

Rules and regulations of fishing vessel fabrication

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There are statutory regulations for all sea-going vessels including fishing vessels. The object of these regulations is to promote safety of life at sea and efficient maintenance of vessels. Important regulations are Life Saving Appliances (LSA), Fire Appliances (FA), Manning and Prevention of Collisions at Sea. Other regulations like loading, stability etc., are however not applicable to fishing vessels.

Every country has different regulations prescribed by its Government. However, most of the regulations are international in nature. Inter-governmental Maritime Consultative Organization (IMCO) came into existence in 1959 after the advent of United Nations Maritime conference at Geneva in 1948 which coordinates among maritime governments to have uniform pattern among all nations. It holds conventions, draws uniform regulations and forwards them to Member-Governments for implementation by statutory rules.

In India, the regulations are covered by Merchant Shipping Act (44) of 1958. There are various classification societies in different countries. The purpose of classification societies is to ensure seaworthiness of the vessels. Also, an unclassified vessel has less value and the underwriter may or may not accept or demand very high premium. Classification is granted when ship is built under surveillance and in accordance with their standards. Alternatively, the ship is surveyed after construction.

Important classified societies are

- Lloyds Register of Shipping, UK
- American Bureau of Shipping, USA
 - Bureau veritas, France

- Det Norske veritas, Norway
- Register of Shipping of the USSR, USSR
- Poland Register of Shipping, Poland

Classified societies operate throughout the world and their rules and regulations are published, making travel in the seas safe. Regulations for smaller and bigger vessels differ. Vessels above 25 GRT and 15 NRT fall under Merchant Shipping Act (MSA). Vessels below 25 GRT and 15 NRT fall under two categories – (i) Coasting vessels Act, 1938 as in Maharashtra and (ii) Harbour Craft Rules framed under the Indian Ports Act (xv) of 1908 for Ports of India other than Maharashtra. A great deal of effort has been made by IMCO in introducing measures and policies designed to increase the safety of navigation. Among them the most important are the compulsory carriage of navigational equipments and the principle of ship's routing and separation of traffic at sea. The other areas where IMCO has made a contribution include measures for regulating traffic in the areas of high density and international regulations for preventing collisions. It has developed standards for testing and approval of life-saving equipments. A guide containing specific instructions on the actions to be taken by the vessel in distress has been prepared for Masters and others involved in distress incidents at sea. The IMCO has also prepared a code of safety for fishermen and fishing vessels. A study has also been made on fire safety in ships.

Merchant Shipping Act:

The Merchant Shipping Act (44) of 1958 has been formulated to ensure efficient maintenance of Indian Mercantile Marine in a manner best suited to serve the national interests. As per the act, a “fishing vessel” means a ship fitted with mechanized means of propulsion which is exclusively engaged in sea fishing for profit. Ships exceeding 15 tones net and employed solely in navigation on the coast of India are registered.

The manning requirements are given in section 76 (4) of the Act, Prevention of Collision at Sea in 285 (1), life–saving appliances in 288 (1), rules relating to fire appliances in 289, inspection of life–saving and fire–fighting equipment in 290 (1), information about ship’s stability in 298 (1) and seaworthiness of the vessel in 335 (1). Fishing vessels are exempted from load – line regulation in section 310 (2).

A classed ship is required to carry out periodical surveys and the societies are represented throughout the world to enable the surveys to be carried out wherever it is most convenient. Classification enables the underwriter to accept the ship as a good risk against marine accident. Besides, the owner can readily affect the insurance. Nearly all sea–going vessels are built under rules of one of the great classification societies. Vessels intended for inland waterways are often built under Bureau veritas classification, as this society has special rules for this type of service.

Life Saving Appliances (LSA):

Life saving equipments are the appliances used to save the lives in case the vessel is in danger.

The vessels may be in distress due to various misfortunes like fire, cyclone, leaks, collision, running around, hitting against iceberg, etc. Though the vessels are constructed taking all the safety factors into consideration, emergency befalls the vessels on the seas. To meet such contingency and to save the lives of all men on board, life – saving appliances are provided on the vessels. These will enable the men to keep alive for a few days till they are rescued by other ships.

Rules and regulations about LSA on fishing vessels:

There are rules and regulations for the provision of these equipments on board the fishing vessels.

