2: Requirements applicable to passenger ships

2.2 Diameter and pressure of the fire mains

2.2.1

The diameters of the fire main and water service pipes are to be sufficient for the effective distribution of the maximum required discharge.

2.2.2

With the discharging capacity specified in [2.1.1] and [2.1.3], the pressure at any hydrant, wherever located, is to be maintained such that a jet of water is emanated from the nozzle for a distance of at least 8 m.

2.3 Number and position of hydrants

2.3.1

The number and position of hydrants are to be such that at least two jets of water not emanating from the same hydrant, one of which is to be from a single length of hose, may reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated and any part of any cargo space when empty.

2.3.2

At least one hydrant is to be provided in machinery spaces. If the machinery spaces are unattended, it is sufficient that the hydrant is positioned near the access to such spaces.

2.4 Fire mains and hydrants

2.4.1

Materials readily rendered ineffective by heat are not to be used for fire mains and hydrants unless adequately protected. The pipes and hydrants are to be so placed that the fire hoses may be easily coupled to them. The arrangement of pipes and hydrants is to be such as to avoid the possibility of freezing.

2.4.2

A valve is to be fitted to serve each fire hydrant so that any fire hose may be removed while the fire pumps are in operation.

2.4.3

Isolating valves to separate the section of the fire main within the machinery space containing the main fire pump from the rest of the fire main are to be fitted in an easily accessible and tenable position outside the machinery space. The fire main is to be so arranged that when the isolating valves are shut all the hydrants of the ship, except those in the machinery space referred to above, can be supplied with water by

the emergency pump by means of pipes located outside the machinery space.

2.5 Fire hoses

2.5.1

Fire hoses are to be of non-perishable material approved by Tasneef and are to be sufficient in length to project a jet of water to any of the spaces in which they may be required to be used.

The regular length of a firehose is to be 20 m, except for ships having a maximum length of 15 m, for which the hose length may be from 10 m up to 15 m.

Each hose is to be provided with a nozzle and the necessary couplings. Fire hoses are to be kept together with any necessary fittings and tools ready for use in conspicuous positions near the water service hydrants or connections.

Additionally, in interior locations in passenger ships carrying more than 36 passengers, fire hoses are to be connected to the hydrants at all times. Fire hydrants in machinery spaces of category A in ships carrying less than 36 passengers are to be fitted with fire hoses.

2.5.2

Ships are to be provided with fire hoses the number and diameter of which are to be to the satisfaction of Tasneef, but, in any case, at least one hose for each hydrant is to be

Nozzles

2.6.1

Standard nozzle sizes are to be 12 mm, 16 mm and 19 mm.

For accommodation and service spaces, a nozzle size greater than 12 mm need not be used.

2.6.2

Nozzles of fire hoses are to be of an approved dual purpose type (i.e. spray/jet type) incorporating a shut-off.

3 FIRE-EXTINGUISHING ARRANGEMENTS

3.1 Machinery spaces

3.1.1

Machinery spaces containing internal combustion machinery are to be provided with:

- at least one 9 l capacity portable foam-type fire extinguisher or another equivalent type
- a fixed gas fire-extinguishing system in compliance with the requirements of Directive

Section 2: Requirements applicable to passenger ships

2002/25/EC of 5 March 2002 or a fixed fire-extinguishing system which, in the opinion of Tasneef, gives equivalent protection

- at least one 5 kg capacity carbon dioxide fire extinguisher in proximity of the main switchboard and of any other electrical panel or sub-panel of power not less than 20 kW.

It is to be possible to reach any point of the machinery space with at least one jet of water.

In particular, for generally unattended machinery spaces, for which it can be demonstrated that the space is not practicable except for planned extraordinary maintenance operations, on condition that all proper safety steps are taken, the delaying device may be omitted, provided that in any case the system is in full compliance with the requirements of Directive 2002/25/EC of 5 March 2002.

The fixed gas fire-extinguishing system can be omitted on ships without a machinery space or engine space, even if fitted with engine casing, provided that a carbon dioxide fire extinguisher is fitted in addition to those already provided.

3.2 Passenger accommodation, service spaces and control stations

3.2.1

- a) Spaces for passenger accommodation and service spaces are to be provided with:
- at least one 9 l capacity portable foam-type fire extinguisher or equivalent type
 - at least one portable foam or powder fire extinguisher in any space
- b) The navigation bridge is to be provided with:
- at least one portable foam-type extinguisher or carbon dioxide fire extinguisher. If only one electrical switchboard is fitted on the navigation bridge or in the pilot position, two portable fire extinguishers are sufficient, one of which is to be foam or carbon dioxide type, and the other of the carbon dioxide type or equivalent.

In addition, two buckets with ropes are to be provided.

3.3 Spare charges

3.3.1

Spare charges are to be provided for 50% of the fire extinguishers capable of being recharged on board.

4 FIREMAN'S OUTFITS

4.1

4.1.1

Where, notwithstanding the requirements in [1.1.1], the installation of cabins for passengers is accepted, one fireman's outfit is to be provided on board.

5 MISCELLANEOUS ITEMS

5.1

5.1.1

Penetrations are to be carried out in such a manner that the fire resistance of the division pierced is not impaired.

Where test reports are not available, specific detailed drawings are to be submitted for approval.

5.1.2

Paints and other coatings applied on internal surfaces are to have low flame spread characteristics and are not to produce an excessive quantity of smoke or other toxic elements.

5.1.3

The mechanical ventilation is to be so arranged that it can be stopped from an easily accessible location. Air intakes and outlets are to be provided with suitable fire damper.

