

# **Uniform Shipping Laws Code 2008**

**Section 5M: Construction – Timber  
(CTH, NSW, NT, QLD, SA, TAS, VIC & WA)**

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**SUB-SECTION M  
TIMBER**

This Sub-section is divided into Parts as follows:

Part 1—Application and General

Part 2—Scantlings for Round Bilge Vessels

Part 3—Scantlings for Hard Chine Vessels

Part 4—Scantlings for Hard Chine Plywood Hulls Constructed on a System of Longitudinal Frames Supported by Web Frames

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**PART 1—APPLICATION AND GENERAL**

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M.2	Application
M.3	General
M.4	Fastenings

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**PART 1—APPLICATION AND GENERAL**

**M.1 Preliminary**

M.1.1 This Sub-section forms part of the Construction Section and shall be read in conjunction with its other Sub-sections.

M.1.2 The Construction Section shall be read in conjunction with the Introduction, Definitions and General Requirements Section.

**M.2 Application**

This Sub-section is to apply to timber vessels of less than 35 metres in length. Vessels of 35 metres in length and over will be specially considered by the Authority.

**M.3 General**

**M.3.1 Materials**

Subject to clause M.57, these requirements apply to vessels constructed of timber and framed with bent or web frames.

- (a) All materials used shall be of best quality. The timber shall be rot free, adequately seasoned and free from sap, shakes, objectionable knots and other defects, suitable for the purpose intended, and conforming with the requirements of Australian Standard AS1738-1975, Timber for Marine Craft.
- (b) All metals used in the construction shall be suitable for a marine environment, or in the case of mild steel protected against corrosion, and conform to relevant Australian or British Standard Specifications. Care should be exercised in the selection of metals used in order to obviate the effects of electro-chemical corrosion.
- (c) Marine plywoods used shall conform to Australian Standard AS2272-1979, Plywood for Marine Craft. Attention is to be given, during the installation of plywood, to the

edges and any holes made in the face of the sheet. The entry of moisture is facilitated at these points and its entry can lead to a rapid deterioration of this material without any apparent evidence of such breakdown being present on the surface veneers of the ply.

- (d) Glues to be used in the construction and lamination of structural members are to be gap-filling resorcinol or phenolic type such as those complying with BS 1204, Synthetic Resin Adhesives (Phenolic and Aminoplastic) for Wood, epoxy resins or other equivalent adhesive having similar durability and which can give a Type WBP bond.

Modified urea-formaldehydes may be used in those parts of the internal structure which are not subject to continuously wet conditions and are well ventilated. Such parts include internal deckhouse members and internal structural assemblies which are well above the bilges. Glues are to be mixed and applied in accordance with the manufacturers' instructions and with due regard to the shop temperature and humidity requirements.

The manufacturers' recommendations in regard to glueing different species of timber should be followed, especially those regarding the degreasing of oily or resinous timbers and also the effect of timber preservatives on the glues.

- (e) The scantling dimensions give in the tables are for stock milled sizes with a minimum of loss for dressing. Sizes, except where specially noted, are for Australian hardwoods of 960kg/m<sup>3</sup> density at 12% moisture content. Where the actual density of the timber used is less than 800kg/m<sup>3</sup> density at 12% moisture content the tabulated scantlings

are to be increased by the ratio  $\frac{960}{W}$  where

W = the actual density in kilograms/cubic metre at 12% moisture content of the timber being used. The densities of timbers at 12% moisture content shall be obtained from the 'Australian Standard AS 1738-1975, Timber for Marine Craft'. Where a dimension lies between any two consecutive numerals in the tables then the scantling may be determined by the next higher dimensions or by direct interpolation.

#### M.3.2 Alternate Construction Methods

The scantlings of vessels constructed on other than the framing systems described herein shall be determined on the basis of the midship section modulus being considered equivalent to the midship section modulus of a vessel of similar dimensions obtained from the application of this Sub-section, and also that the stresses in the individual members of the vessel are acceptable to the Authority. Data to indicate the midship section modulus obtained and the stresses involved may be required to be submitted for approval.

### M.4 Fastenings

#### M4.1 General

M.4.1.1 Fastenings may be of copper, gun metal, silicon bronze, mild steel, stainless steel or monel metal. They shall be in accordance with Table M.26.