These provisions depend on the Acts under which the vessels register.

LSA under Merchant Shipping Act:

According to the Merchant shipping Act, vessels of all types are classified into 15 classes. Fishing vessels come under classes XIII and XIV. Mechanized fishing vessels are covered under class XIII while sailing fishing vessels come under class XIV. The following is the brief description of LSA equipment used in fishing vessels registered under the Merchant Shipping Act of 1958.

Class C boat:

Class C boats are used in smaller vessels of size below 35 m. The purpose of class C boat is the same as life – boat for providing shelter to all the men on board the vessel in case of distress. The general requirements of class C boats are given in First Schedule of Merchant Shipping (LSA) rules 1978. Salient features are that

- It shall be an open boat constructed with rigid sides
- It shall have good stability in a seaway and sufficient freeboard when loaded fully with equipment and persons.
- It shall have length varying with the length of ship and is in the range of 4.3 to 5.5m.
- It shall be fitted with internal buoyancy appliances and shall be so placed as to secure stability.
- Its internal buoyancy appliances shall consist either of air cases or any other suitable material.

Inflatable life-raft:

This is a folded cylindrical-shaped appliance which inflates on pulling a string. It provides shelter to people on board in case of distress. The main advantage of these rafts is that they occupy less space on storage. The raft is equipped inside with first-aid kit, cans of water, food, signal lamp, tools, knife, life-buoys, a line of about 26 m long, 2 sea anchors, raft repair kit, bellows for additional filling of the raft, instruction charts, etc. All the above rations are sufficient for about three days.

The walls are made of double waterproof fabric and linen-collapsible tent protects the crew from wind, rain or sun. The launching is by throwing it overboard with a container and the operating cord is pulled. The pull of cord releases the valve of bottle containing CO₂ gas so that its contents are released into various chambers which make up the raft thereby automatically inflating the raft. The sizes of life-rafts vary with their carrying capacity. They are stowed in places where they can be easily put overboard. The requirements of inflatable life-rafts are furnished in the part I of second schedule of Merchant Shipping, LSA.

- They shall be so constructed as to be stable when fully inflated
- They shall stand drop test into the water from a height of 18 m.
 - Their construction shall include cover of highly visible colour.
 - Their cover shall be capable of protecting the participants.
- They shall be fitted with a lamp on the top of the cover and another inside the raft.
 - Their total unit weights including container shall not exceed 180 Kg.
 - They shall be inflated by a gas which is not injurious to the occupants.

Life–Buoy:

This is for assisting men while in distress at sea. It is thrown for retrieving the person quickly and helping him board the rescue vessel. The person in distress holds the life – buoy while trying to board the vessel. It is circular in shape with distinctive visible colour. The requirements for life-buoys are given in the 11th schedule of Merchant Shipping (LSA) Rules, 1978.

- The life–buoy shall be constructed of cork or other equally efficient buoyant material which shall not be adversely affected by oil or oil products.
 - It shall be capable of floatation in water for at least 24 hours.
- The inside diameter of a life–buoy shall be 45 cm and outside diameter 76 cm.
 - It shall be of highly visible colour.
 - It shall be fitted with grab lines secured at four equidistant points
 - The weight of life–buoy shall not exceed 6.1 Kg.

Buoyant apparatus:

This is used in vessels up to 45 m size. Its purpose is the same as that of life–boat, class C boat and inflatable life–raft. It is least preferred as it does not provide adequate protection to the men on board. The requirements of the rigid buoyant apparatus are given in the 10th schedule of MSA (LSA) Rules 1978. Its salient features are:

- It shall be of such a fabrication that it retains its shape and properties when exposed to varying weather and water.
 - Buoyant material shall not be adversely affected by oil or oil products.
 - It shall be effective and stable when floating either way up.
- Grab lines shall be fitted all around the apparatus in such a way that the number of loops correspond to the number of persons which the apparatus is fit to support.

Self– igniting light:

Self – igniting light shines automatically on throwing into water and in erect position. It works on batteries. It is meant to mark the position of life– buoy in water during night so that a man in distress could reach the spot and get hold of life– buoy and also the vessel can return to the spot to pick up the person. At least half of the total number of buoys required to be carried shall be fitted with a self– igniting light which shall be capable of remaining in water and burning for not less than 45 minutes.