6 GALLEYS ARRANGEMENT

6.1 General

6.1.1

The arrangement of galleys fitted with electric or gas cooking equipment is generally permitted provided that the supply system is in compliance with the requirements of this item [6].

6.1.2

Spaces intended for galley arrangements are to be separated from all other spaces intended for a different purpose.

In ships with reinforced plastic hulls, the bulkheads and decks are to be insulated so that their resistance to fire is equivalent to a B-15 class division. In ships with wooden hulls, the boundary bulkheads are to be lined with a metallic sheet of a suitable thickness.

Section 2: Requirements applicable to passenger ships

6.1.3

Household cooking appliances can be used, provided that they are CE marked.

6.1.4

Exhaust ducts from galley ranges are to be such as to realise a B-15 class division if passing through accommodation spaces containing combustible materials. In ships with wooden hulls, such exhaust ducts are to be constructed with metallic material of a suitable thickness. Each duct is to be provided with:

- a) a grease trap readily removable for cleaning;
- b) a fire damper located in the lower end of the duct;
- c) arrangements, operable from within the galley, for shutting off the exhaust fans;
- d) fixed means for extinguishing a fire within the duct.

6.1.5

At least one portable fire extinguisher of the foam type with a capacity of 9 l or of an equivalent type is to be fitted in the galley.

6.1.6

Where gaseous fuel is used for domestic purposes, the arrangements, storage, distribution and utilisation of the fuel are to be such that, having regard to the hazards of fire and explosion which the use of such fuel may entail, the safety of the ship and persons on board is preserved.

6.2 Open Flame Gas installations

6.2.1 Stowage of Gas Containers

- a) LPG cylinders, regulators and safety devices are to be stowed on the open deck (where leakage will not accumulate) or in a compartment that is vapour-tight and fitted with a vent and drain, so that any gas which may leak can disperse overboard.
- b) The vent and drain are not to be less than 19 mm in diameter, and are to run to the outside of the vessel and terminate 75 mm or more above the "at rest" waterline. Generally, the drain and locker ventilation are to be 500 mm or more from any opening to the interior.
- c) The cylinders and associated fittings are to be positively secured against movement and protected from damage in any foreseeable event.
- d) Any electrical equipment located in cylinder lockers is to be certified safe for use in a potentially explosive atmosphere.

6.2.2 Containers and attachments

- a) Each system is to be fitted with a readily accessible, manually operated isolating valve in the supply pressure part of the system.
- b) In multiple container installations, a non-return valve is to be placed in the supply line near to the stop valve on each container. If a (automatic or manual) change-over device is used, it is to be provided with non-return valves to isolate any depleted container.
- c) Where more than one container can supply a system, the system is not to be used with a container removed unless the unattached pipe is fitted with a suitable gas-tight plug arrangement.
- d) Containers not in use or not being fitted into an installation are to have the protecting cap in place over the container valve.

6.2.3 Fittings and Pipework

- a) For rigid pipework systems, solid drawn copper alloy or stainless steel tube is to be used. Aluminium or steel tubing and any materials having a low melting point are not to be used.
- b) Connection between rigid pipe sections is to be made with hard solder (minimum melting point 450°C), appropriate compression or screwed fittings.
- c) Lengths of flexible piping (if required for flexible connections) are to conform to an appropriate standard, be kept as short as possible, and be protected from inadvertent damage. Such hose is to be installed so as to give access for inspection along its length.

6.2.4 Appliances

- a) All appliances are to be well secured to avoid movement.
- b) All unattended appliances are to be of the room sealed type, i.e. where the gas flames are isolated in a totally enclosed shield where the air supply and combustion gas outlets are piped to open air.
- c) All gas burners and pilot flames are to be fitted with a flame supervision device which will shut off the gas supply to the burner or pilot flame in the event of flame failure.
- d) Flue-less heaters are to be selected only if fitted with atmosphere-sensitive cut-off devices to shut off the gas supply at a carbon dioxide concentration of not more than 1,5% by volume.
- e) Heaters of a catalytic type are not to be used.

Section 2: Requirements applicable to passenger ships

6.2.5 Ventilation

- a) The requirements for the ventilation system of a space containing a LPG appliance are to be assessed against an appropriate standard (EN ISO 10239 standard may be accepted) and are to take into account gas burning equipment and persons occupying that space.
- b) Where ventilators required for the LPG appliances in intermittent use can be closed, there are to be appropriate signs at the appliance warning of the need to have those ventilators open before the appliance is used.

6.2.6 Gas Detection

- a) Suitable means for detecting the leakage of gas are to be provided in any compartment containing a gas-consuming appliance, or in any adjoining space of a compartment into which the gas (more dense than air) may seep.
- b) Gas detector heads are to be securely fixed in the lower part of the compartment in the vicinity of the gas-consuming appliance and in other space(s) into which the gas may seep.
- c) Any gas detector is to be of a type which will be actuated promptly and automatically by the presence of a gas concentration in air not greater than 0,5% (representing approximately 25% of the lower explosive limit). The detection system is to incorporate a visible and audible alarm which can be heard in the space concerned and the control position with the vessel in operation.
- d) Where electrical detection equipment is fitted, it is to be certified as being flame-proof or intrinsically safe for the gas being used.
- e) In all cases, the arrangements are to be such that the detection system can be tested frequently whilst the vessel is in service, which is to include a test of the detector head operation as well as the alarm circuit, in accordance with the manufacturer's instructions.
- f) All detection equipment are to be maintained in accordance with the manufacturer's requirements.

