

MARINE PLYWOOD 2009 UPDATE

By

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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 2009 update of the information.

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 and more sheets of inferior products being marketed as marine plywood. Many mills have shut down, or no longer have timber available to them. At home Norply's mill has been burnt down. We have been struggling to maintain quality of our supplies, having recently rejected 3 full packs of ply from our normally reliable source due to non conformance with veneer thickness and fibre balance specifications.

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, as Australian plywood is almost universally manufactured from locally grown Hoop Pine. Lighter weight and lighter cost plywoods such as Okoume/Gaboon or Pacific Maple are made overseas and are not subject to our compliance regime.

Suppliers who are conscientious about the products they sell will attempt to segregate sub-standard products. Unfortunately, there are other suppliers who only aim to sell the cheapest, regardless of its quality.

Okoume or Gaboon plywood has, in the past, been recommended as a light weight plywood, and Hoop Pine has been the heaviest. The weight of many of the imported plywoods appears to have increased, perhaps other timbers are now being used in their cores and the named timber is being restricted to use as quite thin face veneers. Hoop Pine is now of comparable weight in many cases.

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 Standard AS/NZS2272, 1996, and the British Standard BS1088, 1966. I'll describe their differences and similarities later.

The first thing consumers must realize 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 U.K., regrettably it is not so elsewhere. Because there is no enforceability outside U.K. 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.



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 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. Open gaps are not permitted. BS1088 allows “occasional closed splits”, while AS/NZS2272 specifies not more than two filled grain splits per sheet up to 3 mm wide by 450 mm long. Core veneers are permitted to have sound knots, as well as edge gaps up to 0.5 mm under BS1088, or up to the veneer thickness with a maximum length of 25 mm 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 U.K 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 durable or rot resistant timbers. In fact identical timbers are used in both marine and exterior plywoods, such as Hoop Pine, Okoume, 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 who is prepared to conform to the relevant standards.

While both plywoods use the same waterproof glue, the difference lies in the quality and number 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 75 mm diameter, unlimited knots, large patches, splits up to 15 mm 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 10 mm wide, and with unlimited overlaps. Exterior plywoods up to 9 mm 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.

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.

TYPICAL PLYWOOD SHEET WEIGHTS			
SIZE	PACIFIC MAPLE	GABOON/ OKOUME	HOOP PINE
3 mm	-	3.4 – 3.7	3.3 – 3.5
4 mm	7.2 – 7.9	6.6 – 6.8	6.5 – 6.8
6 mm	11.4 – 11.6	10.0 – 10.6	11.9 – 12.3
9 mm	17.7 – 18.7	14.0 – 14.3	14.9 – 15.1
Pacific Maple & Gaboon sheets 2440 x 1220 mm Hoop Pine sheets 2400 x 1200 mm			