Life jacket:

It is one of the important life-saving appliances worn round the shoulder of each person in distress. This will help the person to keep afloat in water. The requirements for life – jackets are furnished in the 5th schedule of MSA (LSA) Rules 1978.

- It shall be marked on both sides in letters not less than 1.27 cm in size with words “For Adults” and on one side only with maker’s name or other identification mark.
- It shall be capable of lifting the face of an exhausted or unconscious person out of water.
- The buoyancy required to provide the foregoing performance shall not be reduced by more
 - than 5% after 24 hours of submersion into fresh water.
 - It shall not be affected by oil or oil products
 - It shall be of a highly visible colour.

Parachute distress rocket signals:

These rockets are fired from the vessel or life-boat in distress to attract the attention of nearby vessels. On firing, these rockets release bright red stars with parachutes at predestined height.

The requirements of these are given in the 16th schedule of MSA (LSA) rules 1978.

- It shall consist of single bright red star which is projected to the required height by means of a rocket and which burns while falling, its rate of fall being controlled by means of a parachute.
 - The star shall burn with minimum luminosity of 30,000 candle power for not less than 40 seconds.

- The rocket may be ignited by any suitable method.
- The rocket shall be capable of functioning even after immersion in water for about one minute.
 - The components shall have a shelf life of at least two years
 - It shall be packed in a container and effectively sealed.

Fire Appliances:

Fire on board the vessel is the most dreadful hazard. In spite of best small or big are treated as big fires and are to be reported to Mercantile Marine Department (MMD) for investigations. Fire prevention at sea is best effected by cleanliness, tidiness, correct supply and maintenance of fire fighting appliances, carrying out fire drills and by keeping the compartments well ventilated.

There are various ways to detect fires and whatever the means employed, it should be done immediately. The most modern system of fire detection is automatic electronic fire detection and fire alarm to indicate the presence and location of fire. It should be installed in the main machinery spaces and in all unattended spaces. Similarly there are ways of detecting fire by visual or smelling means.

The rules regarding fire detection are furnished in Rule 43 Fire Appliances Rules, 1969. According to these rules every fire– detecting system fitted according to rules shall be capable of automatically indicating the presence of indication of fire and its location. There are certain areas or spaces in the vessel which are more vulnerable to fire. These include engine compartment where it may be due to overheating of engine, wheel house where it may be due to short circuit in electronic equipments or partly from smoking, crew accommodation where smoking is the major cause and galley in which the risk can be due to flames from the stove or the risk of oil or cooking

fat being spilled.

All fires are not of the same type. Depending on the type of material involved, fires are classified as :

- Dry/solid fires
- Inflammable liquid fires
- Electric Fires

Fire extinguishers used for these fires are different.

Dry or sold fires are those in which the materials involved are wood, paper, textiles, upholstery etc. They usually originate in the galley. Inflammable liquid fires involve inflammable liquids like diesel, petrol, kerosene etc. These are caused by an explosion when refilling. Electric fires are caused by short circuit in electrical wiring or fittings.

Fire appliances:

A brief description of various fire appliances statutorily provided for FA Rules is given below

Fire pump:

These draw water for fire fighting. Every fire pump shall be operated by means of power other than the ship's main engine. A hand pump is essential as the engine stop due to fire in the engine room.

Fire hydrants:

Hydrant is a controllable outlet flow of the water main through which water flows either under pressure from a pumping station or from an elevated source. Hydrants must be so placed that fire hoses can be easily coupled to them.

Fire hose:

The fire hose is a pliable cotton or flax length of piping usually in 15-16 meter pieces with coupling at both the ends for joining lengths together or connecting to fire pumps and hydrants.

- Every fire hose together with tools shall be kept in a conspicuous position near the fire hydrants.
- They shall be suitable for the intended use and shall not exceed 20 m in length. They shall be made of leather, closely woven flax canvas or any other suitable material
 - The fire hose should be capable of reaching all parts of the boat
 - It shall not be used for any purpose other than for extinguishing fire.