6.2.7 Emergency Action

A suitable notice, detailing the action to be taken when an alarm is given by the gas detection system, is to be displayed prominently in the vessel.

7 MAIN VERTICAL ZONES

7.1

7.1.1

The subdivision of the hull and deckhouses by means of main vertical zones is not required.

8 BULKHEADS WITHIN MAIN VERTICAL ZONES

8.1

8.1.1

Internal bulkheads used for separating spaces with different purposes are to extend from deck to deck.

9 FIRE RESISTANCE OF BULKHEADS AND DECKS SEPARATING ADJACENT SPACES OF REINFORCED PLASTIC SHIPS

9.1 Ships having a length less than 12 m

9.1.1

The final layer of laminates, which is the inside surface of the ship, of any reinforced plastic structure is to be self-extinguishing. The self-extinguishing characteristic is to be ascertained by a test carried out according to ASTM D635 on specimens having all their surface impregnated with the self-extinguishing resin used. During such test the flame speed is not to exceed 6 cm/min.

9.1.2

Surface treatments, if any, of internal surfaces with products (paints and similar) proven to have low flame spread characteristics when fitted on combustible support may be considered to have characteristics equivalent to those required in [9.1.1].

9.2 Ships having a length not less than 12 m

9.2.1

The final layer of laminates, which is the inside surface of the ship, of any reinforced plastic structure is to be self-extinguishing. The self-extinguishing characteristic is to be ascertained by a test carried out according to ASTM D635 on specimens having all their surface impregnated with the self-extinguishing resin used.

Section 2: Requirements applicable to passenger ships

During such test the flame speed is not to exceed 6 cm/min.

Surface treatments, if any, of internal surfaces with products (paints and similar) proven to have low flame spread characteristics fitted on combustible support may be considered to have characteristics equivalent to those required above. Moreover, all reinforced plastic ship structures (plates, decks, structural members in general), except those in void spaces or spaces having no fire risk, are to be subjected to a fire test to verify that their fire resistance is equivalent to a B-15 class division.

9.2.2

If made of reinforced plastic, the following divisions are to be subjected to a fire test to verify that their fire resistance is equivalent to a B-15 class division for the entire duration of the test (half an hour):

- bulkheads and decks separating accommodation and service spaces and control stations from spaces where propulsion or auxiliary machinery is installed (except for hydraulic machinery), and from the emergency diesel engine room, when required;
- bulkheads and decks separating control stations from accommodation or service spaces;
- bulkheads and decks separating spaces where propulsion and auxiliary service machinery is installed (except for hydraulic machinery) and the emergency diesel engine room, when required;
- bulkheads of corridors serving accommodation or service spaces and control stations.

9.2.3

When the divisions mentioned above are constructed of insulated reinforced plastic, the insulation is to be fitted on the side of the space having the greater fire risk.

9.2.4

The equivalence of the divisions mentioned above to B-15 class divisions may be verified by Tasneef by means of a standard fire test carried out on reduced scale prototype panels. Where the reinforced plastic has a thickness not less than 13 mm and its final layer of laminates (for a thickness not less than 1,5 mm) is self-extinguishing, such test is not required.

10 FIRE RESISTANCE OF BULKHEADS AND DECKS SEPARATING ADJACENT SPACES OF WOODEN SHIPS

10.1

10.1.1

For wooden ships it is not necessary to provide any structural fire protection.

11 MEANS OF ESCAPE

11.1

11.1.1

In general all compartments and spaces below the main deck are to be provided with a vertical means of escape which, for ships with wooden hulls, gives direct access to an open space.

Ladders of stairways representing means of escape from machinery spaces and from interior compartments, together with the relevant supports, are to be made of steel or another equivalent material which is considered suitable by Tasneef.

In general, as regards the means of escape, the following requirements apply:

- Corridors, stairways and doors fitted in accommodation spaces, service spaces and control stations are to have a width not less than 650 mm and not less than 400 mm in all other remaining spaces of the ship.
- Ladders servicing passenger accommodation spaces, service spaces and control stations are to have a tread width not less than 250 mm and a lift not greater than 200 mm. Different dimensions will be considered case-by-case by Tasneef.
- With regard to the number and arrangement of the means of escape, the applicable statutory requirements are to be complied with.

12 PENETRATIONS AND OPENINGS IN FIRE-RESISTANT DIVISIONS

12.1

12.1.1

Doors are to have a fire resistance comparable with that of the divisions on which they are fitted.

Section 2: Requirements applicable to passenger ships

13 PROTECTION OF STAIRWAYS AND LIFTS IN ACCOMMODATION AND SERVICE SPACES

13.1

13.1.1

Interior stairways are to be enclosed at least at one tweendeck within trunks. Only self closing doors are to give access to such trunks. Hold-back hooks not controllable from the navigating bridge are not allowed.

Trunks in ships with a reinforced plastic hull are to have fire resistance equivalent to that of B-15 class division. Trunks in ships with a wooden hull are to be constructed with wooden structures.

13.1.2

Self-closing doors giving access to machinery spaces are to be fitted both on ships with reinforced plastic hulls and on those with wooden hulls.

14 WINDOWS AND SIDESCUTTLES

14.1

14.1.1

In general the requirements of Part B, Chapter 9, Section 9 of the Tasneef Rules for the Classification of Ships apply. All windows and sidescuttles in bulkheads separating accommodation and service spaces and control stations from weather are to be constructed with frames of steel or other suitable material. The glass is to be retained by a metal glazing bead or angle.

