



Australian Cherub Fact Sheet No 4

June 2008

Building your own Cherub

All modern Cherubs are built using composite construction often referred to as or foam sandwich construction. Most current boats are built from laminates composed of carbon fibre reinforcing over closed cell foam with epoxy as the resin system. It is possible to also use glass reinforcing and polyester or vinyl ester resins but carbon and epoxy laminate systems produce stiffer lighter hulls and are therefore more generally preferred by home builders who are aiming for a top performing boat.

There are two basic construction methods. The first is to build the hull from scratch using a jig to form the foam panel into the designed hull shape. This method allows you to choose your design or even design your own hull. It does require some significant experience in boat building and a well detailed design to ensure that the finished hull fits the Cherub measurement rules. In recent years several boats have been built to the Lairy Canary design using this method.

The second method is to purchase a [Matthews hull shell](#) from Brenmark Industries in Brisbane and construct the frames, floor and decks at home. This second method is the more popular with some 34 boats having been built in this way over the past ten years. Matthews shells cost about \$4,500 and come fitted with a transom and a centrecase and finished with an undercoat. They are constructed in a female mould from carbon fibre over closed cell foam in an epoxy resin system. The quality of the shells is very high.

A home builder working from a Matthews shell is in a position to design the topsides of the boat to suit their own individual needs. Many recent builders have developed topside designs that are comprised primarily of flat panels. These designs allow most of the panels to be laid up and laminated on a flat workbench prior to fitting and bonding to the hull. This system allows the full boat to be built without the need for any specialised moulds or tooling. Trevor Fay's Wally (3144), which has won the Nationals twice, is a good exam-

ple of this type of construction. Australian Cherub Fact Sheet No 3 provides details of some of the more popular layouts. High resolution photos of these layouts are available at Cherub Central.

Building a Cherub at home is not a project that should be taken on lightly. There is a considerable investment required in the shell and the materials to finish the hull and there are important health and safety issues that you need to be aware of and manage. However, for someone who has an understanding of composite construction techniques and basic skills building your own boat is a very manageable and rewarding project.

Below Top: A Matthews shell as it arrives from Brisbane with transom and centrecase fitted. Bottom: Duncan Groome's finished hull Kiss 3162 is an example of a design that is finished with predominantly flat panels that can be layed-up on a workbench and then bonded into place in the hull.



Finished hull weight

The finished hull weight is an issue for home builders. The minimum hull weight for a Cherub is 51 kg. To achieve this weight the finished hull needs to be about 46 kg before painting and fittings. While this is very achievable for a home builder, some care is required to keep the boat to weight while still making it strong enough to withstand the stresses involved in high speed downwind sailing. Several builders have found that the first boat they build is 3 to 4 kg overweight while their second one is on weight.



Above: Frames and the bulkheads bonded in place on Wayne Torpy's rebuild of [Rope City 3055](#).

Below: Simon Blatchford's partly finished new hull with the bulkhead fitted and first longitudinal frame fitted and bonded. Flat panels make for easy construction. High res views [one](#), [two](#) and [three](#) here.



Vacuum bagging

In composite construction vacuum bagging can be of great assistance in achieving consolidation of the laminate and ensuring that the finished product is well bonded. When used with peel ply it can also ensure that the cured laminate is minimum weight without excess resin. The downside of vacuum bagging for the home builder is the need to acquire the necessary equipment and the additional consumables involved.

When home building a Cherub, using vacuum bagging techniques can be an advantage but, on flat panels, it is possible to achieve the same curing pressures with simpler technology such as a sheet of plywood and some bricks.

Customised parts

Homebuilding is becoming even more viable as more customised Cherub parts become available. Ben Lawrie in Perth now has a mould for a concave foredeck that fits a Matthews shell. His foredeck, which includes mounting points for a self tacker, can be use either to form the top of a forward buoyancy tank or as an open deck over a floor that extends to the bow of the boat. Ben also has mouldings available for a bow pole assembly.

Building a quality boat and staying healthy

The most important priority in any boat building project is making sure that you stay healthy, so that you can continue to enjoy sailing your boat for many years. This is particularly important in composite construction which involves many chemicals that may be hazardous or may have potential health risks. When undertaking a home building project there is always a temptation to jump straight into the project without carefully familiarising yourself with the health and safety messages that are so important for many of the products used.

Making sure that you are well informed on health and safety issues, the properties of the materials you are working with and the recommended techniques for their use will go a long way toward ensuring that you end up with a quality boat.

Extensive information on product specifications, materials data sheets and health and safety messages are available from the web sites of many composite materials suppliers. A number of these site also include detailed "How to" information on composite construction. These include:

[Fibre Glass International](#)
[ATL Composites](#)
[West System](#)
[Epiglass](#)