Nozzle:

These are detachable gunmetal fittings used at the end of delivery hose to reduce the size of the outlet by means of a tapering inner surface. These are made in various sizes according to the output of the pump and to deliver water over the fire from the hose pipe. The nozzles are either for jet or water or for spray of water. Special nozzles are available which can be changed from jet to spray or spray to jet as required. For solid fires, jet spray is needed while for oil fires fine spray must be used.

Fireman's outfit:

The fireman's outfit is meant for use by fireman to approach the places of fire with fire extinguisher.

- Every fireman's outfit shall consist of breathing apparatus as specified in the rules.
- Portable self-contained electric battery operated safety lamp capable of functioning efficiently for a period of at least three hours
 - Fireman's axe
- Where more than one such outfit is provided they shall be kept in places readily accessible and widely separated.

FA for vessels registered under Harbours Craft Rules

- One GI bucket
- One fog horn
- One hand pump with suitable rubber hose pipe at least of 5 m in length

Fire prevention:

Fire prevention at sea is best affected by

- Cleanliness
 - Tidiness
- Correct supply and maintenance of FFA
 - Carrying out fire drills
- Keeping the compartments well ventilated.
- Living quarters and other places of possible fire starting are kept clean and tidy. FFA should be periodically checked to ensure that they are in good condition.

Precautions for fire prevention:

- Maintain pressure stoves, lamps in good order and secure them so that they cannot adrift due to motion of vessel.
 - Lighted stove should not be kept unattended.
- Gas cylinders should be installed and connected up so that there is no possibility of leakage.
 - Use deep ash trays with a little water
 - No smoking while refueling
 - Regular inspection for possible leaks in the pipeline, etc.
- Engine room lined with fire – proof material and painted with fire– resistant paint
 - Maintain insulation of electrical leads for wiring

- All fire extinguishers to be kept at appropriate places, ready to use at any moment
- Ensure that the bulkheads of engine compartment are fire proof on wooden boats. Steel
- bulkheads are fitted and on FRP, special fire proof resins are used. Steel boats present no problem.

b) Manning Regulations/Requirements:

There are regulations as per MSA (44 of 1958) with respect to crew certified hands needed in fishing vessels which are

Skipper grade I

Skipper grade II

Mate of a fishing vessel

Second hand of a fishing vessel

Engineer of a fishing vessel

Engine driver of a fishing vessel

Certificate of proficiency

Requirements:

- If the vessel is of 24 m or more in length and is operating beyond the contiguous zone, with a certificated skipper grade I and a certificated mate of a fishing vessel.
- If the vessel is of 24 m or more in length and is operating within the contiguous zone, with a certificated skipper grade II and a certificated mate of a fishing vessel.
- If the vessel is of less than 24 m in length and is operating beyond the contiguous zone, with a certificated skipper grade II and a certificated mate of a fishing vessel.
- If the vessel is less than 24m in length and is operating beyond the contiguous zone, with a certificated skipper grade II.

- If the vessel has a propulsion power of 750 KW or more, with at least one engineer of a fishing vessel who shall be designated as Chief Engineer and one engine driver of a fishing vessel.
- If the vessel has a propulsion power of 350 KW or more but less than 750 KW with at least one engineer of a fishing vessel who shall be designated as chief engineer.
- If the vessel has propulsion power of less than 350 KW with at least one engine driver of a fishing vessel who shall be designated as engineer-in-charge.

Regulations for prevention of collisions at sea

Regulations for prevention of collision at sea also known as Rules of Road were revised and redrafted by the Inter-governmental Maritime Consultative Organization (IMCO) and approved by a conference convened by IMCO in 1972. These rules came into force on 1st January, 1977.

There are 38 rules in the new regulations under parts (A to E). Part A deals with application, responsibility and general definitions. Part B deals with steering and sailing rules. This refers to conduct of vessels in restricted visibility, in sight of another and any condition of visibility. Part C pertains to lights and shapes to be exhibited during night and day for identity. Part D is concerned with sound and light signals. It gives (i) definitions about whistle, short blast, prolonged blast etc. (ii) equipment for sound signals (iii) maneuvering and warning signals (iv) sound signals in restricted visibility, (v) signals to attract attention (vi) distress signals. Part E deals with exemptions, i.e., vessels exempted from rules as these were constructed prior to the introduction of rules.

There are 31 rules under various heads.