15 FIXED FIRE DETECTION AND FIRE ALARM SYSTEMS

15.1

15.1.1

A fixed fire detection and fire alarm system is to be provided serving all internal ship spaces except those which, in the opinion of Tasneef, have no or low fire risk. In addition, manual fire call points are to be provided, fitted close to the access to accommodation spaces and machinery spaces of category A. The number and position of such call points are, in any case, to be to Tasneef's satisfaction.

15.1.2

The sections or loops of call points serving machinery spaces of category A are not to serve accommodation and service spaces and control stations.

16 VENTILATION SYSTEM

16.1

16.1.1

With regard to the ventilation system, in general the requirements of Directive 2002/25/EC of 5 March 2002 apply.

Section 3: Requirements applicable to cargo ships

1 GENERAL

1.1

1.1.1

Except for special cases to be individually considered by Tasneef, cargo ships having gross tonnage and/or length between the perpendiculars within the limits specified below may be constructed of reinforced plastics, aluminium alloy or wood, provided that they do not carry crude oil, petroleum products, liquefied gases, dangerous chemicals and other flammable liquid products.

1.1.2

Cargo ships dealt with in this Section are to comply, as appropriate, with the requirements given in Section 3 item [2] of the "Rules for fire protection, detection and extinction for the issue of statutory certificates other than SOLAS certificates", for ships of 500 gross tonnage and upwards and for ships of less than 500 gross tonnage, with the modifications specified in [2], [3] and [4].

2 SHIPS CONSTRUCTED OF REINFORCED PLASTICS

2.1 Field of application

2.1.1

The provisions of this Article apply to ships having Rule length not exceeding 50 metres and to ships with reinforced plastic hulls.

2.2 Suppression of fire and explosion - Detection and alarm

For ships having a gross tonnage not less than 500, accommodation spaces (even partially) under the decks extending through the whole breadth of the ship are to comply with the requirements given in [1.1.3]. For other accommodation spaces, the requirements of [1.1.3] may be limited to dead corridors and to those which represent an escapeway from the above-mentioned spaces underneath. In accommodation spaces not complying with the requirements of [1.1.3], the stairway spaces are to be enclosed by suitable draught-cutting trunks.

For all ships with AUT notation, irrespective of their length, machinery spaces are to be protected by a fixed fire detection and fire alarm system complying, as far as practicable, with the requirements of Appendix 1 and Pt F, Ch 3, Sec 2 of the Rules for the Classification of Ships.

2.3 Suppression of fire and explosion

2.3.1

The final layer of laminates, which is the inside surface of the ship, of any reinforced plastic structure is to be self-extinguishing. The self-extinguishing characteristic is to be ascertained by a test carried out according to ASTM D635 on specimens having all their surface impregnated with the self-extinguishing resin used. During such test, the flame speed is not to exceed 6 cm/min. For ships having length between the perpendiculars less than 15 metres with accommodation arrangements allowing the overnight stay of not more than 5 persons or when ships are engaged in voyages in the course of which they do not sail more than 6 miles from harbours, the above fire test is not required.

2.3.2

All reinforced plastic ship structures, except for those in void spaces or spaces having no fire risk, are to be subjected to a fire test to verify that their fire resistance is equivalent to a B-15 class division. For ships having length between the perpendiculars less than 15 metres, the above fire test is not required.

2.3.3

If made of reinforced plastic, the following divisions are to be subjected to a fire test to verify that their fire resistance is equivalent to a B-15 class division for the entire duration of the test (half an hour):

- bulkheads and decks separating accommodation or service spaces and control stations from the propulsion machinery space;
- bulkheads and decks separating control stations from accommodation or service spaces;
- bulkheads of corridors serving accommodation or service spaces and control stations;
- bulkheads and decks of stairway enclosures; and
- for ships having length between the perpendiculars of 24 metres or above, bulkheads and decks of galleys and of lockers for paints, lamps and other flammable materials adjacent to accommodation or service spaces and to control stations; such bulkheads are to extend from deck to deck.
- For ships having length between the perpendiculars less than 15 metres, the above fire test is not required.

Rules for fire protection, detection and extinction for the issue of statutory certificates for ships with reinforced plastic, aluminium alloy or wooden hulls

Section 3: Requirements applicable to cargo ships

2.3.4

The equivalence of the divisions mentioned above to B-15 class divisions may be verified by Tasneef by means of a standard fire test carried out on reduced scale prototype panels. Where the reinforced plastic has a thickness not less than 13 mm and its final layer of laminates (for a thickness not less than 1,5 mm) is self-extinguishing, such test is not required.

2.3.5

When the divisions mentioned in (b) and (c) above are constructed of insulated reinforced plastic, the insulation is to be fitted on the side of the space having the greater fire risk.

2.3.6

Interior stairways and associated supports are to be of steel or other suitable material to the satisfaction of Tasneef and stairways serving accommodation or service spaces and control stations are to be enclosed in a trunk; if one stairway is intended only for two 'tweendecks, it may be enclosed within a trunk at only one such 'tweendecks and, in the case of low fire risk or special installations, the above trunk may also be omitted. In any case, in ships having length between the perpendiculars up to about 15 metres, interior stairways and associated supports need not be of steel and the stairway need not be enclosed within trunk.

2.4 Suppression of fire and explosion-

Fire-extinguishing

2.4.1

Machinery spaces of category A are to be protected by a fixed gas fire-extinguishing system complying with the provisions of Section 3 [1.7] of the "Rules for fire protection, detection and extinction for the issue of statutory certificates other than SOLAS certificates" or with a fixed fire-extinguishing system which, in the opinion of Tasneef, gives equivalent protection. However, for ships not fitted with a machinery space, even though equipped with a proper casing for the protection of the main propulsion machinery, the above fire-extinguishing system need not be provided.

