Building a Paper Tiger Catamaran

Paper Tiger Catamaran
GUIDES

Plywood Selection

Warnings/Cautions

- This article refers to information that is largely Australian in nature. People located in other countries may need to source additional information relevant to their location.

Definitions

Marine Ply	Plywood made from superior timber and using superior bonding glues that provides a better product for building boats and for use in marine environments.
Plywood	A timber board or panel made of multiple (odd numbered) layers of wood veneers glued cross-directionally for greater dimensional stability. The outer layers are often of a different timber to the inner layers. An ideal material for the construction of boats such as the Paper Tiger.
Scarfing	The joining of two sheets of plywood by chamfering both sheets and overlapping the chamfers to give a larger area of bonding.

This article was written by Neil Waterman (AUS) who built the boat that won the 2009 Paper Tiger Catamaran International Championships.

Choosing the plywood for your Paper Tiger is a critical step in achieving a good end result.

Weight

When building a Paper Tiger, it is very important to consider weight as you are researching, preparing and while building the boat. In Australia, the only suitable marine ply available is Gaboon-Mahogany. This is 3-ply, with the outside layers being Gaboon and the inside layer being Mahogany. These sheets can weigh anywhere between 4kg and 7kg depending on how long they have been in storage. When I went to buy my ply, the shop had 20 sheets available, and I took electric 'fruit & vegetable' scales that gave an instantaneous reading down to 10 grams. I weighed all sheets and then selected the lightest ones. In Australia the sheet size is 2440mm x 1220mm.

Why use Marine Ply?

The reason why you should build with marine grade ply is marine plywood is manufactured from selected species with 'A grade' surfaces that are sanded both sides. It is manufactured to standard AS/NZS 2272 using a permanent 'type A' bond adhesive. Marine plywood is perfect for boat and yacht construction and other marine applications. It is manufactured from selected species, based on density, bending strength, impact resistance and surface finishing characteristics. Also, as opposed to exterior grade ply, marine ply does not have any gaps between butt joints in the sheet.

Thickness

Now the thickness: The current plans state 5mm for the thickness, but we now mostly use 4mm (1mm for each outside layer of the ply and 2mm for the inside layer). To minimise weight, some builders use 3mm for the deck from the main beam to the bow. I would not advise this for a few reasons: the first being you cannot put your weight on the deck to fix up tell tales while sailing, the

second being people have dropped their shackle key and it has gone straight through the deck – it just doesn't withstand much punishment.

Grain Direction and Joints

There are a lot of arguments as to which way to lay the grain – some people say to have the grain on the outside layer of the ply running lengthways (bow to stern), which means the inside layer of the ply runs vertical; while others say to have the outside layer of the ply running vertically (from deck down). Ian Marcovitch (AUS) built two boats that have the ply running along the hull on the sides, the foredeck and the aft deck, but athwartships on the bottom panels and on the deck between the beams. So there is plenty of variation on opinion in this area.

The main difference in choice of grain direction is how many joints there need to be. If you have the grain lengthways, then there needs to be only one joint in each side of the hull, and one joint in the deck, however if you run the grain vertically, then there will be 3 joints in each side, and 3 joints in the deck. Add all the joints up, and depending on how you scarf your joints (mentioned later), then you are looking at either 8 joints (16 cuts) or 30 joints (60 cuts).

If you don't know what a scarf joint is, refer to the article "Building a Paper Tiger – Scarfing Plywood" by Phill Brander. With scarf joints, I would recommend the overlap on the two sheets to be anywhere between 20mm and 40mm. This allows the maximum surface area for gluing and therefore maximum strength.

Number of Sheets

Finally, how many sheets do you need to build a Paper Tiger? This all depends on what you are going to do inside – some people build a sub-deck with ply, while others build bulkheads with ply and or foam – which are not stated in the plans. *(Refer to other building articles on the website for further information on these).*

To build the minimum, which includes the hull, deck, centreboard case, transom, and any other small bits and pieces, you will need safely 6 sheets.

For assistance with your Paper Tiger Catamaran, or suggestions for this or other Guides, please contact the Paper Tiger Catamaran International Association:
David Stumbles (Secretary) **+61 400 476 449** or **ptcia@papertigercatamaran.org**
www.papertigercatamaran.org