Marine Plywood

2008 update

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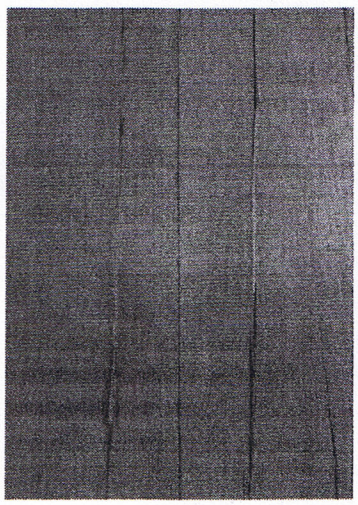

Each year, BoatCraft Pacific has published a warning about the misconceptions surrounding the term marine plywood, together with information on the plywoods currently available. Here's the 2008 update of the information.

MANY countries publish standards for manufacture of plywoods, including marine plywood. Marine plywood is the highest quality grade of plywood manufactured. The only standards having practical relevance to us as consumers are the Australian/New Zealand Standard AS/NZS2272, 1996, and the British Standard BS1088, 1966. I'll describe their differences and similarities later.

The first thing consumers must realise is that any standard is legally enforceable only within its country of origin. Thus as a quality guarantee, AS/NZS2272 is only enforceable in Australia and New Zealand, and BS1088 is only enforceable within the British Isles.

For some historic reasons, BS1088 has come to be regarded as an international standard which indicates that, worldwide, a plywood sheet so branded will meet marine requirements. While this belief is valid within UK, regrettably it is not so elsewhere. Because there is no enforceability outside UK the sad fact is that many Asian manufacturers appear happy to apply the mark BS1088 as a brand rather than as a statement of quality, with the result that quite inferior products are now widely available on the market, showing poor bonding, splits and other defects in both face and core veneers, all in the name of 'marine plywood'. Typical sheets are shown in the photo.

There are, however, one or two reliable manufacturers. For example, at BoatCraft Pacific, we have sold Wayang brand Pacific Maple marine plywood for nine years, and in that time have only had two instances of any problems with sheet quality. In contrast, whenever we have attempted to obtain Gaboon (Okoume) marine plywood, now made in Asian countries, we have rejected up to 75% or more of the sheets.

So what do the standards specify, and what are their differences ?

Firstly, while BS1088 specifies that the timber selected should be a moderately durable species, it also permits the non-durable Okoume species (which is the proper name for Gaboon) to be used. AS2272 only permits timbers to be selected from a particular list of species, and in particular specifies that the plywood must comply with a minimum stress grading of F14, which means that it must meet a minimum value for its stiffness and breaking strength. No other marine plywood in the world is made to comply with any such minimum strength value, and as a result we regard Australian marine plywood as the Rolls Royce of all plywoods. For comparison, Gaboon plywood rates about F8, Pacific Maple rates about F11. For most boat building applications, however, it is not necessary to use as high a stress grading as F14 - just like Holdens and Fords will get you from A to B just as well as a Rolls.

Both standards similarly detail the qualities of veneers permitted in the sheets. Face veneers must be free of open defects other than small sound 'pin' knots. Gaps are not permitted. BS1088 allows 'occasional closed splits', while AS/NZS2272 specifies not more than two filled grain splits per sheet up to 3mm wide by 450mm long. Core veneers are permitted to have sound knots, as well

as edge gaps up to 0.5mm under BS1088, or up to the veneer thickness with a maximum length of 25mm under AS/NZS2272. Overlaps in core veneers are not permitted. We find these gaps and overlaps to be the most frequent differentiation between complying and non-complying plywoods.

The adhesive used in all plywood manufacture is waterproof phenolic type WBP. Regular production sampling and testing is required for waterproof and adhesion qualities by both long term immersion and by 72 hour boiling. There should be no adhesion failures.

All marine plywood must be branded with the following details: manufacturer's name and country, 'Marine Plywood', the Standard number, the veneer type or quality, and adhesive grade. It is up to the manufacturer to implement a suitable quality control system for his production. Within the country of jurisdiction, this is monitored by an independent authority, in UK by the British Standards Institution, in Australia independent monitoring is carried out by the Plywood Association of Australia. As stated above, there is nothing to stop manufacturers in other countries from usurping the use of these standards, without any form of control or supervision whatsoever.

It is fair to point out, however, that any system of quality control of mass production is a statistical exercise. 99.9% of production may be excellent, but that still leaves a few sheets which might not comply, and escape the net. If you are unlucky enough to buy some of them, don't reject that brand outright, ask your supplier to investigate and have them replaced. If you still get dud ones, then, yes, never get them from that source again. Better still, avoid the problem by making your purchases from a supplier who is fully experienced in handling that particular product, who understands your particular application, and exerts quality control over what he supplies.

There are two other myths about plywood that we should dispel.

Firstly, that 'marine' plywood means it does not rot. There is no plywood manufactured today using truly durable or rot resistant timbers. In fact identical timbers are used in both marine and exterior plywoods, such as Hoop Pine, Oukoume, and Meranti.

Secondly the myth often spread by plywood salesmen that 'exterior plywood is just as good as marine'. It most certainly is not, provided you're comparing plywoods made by a reputable manufacturer.

While both plywoods use the same waterproof glue, the difference lies in the quality of the veneers. As mentioned above, marine plywood is made from high quality veneers, with tightly specified limits to knots and splits. Exterior (and structural) plywoods are permitted to have face veneers of reducing quality, from A grade down to D grade. A grade is fine sanded and of quality similar to that used in marine plywood. D grade is unsanded, and admits open holes to 75mm diameter, unlimited knots, large patches, splits up to 15mm across and half the length of the sheet. I describe it as knot holes held together with strips of veneers.

Core veneers in all grades of exterior plywood may have unlimited defects, open edge joint gaps up to 10mm wide, and with unlimited overlaps. Exterior plywoods up to 9mm thick may be only 3-ply.

Exterior plywoods are always graded and branded with the quality of veneers used on the front and back faces. Thus, A-A is top quality, and is almost as good as marine. If you can get it, it would probably cost the same. Commonly available exterior plywood is B-C or B-D grading. C-D is only packing case plywood.

It's regrettable that, in the past year, with more and more products being made in Asian countries, there has been a marked tendency for the standard of quality control to be reduced, and we are seeing more sheets of inferior products being marketed as marine plywood. The conclusion is that, if you want absolutely reliable quality, then you should buy plywood stamped with the Australian Standard mark AS 2272. Unfortunately, it will be considerably more expensive, and is heavier, than other plywoods. Lighter weight and lighter cost plywoods complying with marine standards are available from some suppliers who are conscientious about the products they sell. Unfortunately, there are other suppliers who only aim to sell the cheapest, regardless of its quality.

You need to inspect closely every sheet you buy, checking both faces as well as the veneer edges. And if you are one of those who insists on saving 'a ha'porth of tar' by using exterior plywood on your boat, reflect on all those possible strength reducing defects you are introducing into the structure with your plywood. It's your call. ■