2.5 Suppression of fire and explosion - Structural integrity

2.5.1

The structural integrity is to be to Tasneef satisfaction.

3 SHIPS CONSTRUCTED OF ALUMINIUM ALLOYS

3.1 Field of application

3.1.1

The provisions of this Article [3] apply to ships of less than 100 gross tonnage constructed of aluminium alloys.

3.2 Suppression of fire and explosion - Detection and alarm

3.2.1

Cabins and associated corridors, machinery spaces, cargo holds, galleys, and lockers and storerooms containing flammable materials are to be provided with an automatic fire detection and fire alarm system. For ships with AUT notation, machinery spaces are to be protected by a fixed fire detection and fire alarm system complying, as far as practicable, with the requirements of Appendix 1 and Pt F, Ch 3, Sec 2 of the Rules for the Classification of Ships.

3.3 Suppression of fire and explosion - Containment of fire

3.3.1

All aluminium alloy structures forming boundaries of ship spaces, except for those bounding open decks, sanitary and similar spaces, tanks, voids and auxiliary machinery spaces having little or no fire risk and for any other spaces not containing combustible materials, are to be suitably insulated with non-combustible material so as to be equivalent to a steel structure when subjected to a standard fire test of 30 minutes.

This insulation may be omitted:

- a) for external plating, and its stiffeners, below the unloaded ship's waterline, beginning from 200 mm below such waterline; and
- b) for accommodation spaces and control stations when such spaces comply with the following conditions:
 - all furniture, fixed and movable, is made of non-combustible material and any padding and finishes are made of material having low flame spread characteristics and are reduced to a minimum;
 - curtains, carpets and similar are made of wool or other material having equivalent qualities of resistance to the propagation of flame.

Rules for fire protection, detection and extinction for the issue of statutory certificates for ships with reinforced plastic, aluminium alloy or wooden hulls

Section 3: Requirements applicable to cargo ships

The insulation may also be omitted for accommodation spaces and control stations, irrespective of the materials used therein, when they are provided with an automatic sprinkler, fire detection and fire alarm system complying with the requirements of Appendix 2 and Appendix 1, respectively.

- c) bulkheads and decks forming divisions separating machinery spaces of category A and cargo pump rooms, including their trunks, respectively, from accommodation and service spaces are to be of "A-60" class. Such bulkheads and decks and any boundaries of machinery spaces of category A and cargo pump rooms are not to be pierced for windows or portlights;

3.3.2

Ships having a gross tonnage exceeding 50 are to have the corridor bulkheads made of B-0 class divisions.

3.3.3

- a) Interior stairways and associated supports are to be of steel or aluminium alloy and those serving accommodation and service spaces and control stations are to be enclosed within a trunk of suitable material. If one stairway is intended only for two 'tweendecks, it may be enclosed within a trunk at only one such 'tweendecks and, in the case of low fire risk or special installations, the above trunk may

3.4 Suppression of fire and explosion - Fire-extinguishing

3.4.1

In addition to the fire-fighting equipment indicated in Section 3 item [2] of the "Rules for fire protection, detection and extinction for the issue of statutory certificates other than SOLAS certificates", machinery spaces of category A are to be protected by a fixed gas fire-extinguishing system complying with the provisions of Sec 3, [1.7] of the foregoing Rules or with a fixed fire-extinguishing system which, in the opinion of Tasneef, gives equivalent protection. However, for ship not fitted with a machinery space, even though equipped with a proper casing for the protection of the main propulsion machinery, the above fire-extinguishing system need not be provided.

3.5 Suppression of fire and explosions - Structural integrity

3.5.1

The structural integrity is to be to Tasneef's satisfaction.

4 WOODEN SHIPS

4.1 Field of application

4.1.1

The provisions of this Article [4] apply to wooden ships of less than 200 gross tonnage.

4.2 Suppression of fire and explosion - Detection and alarm

4.2.1

For ships having length between the perpendiculars of 24 metres or above, accommodation and service spaces, control stations, spaces where propulsion and auxiliary service machinery is installed (except for hydraulic machinery), the emergency diesel engine room, when required, spaces where fuel tanks are fitted, lockers for lamps and paints and other flammable materials, cargo holds and all other spaces subject to fire risk are to be fitted with an automatic fire detection and fire alarm system.

For ships with AUT notation, machinery spaces are to be protected by a fixed fire detection and fire alarm system complying with the requirements of Appendix 1 and Pt F, Ch 3, Sec 2 of the Tasneef Rules for the Classification of Ships.

4.3 Suppression of fire and explosion - Containment of fire

4.3.1

- a) In ships having length between the perpendiculars of 24 metres and above, the following bulkheads and decks are to be B-15 class:

- bulkheads and decks separating accommodation or service spaces and control stations from the propulsion machinery space;
- bulkheads and decks separating control stations from accommodation or service spaces;

Section 3: Requirements applicable to cargo ships

- bulkheads of corridors serving accommodation or service spaces and control stations;
 - bulkheads and decks of stairway enclosures; and
 - bulkheads and decks of galleys and of lockers for paints, lamps and other flammable materials adjacent to accommodation or service spaces and to control stations; such bulkheads are to extend from deck to deck.
- b) The equivalence of the fire resistance of the aforementioned divisions to that of B-15 class divisions may be verified by Tasneef by means of a standard fire test on reduced scale prototype panels.
- c) When divisions mentioned in a) and b) above are made of insulated reinforced plastics, the insulation is to be fitted on the side of the space having the higher fire risk.
- d) In ships having Rule length exceeding 15 metres or gross tonnage exceeding 50, interior stairways and associated supports are to be of steel and those serving accommodation or service spaces and control stations are to be enclosed within trunks; if one stairway is intended only for two 'tweendecks, it may be enclosed within a trunk at only one such 'tweendecks; in the case of low fire risk or special installations, the above trunk may also be omitted.