- Preliminary definitions - Rule 1
- Lights and shapes – rule 2-14
- Sound signals and conduct in 15-16 restricted visibility
 - Steering and sailing rules – 17-27
- Sound signals for vessels in sight 28 of one another
 - Miscellaneous – 29-31

Important rules

Rule 3 d (Fishing vessel)

A vessel engaged in fishing means any vessel fishing with nets, lines, trawls or other fishing apparatus – but does not include fishing with troll lines or other fishing apparatus which do not restrict maneuverability.

Rule 9 (c)

A vessel engaged in fishing shall not impede the passage of any other vessel navigating within a narrow channel.

Rule 10 (i)

A fishing vessel shall not impede the passage of any vessel following traffic lane under traffic separation scheme. A vessel other than crossing a vessel shall not enter a separation lane. However, in case of emergency, a vessel for fishing can enter separate zone.

Rule 18 (a)

A power-driven vessel under way shall keep out of the way of a vessel engaged in fishing.

Rule 18 (b)

A sailing vessel underway shall keep out of a vessel engaged in fishing

Rules 18 (c)

A vessel engaged in fishing when underway as far as possible keep out of the way of Vessel not under command

A vessel restricted in her ability to maneuver

Marine Fishing Regulations of Marine States of India

Due to the intensive concentration of different classes of fishing vessels in the shore area, State Governments felt the necessity of legislative measures to regulate the operation of coastal area traditionally exploited by small fishermen. There is no uniformity in the distance limit of territorial water area for traditional sectors in the west or the east coast of India. The Government of Gujarat and that of West Bengal have so far not enacted any regulation of fishing in its territorial waters.

Maharashtra:

Maharashtra has enacted the Marine Fishing Regulation Act (MFRA) 1981. The following restrictions on fishing operations have been imposed:

- Prohibition of operation of trawl gear by mechanized fishing vessel up to 5 fathoms from shore and 10 fathoms depth in the specified area.
- Banning of fishing by mechanized fishing vessels from 1st June to the Narali Purnima.
- Prohibition of operation of trawl gear by mechanized fishing vessels between 6.00 PM and 6.00 AM
- Prohibition of fishing by mechanized fishing vessels of any type with more than six cylinder engines within the territorial waters of Maharashtra up to 12 nautical miles.
- Restrictions of operation of purse seine gear were imposed from December 1987 and according to this purse seine gear will not be operated by any mechanized fishing vessel within the territorial waters.

Goa:

Marine Fishing Regulation Act 1980 and Rules 1982 are followed by Goa, Daman and Diu which specifies the 5 km stretch from the coast–line as the area for traditional fishermen. Mechanized fishing vessels can operate only beyond this 5 km limit. Government of Goa has imposed restrictions in mesh size of nets, 20 mm for prawn and 24 mm for fish with a view to conserving younger fish.

Karnataka:

The Karnataka Government has enacted Marine Fishing Regulation, 1986.

- Area up to 6 km from the shore is reserved for traditional craft
- Mechanized boats up to 16 m in length are allowed to operate beyond 6 km.
- Deep sea vessels of 16 m and above are required to operate beyond 20 km.

Kerala:

The Kerala Marine Fishing Regulations Act, 1980 and the Rules (1980) framed empower the Government to regulate, restrict, prohibit and specify the use of such fishing gear and craft as may be in any notified area in the territorial waters.

- An area of 10 km from the shore is reserved for traditional fishermen operating traditional fishing craft.
 - Vessels above 25 GRT are prohibited in the territorial waters

- Mechanized boats wishing to move from the area of one port to another are required to obtain permission from an authorized officer.
- All bottom trawls which have less than 35 mm mesh size are prohibited for fishing in territorial waters along the entire coast line
- The use of bottom trawl has been prohibited between sunrise and sunset in the specified area.
 - Trawling is banned throughout the territorial waters during the monsoon period.

Tamil Nadu:

The Tamil Nadu Marine Fisheries Regulation Act 1983 and Rules (1983) framed provide for regulation, restriction and prohibition of fishing by various categories of fishing vessels along the coast line of the state.

- Areas up to 5.5 km are reserved for traditional non-mechanized boats.
 - Mechanized boats are permitted to use areas beyond 5.5 km
 - Fishing within 100 meters below a river mouth is prohibited
- No fishing gear of less than 10 mm mesh in respect of nets other than trawl nets shall be used.
- The number of mechanized fishing vessels which may be used for fishing in any specified area shall be decided by the authorized officer.

