



## Why choose ply over foam composite

Firstly, there are still people who appreciate the satisfaction that comes from hand crafting their pride and joy; then there is the opportunity for the enthusiast to tweak the rules in search of an edge; next, it is relatively easy to solidly repair a damaged timber boat; and finally, savings of up to 80% in hull cost (if labour isn't costed) can be achieved by building ply hulls compared to purchasing composite ones.

The potential downside of ply is its reduced durability compared to composites if left out in the weather for very long periods. This can be largely addressed if the boat is soundly built, properly sealed inside and out, painted with 2 pack polyurethane paint, and water is not allowed to pond in the hulls. Even so, a composite boat may be expected to stand up to the weather better, although the gelcoat will break down under UV light over time. Any PT will last much longer if it receives a bit of TLC and protection from the elements.

Having made the decision to go with ply construction, which ply is preferable? I had a set of hulls for 20 years that were made out of exterior grade ply (except for the decks). The glueing of the veneers was fine but the quality of the timber was inferior, resulting in a lot of stress cracking of the surface. This problem was solved by sheathing the hulls, which of course added unwanted

weight. For a durable boat, marine grade plywood is definitely the go.

## What is marine ply

Marine grade plywood is constructed with A Grade veneers on both outer surfaces, which means that they have no open imperfections and provide a high resistance to stress cracking. The core veneer(s) should be free of voids to resist water penetration, which could become trapped between the glue lines and degrade the structure. The timbers used are generally rated as non-durable, so the timber is treated to resist fungal damage in high-moisture environments. The glue used to join the veneers is A-Bond standard and is Water Boil Proof (WBP), which is the same glue standard used in A-Bond exterior grade plywood.

At this point, a word of caution is in order. Marine plywood ain't always 'marine' plywood. Some of the products imported into Australia don't meet the strict requirements set down by the relevant standards adopted in Australia. Marine plywood should be marked to indicate that it is manufactured and certified to Australian Standard AS/NZS2272-2006, or to the British Standard BS1088-1:2003 (the accepted international standard), for marine plywood.

The wash-up of all of this is that certified marine

plywood should provide a strong, stable, long lasting material with which to build your masterpiece. The high surface quality will also provide a sound base for finishing coats. Of course, all of this comes at a premium price.

If you would like to know more about what makes plywood 'marine' grade, check out the British Standard at:

<http://www.chinapwi.com/Download/Marine%20plywood%20BS%201088-1.pdf>

## Why Gaboon

A number of timber species are used in the manufacture of marine ply, and the species used will effect the characteristics of the finished board. The timbers generally used in the manufacture of marine ply are durable species where weight is not a primary concern. However, light weight is a characteristic which is of great importance to us.

Marine grade plywood made from '*Aucoumea Klaineana*' (an African hardwood known as Okoume, Gaboon, and Mahogany) has long been the material of choice for building ply PTs. BS1088, clause 3.3.2, makes special reference to the use of low density timbers like Gaboon where light weight is critical to construction. Gaboon is not regarded as a durable timber in its raw state, but 4mm thick plywood made from 3 equal thickness veneers of Gaboon is light and easily worked, and once sealed with epoxy, the material is definitely strong and durable enough to withstand many years of serious racing under demanding conditions.

## Weight

So how light is light? The plywood that I obtained some 4 years ago was 4.5kg per 2440mm x 1220mm x 4mm sheet. I weighed the whole stock that the supplier had in order to select the lightest sheets. However, as the sheets were quite damp, there may well have been lighter sheets available elsewhere.

I have also seen Gaboon ply at over 6kg per sheet. With 5 sheets used in a typical PT, you can see there was a potential weight saving of around 7kg just from taking the time to select the lighter sheets. It is desirable to end up with finished hulls (painted) that weigh under 17kg each if a minimum weight boat is to be achieved. If the builder intends adding interior stiffening to the hulls, (a common practice these days) the lightest weight ply obtainable is a must. Further drying of the ply (and therefore weight reduction), may be possible once the hulls are built.

## Quality

The heavy ply I mentioned above had unequal veneer thicknesses, poorly glued areas and significant voids in the core veneer. This clearly didn't meet the relevant

standards. Difficulties with obtaining good quality Gaboon plywood in recent years has been expressed by builders within the class, as well as by importers in online comment. Even though I carefully selected the ply sheets for my current boat, they were all damp and slightly buckled. Luckily internal hull stiffening, which I had planned anyway, ironed this out.

## What to look for

There are quite a few suppliers who advertise Gaboon marine plywood for sale and espouse the quality of their product. So how might you avoid disappointment when your new boat hits the scales?

- If you can, select the sheets yourself.
- Look for the certification stamps that 'should' indicate compliance with the Australian or British standards.
- Take a set of reliable scales with you that are designed to measure weights up to 10kg accurately.
- Select the lightest sheets available, preferably under 5kg per sheet. If the sheets are heavier, try another supplier if you can.
- Look for the flattest sheets available.
- Look for dry sheets. Although a light weight, damp sheet will lose more weight as it dries, it may buckle if not held flat and may take significant time to dry out completely.
- Look to see if the veneers are of equal thickness. The outer veneers take the major loadings, so if the core is thicker, the panels may not be as stiff.
- Look at the end grain of the core veneer (both sides of the sheet) to see if there are any gaps. You may still miss gaps in the middle of the sheet, but the chances are reduced if the edges are all good. Core gaps will sometimes show as faint lines in the surface colour running across the sheet. Gaps can be filled during construction, should you miss them, but indicate poor ply quality.
- Look for any delamination of the veneers.

If everything seems good, then you should end up with a satisfactory product. If you have to order your ply sight unseen, then specify your requirements based on the above list. If the supplier takes pride in their reputation, they should be happy to assist you.

The following two sites are provided as examples only of the many suppliers available, just to get you started.

**They are not intended as a recommendation.** The final choice is up to you.

[http://bruynzeel.rtrk.com.au/?scid=58417&kw=4394256&pub\\_cr\\_id=7859659554](http://bruynzeel.rtrk.com.au/?scid=58417&kw=4394256&pub_cr_id=7859659554)

<http://www.denmanmarine.com.au/id67.html>