4.4 Suppression of fire and explosion - Fire-extinguishing

4.4.1

In addition to the fire-fighting equipment indicated in Section 3 item [2] of the "Rules for fire protection, detection and extinction for the issue of statutory certificates other than SOLAS certificates", on ships having length between the perpendiculars of 24 metres and above, machinery spaces of category A are to be protected by a fixed gas fire-extinguishing system complying with the provisions of Sec 3, [1.7] of the foregoing Rules or with a fixed fire-extinguishing system which, in the opinion of Tasneef, gives equivalent protection.

However, for ships not equipped with a machinery space, even though fitted with a proper casing for the protection of the main propulsion machinery, the above fire-extinguishing system need not be provided.

4.5 Suppression of fire and explosions - Structural integrity

4.5.1

The structural integrity is to be to Tasneef satisfaction.

Rules for fire protection, detection and extinction for the issue of statutory certificates for ships with reinforced plastic, aluminium alloy or wooden hulls

Section 4: Requirements applicable to fishing vessels

1 GENERAL AND APPLICATION

1.1

1.1.1

Except for special cases to be individually considered by Tasneef, the provisions of this paragraph apply to fishing vessels with reinforced plastic, aluminium alloy or wooden hulls.

1.1.2

Fishing vessels having a length between the perpendiculars < 24 m are to comply with the Tasneef "Rules for the issue and maintenance of

the Seaworthiness Certificate or the Safety Certificate of fishing vessels less than 24 m".

1.1.3

Fishing vessels having a length between the perpendiculars ≥ 24 m are to comply with the requirements amended of the Torremolinos Protocol as amended.

Appendix 1: Specific requirements for fire detection systems

1 FIXED FIRE DETECTION AND FIRE ALARM SYSTEMS

1.1 Engineering specifications

1.1.1 General requirements

- a) Any required fixed fire detection and fire alarm systems with manually operated call points are to be capable of immediate operation at all times.
- b) Fixed fire detection and fire alarm systems are not to be used for any other purpose, except that closing of fire doors and similar functions may be permitted at the control panel.
- c) The system and equipment are to be suitably designed to withstand supply voltage variation and transients, ambient temperature changes, vibration, humidity, shock, impact and corrosion normally encountered in ships.
- d) Fixed fire detection and fire alarm systems with a zone address identification capability are to be so arranged that:
 - 1) means are provided to ensure that any fault (e.g. power break, short-circuit, earth, etc) occurring in the loop will not render the whole loop ineffective
Note 1: Loop means an electric circuit linking detectors of various sections in a sequence and connected (input and output) to the indicating unit(s).
 - 2) all arrangements are made to enable the initial configuration of the system to be restored in the event of failure (e.g. electrical, electronic, informatics, etc)
 - 3) the first initiated fire alarm will not prevent any other detector from initiating further fire alarms
 - 4) no loop will pass through a space twice. When this is not practical (e.g. for large public spaces), the part of the loop which by necessity passes through the space for a second time is to be installed at the maximum possible distance from the other parts of the loop.

1.1.2 Sources of power supply

There are not to be less than two sources of power supply for the electrical equipment used in the operation of the fire detection and fire alarm system, one of which is to be an emergency source. The supply is to be provided by separate feeders reserved solely for that purpose. Such feeders are to run to an automatic change-over switch situated in or adjacent to the control panel for the fire detection system.

The main (respective emergency) feeder is to run from the main (respective emergency) switchboard to the change-over switch without passing through any other distributing switchboard.

1.1.3 Component requirements

- a) Detectors
 - 1) Detectors are to be operated by heat, smoke or other products of combustion, flame, or any combination of these factors. Detectors operated by other factors indicative of incipient fires may be considered by Tasneef provided that they are no less sensitive than such detectors. Flame detectors are only to be used in addition to smoke or heat detectors.
 - 2) Smoke detectors required in all stairways, corridors and escape routes within accommodation spaces are to be certified to operate before the smoke density exceeds 12,5 per cent obscuration per metre, but not until it exceeds 2 per cent obscuration per metre. Smoke detectors to be installed in other spaces are to operate within sensitivity limits to the satisfaction of Tasneef having regard to the avoidance of detector insensitivity or oversensitivity.
 - 3) Heat detectors are to be certified to operate before the temperature exceeds 78°C but not until it exceeds 54°C, when the temperature is raised to those limits at a rate less than 1°C per minute. At higher rates of temperature rise, heat detectors are to operate within temperature limits to the satisfaction of Tasneef having regard to the avoidance of detector insensitivity or oversensitivity.
 - 4) The operation temperature of heat detectors in drying rooms and similar spaces of a normal high ambient temperature may be up to 130°C, and 140°C in saunas.
 - 5) All detectors are to be of a type such that they can be tested for correct operation and restored to normal surveillance without the renewal of any component.

1.1.4 Installation requirements

- a) Sections
 - 1) Detectors and manually operated call points are to be grouped into sections. Note 1: Section means a group of fire detectors and manually operated call points as shown in the indicating unit(s) required in item a) 3) of [1.1.5].

