

Design 123 - Basic Specification

Measurements Metric system throughout, unless otherwise noted (screw lengths and gauges for example). All linear dimensions are given in millimetres (and “mm” is not always suffixed to the numbers).

Timber Mahogany, Brazilian or African (often now called Ghana Mahogany), or Red Meranti for solid structural timber work. Most other hardwoods and softwoods are suitable but avoid Teak, Iroko and Oak for structural lamination and bonding (with the exception of the teak laid to the decks). Avoid softwoods with a high resin content (e.g. Pitchpine) or softwoods with large or loose knots. For timbers that are used extensively in the boat, it is preferable to choose timbers with a density of 550g/m³ or less so as not to build up excessive structure weight. Buy all timber kiln dried if possible and store in dry and well ventilated conditions. Stick between baulks/planks of timber to allow good air circulation. Moisture content of timber should be 12% or less. The timber types given in the specifications below are those considered most suitable.

If you wish to build from ecologically sustainable sources, then please come back to us for a specification of suitable timbers.

Plywood Must be WBP (weather & boil proof) grade minimum. 5-ply is better than 3-ply (applies to 6mm thickness - thicker ply will automatically be 5-ply or more). Far Eastern WPB grade is usually satisfactory but the surface finish is not always very good. WBP Gaboon ply is excellent and to be preferred wherever possible. Gaboon ply is usually available in “Marine” and “Lloyds” grades - “Marine” grade is fine (but it doesn’t necessarily mean BS 1088). BS 1088 is the British Standard for marine grade and controls glue (which is WBP), structure and timber species. With wood epoxy systems BS 1088 ply is not necessary, provided that the ply used is structurally sound (not too many voids, no veneer corrugations, sufficient plies, minimal surface filler etc.) - and indeed some of the species used for BS 1088 ply are not so very suitable for WEST system. When decoratively veneered ply is used structurally, the decorative veneers must also be bonded on with WBP grade adhesives.

Plywood from ecologically sustainable sources is difficult. The only ply available that approaches this is Finnish birch ply and North

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American Douglas Fir ply. Both these (in the correct grades) are suitable structurally, but the surface veneers are not really very decorative.

Furniture & secondary structures

The furniture is made from plywood and solid timber with plywood panels. Many items of the furniture are also used structurally - these are called secondary structures. The timber to be used decoratively needs to be chosen carefully so that it fits in with the timbers used for the primary structures and also with the style of the interior, and is also readily and reasonably economically available.

Coating system

WEST™ wood epoxy materials. The use of #207 coating hardener on larger surfaces will provide a better finish (use ordinary #205 hardener on the first two coats). Minimum three coats on all structures and areas of the boat. See also WEST™ fact sheet.

Glue

WEST™ #105/#205 resin mix modified with #403 microfibres (about 7% to 10% by weight - but you will soon judge better by consistency which should be a thickish paste, but still runny). End grain and bare timber to be wetted out with #105/#205 and allowed to stand for 15 minutes before gluing with resin/#403 mix. Pre-coated areas (where the WEST™ coating has gone off to be sanded thoroughly and any surface “sweat” removed. Timber direct from the saw is suitable for gluing. Timber from the planer can be shiny, with the surface cells compressed - roughen slightly with medium abrasive paper. See also WEST™ fact sheet.

Filleting

WEST™ #105/#205 resin mix modified with #405 filleting blend.

Decorative finishes

Exterior clear finishes should be UV resistant. We recommend that one coat of 2-pot varnish is applied before using conventional varnishes - otherwise the conventional varnish may have difficulty in curing. The same applies to paint finishes - one coat of 2-pot first, then conventional or acrylic if wished.

Fastenings

Very few structural fastenings are required, most fastenings being used to hold items together while glue cures. However for convenience most fastenings are left in place, rather than being

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withdrawn.

Brass or stainless countersunk wood screws are fine. Use a Stanley “screwsink” of the correct size for the screw when boring off for screws to obtain best hold and clean countersinks. Stanley “plugcutters” are available for each gauge of screw and the dowels produced match the countersink made by the screwsink. Where screws are not to be dowelled over (glue dowels in with WEST™), or filled over with WEST/#407 microballons, fudge plenty of WEST™ down screw hole (a pipe cleaner is ideal for this). Wax screw if it is required to be withdrawn later.

Nails and staples can be used wherever suitable. Use stainless steel, brass or bronze, light alloy, nylon or delrin. Avoid steel, including galvanized or sheradized, unless the fastening is to be removed.

Backbone (Hog, stem & apron)	African Mahogany laminations
Coachroof carlings	African Mahogany or Douglas Fir.
Coachroof runners	African Mahogany, Brazilian Mahogany or Teak.
Coachroof sides	African Mahogany.
Coachroof top	9mm Gaboon ply.
Decks	9mm gaboon ply.
Floors	African Mahogany.
Frames	Laminated timber/ply/solid timber as drawings. African Mahogany and Khaya veneers
Hull skin	11 off 9mm Gaboon ply planks lapped 30mm and laps filleted inside and out.
King plank	African Mahogany or Douglas Fir.

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Main carlings	African Mahogany or Douglas Fir.
Mast post	African Mahogany or Brazilian Mahogany (or other timber to match furniture trim).
Mast runner	African Mahogany or Douglas Fir.
Shelves	African Mahogany or Douglas Fir.
Sternpost	African Mahogany.
Transom	9mm Gaboon ply .
Useful WEST™ System reading and viewing	Basic application technique VHS training video. The Gougeon Bros. on Boat Construction. WEST™ system Technical Manual.