M.4.1.2 All fastenings of ferrous metal shall be suitably protected.

M.4.1.3 Dumps, where used in lieu of a bolt, shall have the same cross sectional area.

M.4.1.4 Fastenings may be increased above the sizes shown in the table, but any increase shall be such that the fastening does not unduly weaken the member.

M.4.1.5 All fastenings of stainless steel shall be of type 316 material.

M.4.1.6 Iron or steel fastenings shall not be used in the underwater portion of any vessel sheathed with copper or other non-ferrous material.

M.4.1.7 Through fastenings, other than nails, shall be either rivetted on rings or washers of the same material, or fitted with screw nuts. The material for the rings, washers or nuts shall be compatible with the through fastenings used.

#### M.4.2 Hog to Keel

M.4.2.1 The hog to keel fastenings between floors in vessels less than 15 metres length may be dump fastenings.

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M.4.2.2 In vessels of 15 metres length and over these fastenings shall be through fastenings.

M.4.2.3 There shall be at least one fastening between floors for every 0.1m<sup>2</sup> of faying surface between keel and hog.

M.4.3 Floors

M.4.3.1 Floors shall be through bolted to the keel and hog, and where practicable through the extremities of the arms to the stringer and planking.

M.4.4 Clamps and Stringers

M.4.4.1 Clamps and stringers shall be through fastened at every alternate frame.

M.4.5 Beam Shelf

M.4.5.1 The beam shelf shall be through fastened to the sheer clamp. The maximum spacing of such fastenings shall not exceed twice the frame spacing.

M.4.6 Planking

M.4.6.1 The fastening dimensions for hull planking shall be determined from Table M.26.

M.4.6.2 Planking fastenings to bent frames may be either through nails, screw bolts or wood screws. Through nails shall be either rivetted on roves, or clenched and through fastenings shall be used where frames are laminated and not glued.

M.4.6.3 Clenched nails shall not be used where ever the single moulding of a laminated framing member is less than 15 mm.

M.4.6.4 Plank fastenings into the hog, floors, bulkhead grounds, transom and hood ends shall be copper nails, screws or dumps.

M.4.6.5 The planking hood ends shall be secured with a double row of copper nails, screws or dumps.

M.4.6.6 Plank fastenings into the forward and aft deadwoods and the horn timbers shall be double reeled.

M.4.6.7 All butt straps in the hull planking shall be through fastened with nails, rivetted on roves or clenched, bolted or screwed.

## PART 2—SCANTLINGS FOR ROUND BILGE VESSELS

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## PART 2—SCANTLINGS FOR ROUND BILGE VESSELS

**M.5 Keel and Hog or Keelson**

M.5.1 (a) The keel shall be sided and moulded as indicated in Table M1. The siding and moulding shown therein may be varied in accordance with the notes to the table.

(b) The minimum hog siding and moulding shall be as shown in Table M1 but may be varied in accordance with the notes to the table.

(c) Where a keelson used in lieu of a hog is associated with a rabbetted keel, the keelson shall have a sectional area and be sided and moulded in accordance with Table M1 and associated notes.

M.5.2 The keel and hog or keelson in vessels less than 10 metres in length shall be in one length.

M.5.3 For vessels 10 metres in length and over where the keel, hog or keelson is not in one length it shall be efficiently scarphed.

Any such proposals shall be clearly indicated on the plans submitted.

M.5.4 The keel and hog or keelson may be scarphed at one third of their respective lengths with at least 10 times the frame spacing shown in Table M6 between the extremities of the scarphs in the keel and hog. Keel and hog or keelson scarphs should be avoided in way of a machinery space.

M.5.5 Keel and hog or keelson scarphs shall be not less in length than six times the moulding of the keel and hog or keelson respectively and have nibs of the following depths:

0.25 times depth of scarph for a moulding up to 200 mm in depth.

0.125 times depth of scarph + 25 mm for a moulding exceeding 200 mm in depth.

M.5.6 Stopwaters shall be fitted to all centreline construction joints where they intercept the rabbet line.

M.5.7 A rabbetted keel, viz. where the keel and hog are made out of one piece of timber or are of laminated construction, may be reduced in cross sectional area by up to 15 per cent of the total combined areas for the keel and hog obtained from the addition of the sectional areas shown in Table M1.