Appendix 1: Specific requirements for fire detection systems

- 2) A section of fire detectors which covers a control station, a service space or an accommodation space is not to include a machinery space of category A. For fixed fire detection and fire alarm systems with remotely and individually identifiable fire detectors, a loop covering sections of fire detectors in accommodation spaces, service spaces and a control station is not to include sections of fire detectors in machinery spaces of category A.
 - 3) Where the fixed fire detection and fire alarm system does not include means of remotely identifying each detector individually, no section covering more than one deck within accommodation spaces, service spaces and control stations is normally to be permitted except a section which covers an enclosed stairway. In order to avoid delay in identifying the source of fire, the number of enclosed spaces included in each section is to be limited as determined by Tasneef. In no case are more than 50 enclosed spaces to be permitted in any section. If the detection system is fitted with remotely and individually identifiable fire detectors, the sections may cover several decks and serve any number of enclosed spaces
- b) Position of detectors
- 1) Detectors are to be located for optimum performance. Positions near beams and ventilation ducts or other positions where patterns of air flow could adversely affect performance and positions where impact or physical damage is likely are to be avoided. Detectors which are located on the overhead are to be a minimum distance of 0,5 m away from bulkheads, except in corridors, lockers and stairways.
 - 2) The maximum spacing of detectors is to be in accordance with Tab 4. Tasneef may require or permit different spacing to that specified in the table if based upon test data which demonstrate the characteristics of the detectors.

Table 1: Maximum spacing of detectors

Type of detector	Maximum floor area per detector	Maximum distance apart between centres	Maximum distance away from bulkheads
Heat	37 m ²	9 m	4,5 m
Smoke	74 m ²	11 m	5,5 m

- c) Arrangement of electrical wiring
 - 1) Electrical wiring which forms part of the system is to be so arranged as to avoid galleys, machinery spaces of category A, and other enclosed spaces of high fire risk except where it is necessary to provide for fire detection or fire alarm in such spaces or to connect to the appropriate power supply.
 - 2) A loop of fire detection systems with a zone address identification capability is not to be damaged at more than one point by a fire.

1.1.5 System control requirements

- a) Visual and audible fire signals (see Note 1). Note 1: Refer to the Code on Alarms and Indicators as adopted by the Organisation by Resolution A.830(19).
 - 1) The activation of any detector or manually operated call point is to initiate a visual and audible fire signal at the control panel and indicating units. If the signals have not received attention within 2 min, an audible alarm is to be automatically sounded throughout the crew accommodation and service spaces, control stations and machinery spaces of category A. This alarm sounder system need not be an integral part of the detection system.
 - 2) The control panel is to be located on the navigating bridge or in the continuously manned central control station.
 - 3) Indicating units are, as a minimum, to denote the section in which a detector has been activated or a manually operated call point has been operated. At least one unit is to be so located that it is easily accessible to responsible members of the crew at all times. One indicating unit is to be located on the navigating bridge if the control panel is located in the main fire control station.

Appendix 1: Specific requirements for fire detection systems

- 4) Clear information is to be displayed on or adjacent to each indicating unit about the space covered and the location of the sections.
 - 5) Power supplies and electric circuits necessary for the operation of the system are to be monitored for loss of power or fault conditions as appropriate. Occurrence of a fault condition is to initiate a visual and audible fault signal at the control panel which is to be distinct from a fire signal.
- b) Testing
- Suitable instructions and component spares for testing and maintenance are to be provided.

Appendix 2: Specific requirements for sprinkler systems

1 AUTOMATIC SPRINKLER SYSTEMS

1.1 Engineering specifications

1.1.1 General

a) Type of sprinkler systems

Automatic sprinkler systems are to be of the wet pipe type but small exposed sections may be of the dry pipe type where, in the opinion of Tasneef, this is a necessary precaution. Saunas are to be fitted with a dry pipe system, with sprinkler heads having an operating temperature up to 140 degree C.

b) Sprinkler systems equivalent to those specified in [1.1.2] to [1.1.4].

Automatic sprinkler systems equivalent to those specified in [1.1.2] to [1.1.4] are to be approved by Tasneef (see Note 1).

Note 1: Refer to the Revised Guidelines for approval of sprinkler systems equivalent to that referred to in SOLAS Regulation II- 2/12 as adopted by the Organisation by Resolution A.800(19).

1.1.2 Sources of power supply

a) Cargo ships

There are to be not less than two sources of power supply for the sea water pump and automatic alarm and detection system. If the pump is electrically driven it is to be connected to the main source of electrical power, which is to be capable of being supplied by at least two generators.

The feeders are to be so arranged as to avoid galleys, machinery spaces and other enclosed spaces of high fire risk except insofar as it is necessary to reach the appropriate switchboards.

One of the sources of power supply for the alarm and detection system is to be an emergency source. Where one of the sources of power for the pump is an internal combustion engine, in addition to complying with the provisions of item c) of [1.1.4], it is to be so situated that a fire in any protected space will not affect the air supply to the machinery.

1.1.3 Component requirements

a) Sprinklers

- 1) The sprinklers are to be resistant to corrosion by marine atmosphere. In accommodation and service spaces the sprinklers are to come into operation within the temperature range from 68° to 79°C, except that in locations such as drying rooms, where high ambient temperatures might be expected, the operating temperature may be increased

by not more than 30°C above the maximum deck head temperature.