Andhra Pradesh:

Andhra Pradesh has not yet enacted the Marine Fishing Regulations Act. However, the executive orders issued in 1983 demarcate operational areas of fishing vessels of different types.

- Non-mechanized traditional fishing craft should be allowed to operate exclusively up to 10 km from the shore and no other type of vessel should be allowed to operate within that area.
 - Mechanized fishing vessels should operate beyond 10 km from the coast
- Large mechanized vessels 20 m and above should operate beyond 23 km from the coast.

Orissa:

According to Orissa Marine Fishing Regulation Act (1982) and Rules (1983) framed there under.

- Non-mechanized traditional fishing craft shall be allowed to operate freely without restriction. Waters up to 5 km from the shore have been exclusively reserved for such fishing craft.
- Mechanized fishing vessels up to 15 m in length shall be allowed to operate beyond 5 km from the coast.
- Mechanized fishing vessels of 25 GRT and above or 15 m length shall be allowed to operate beyond 10 km from the shore.
- No fishing vessel shall ordinarily be allowed to interchange the base of operation without permission of the authorized officer.

- There is no restriction for trawlers from outside the state for fishing in offshore areas beyond 10 km provided they register and obtain valid licenses to operate in the coastal waters of Orissa.

Maritime Zones of India Act:

The maritime Zones of India (Regulations) or (Fishing by foreign vessels) Act, 1981 and Rules 1982 provide that no foreign fishing vessel shall undertake fishing operations within the territorial waters of India. According to the provision of the rules, charter vessels shall fish beyond 44.5 km from the shore on the western coast and 22.2 km on the eastern coast as a general rule, subject to certain restrictions.

Maintenance of wooden fishing vessel: For the proper upkeep of wooden fishing boats a regular maintenance schedule is necessary. Dry docking is done at least once a year preferably during the monsoon when fishing is normally not done. The following schedule has been recommended by the C.I.F.T

The boat is made as light as possible by removing stores, masts, derricks etc.,
The boat is kept at certain height above the ground so as to permit free air movement on all sides.
It should be protected from white ants, sun and rain.

Bottom foulers are removed by scrapers.

Hull sheathing is examined carefully particularly at the stem, keel and rudder. The hull has to be checked for leakage. The seams and joints have to be checked, recalled and filled with putty wherever necessary. The underwater part of the hull has to be checked for marine borers. The

borer holes are either filled with wooden plugs or with any sealing compound. In case of extensive damage as may be evident from large number of holes the affected members need replacement.

The entire wooden hull below water line should receive two or more coats of coal tar or its derivative like creosote. A thick layer of insulation tar felt underlay is fixed over the coal tar coatings prior to the fastening of metal sheathing. Painting is needed over the sheathing to prevent corrosion and settlement of fouler's through copper sheathing does not need any coats of paint, aluminum sheathing needs two coat of anticorrosive and antifouling paints. FRP sheathing needs two coats of antifouling paints. The antifouling paints coats are to be applied a few hours before launching the boat when the paint is still wet.

The deck is checked for leaks. Frequent application of linseed oil keeps the deck plants free from splitting and weathering.

The frames, shelves, beams, bulkheads etc., are regularly checked for presence of rot. Affected parts have to be replaced. Application of fungicides like pentachlorophenol, good ventilation and hygienic conditions prevent the fungal infection.

The old paint on the outside of hull above water line has to be scrapped and the hull is cleaned and allowed to dry. Two coats of good quality marine grade paints are given. There is no need to paint the inside of the hull.

All ferrous structures should be chipped, brushed and cleaned to remove rust and mill scale. One coat of anticorrosive paint is given.

Check all the external fastenings for slackness and corrosion. Badly corroded fastenings should be replaced. Rudder and stern gear fittings are to be checked for possible failures.

All major and minor repairs of engine and machinery to be attended by competent hands.
Check the propeller for dents, wear and tear. Minor dents are cleaned up with a file and finally treated with emery paper. Propeller has to be replaced if it is severely damaged.
Zink blocks are to be fitted at approximate places for cathodic protection.