- 2) Six spare sprinkler heads are to be provided for all types and ratings installed on the ship.

b) Pressure tanks

- 1) A pressure tank having a volume equal to at least twice that of the charge of water specified in this item is to be provided. The tank is to contain a standing charge of fresh water, equivalent to the amount of water which would be discharged in one minute by the pump referred to in item c) 2) below, and arrangements are to be provided for maintaining an air pressure in the tank such as to ensure that, where the standing charge of fresh water in the tank has been used, the pressure will be not less than the working pressure of the sprinkler, plus the pressure exerted by a head of water measured from the bottom of the tank to the highest sprinkler in the system.

Suitable means of replenishing the air under pressure and of replenishing the fresh water charge in the tank are to be provided. A glass gauge is to be provided to indicate the correct level of the water in the tank.

The tank is to be designed and built in compliance with the requirements for pressure vessels given in Part C, Ch 1, Sec 3 of the Rules for the Classification of Ships.

- 2) Means are to be provided to prevent the passage of sea water into the tank.

c) Sprinkler pumps

- 1) An independent power pump is to be provided solely for the purpose of continuing automatically the discharge of water from the sprinklers. The pump is to be brought into action automatically by the pressure drop in the system before the standing fresh water charge in the pressure tank is completely exhausted.

- 2) The pump and the piping system are to be capable of maintaining the necessary pressure at the level of the highest sprinkler to ensure a continuous output of water sufficient for the simultaneous coverage of a minimum area of 100 m at the application rate specified in item b) of [1.1.5]. The hydraulic capability of the system is to be confirmed by the review of hydraulic calculations, followed by a

Appendix 2: Specific requirements for sprinkler systems

test of the system, if deemed necessary by Tasneef.

- 3) The pump is to have fitted on the delivery side a test valve with a short open-ended discharge pipe. The effective area through the valve and pipe is to be adequate to permit the release of the required pump output while maintaining the pressure in the system specified in item b) 1) of [1.1.3].

1.1.4 Installation requirements

a) General

Any parts of the system which may be subjected to freezing temperatures in service are to be suitably protected against freezing.

b) Piping arrangements

- 1) Sprinklers are to be grouped into separate sections, each of which is to contain not more than 200 sprinklers. Any section of sprinklers is not to serve more than two decks. However, Tasneef may permit such a section of sprinklers to serve more than two decks, if it is satisfied that the protection of the ship against fire will not thereby be reduced.
- 2) Each section of sprinklers is to be capable of being isolated by one stop valve only. The stop valve in each section is to be readily accessible in a location outside of the associated section or in cabinets within stairway enclosures. The valve's location is to be clearly and permanently indicated. Means are to be provided to prevent the operation of the stop valves by any unauthorised person.
- 3) A test valve is to be provided for testing the automatic alarm for each section of sprinklers by a discharge of water equivalent to the operation of one sprinkler. The test valve for each section is to be situated near the stop valve for that section.
- 4) The sprinkler system is to have a connection from the ship's fire main by way of a lockable screw-down non-return valve at the connection which will prevent a backflow from the sprinkler system to the fire main. The automatic sprinkler fire detection and fire alarm system is to be an independent unit and therefore no other piping system is to be connected to it, except for the following:

- connections for feeding the system from shoreside sources, fitted with adjacent stop valves and non-return valves
- connection from the fire main as required above.

The valves on the shore filling connection and on the fire main connection are to be fitted with clear and permanent labels indicating their service. These valves are to be capable of being locked in the "closed" position.

- 5) A gauge indicating the pressure in the system is to be provided at each section stop valve and at a central station.
 - 6) The sea inlet to the pump is, wherever possible, to be in the space containing the pump and is to be so arranged that when the ship is afloat it will not be necessary to shut off the supply of sea water to the pump for any purpose other than the inspection or repair of the pump.
- #### c) Location of systems
- The sprinkler pump and tank are to be situated in a position reasonably remote from any machinery space of category A and are not to be situated in any space required to be protected by the sprinkler system.

1.1.5 System control requirements

a) Ready availability

- 1) Any required automatic sprinkler, fire detection and fire alarm system is to be capable of immediate operation at all times and no action by the crew is to be necessary to set it in operation.
- 2) The automatic sprinkler system is to be kept charged at the necessary pressure and is to have provision for a continuous supply of water as required in these Rules.

b) Alarm and indication

- 1) Each section of sprinklers is to include means for giving a visual and audible alarm signal automatically at one or more indicating units whenever any sprinkler comes into operation. Such alarm systems are to be such as to indicate if any fault occurs in the system. Such units are to indicate in which section served by the system a fire has occurred and are to be centralised on the navigating bridge or in the continuously manned control station and, in addition, visible and audible alarms from the unit are to be placed in

Appendix 2: Specific requirements for sprinkler systems

- a position other than in the aforementioned spaces to ensure that the indication of fire is immediately received by the crew.
- 2) Switches are to be provided at one of the indicating positions referred to in the previous item 1) which will enable the alarm and the indicators for each section of sprinklers to be tested.
 - 3) Sprinklers are to be placed in an overhead position and spaced in a suitable pattern to maintain an average application rate of not less than 5 l/m² per minute over the nominal area covered by the sprinklers.
However, Tasneef may permit the use of sprinklers providing such an alternative amount of water suitably distributed as has been shown, to the satisfaction of Tasneef, to be no less effective.
- 4) A list or plan is to be displayed at each indicating unit showing the spaces covered and the location of the zone in respect of each section. Suitable instructions for testing and maintenance are to be available.
- c) Testing
Means are to be provided for testing the automatic operation of the pump on reduction of pressure in the system.