

THE USE OF BASSWOOD IN MODEL CONSTRUCTION

by Tom Arnold

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Let me begin by saying that basswood is fabulous stuff. I began using it quite awhile ago when I built a 24" span Fairey Firefly for the World War II Combat event in the 1988 FAC Nats. Sheet 1/32" basswood was cut into 1/16" wide strips with a steel straight edge (balsa strippers cannot handle basswood) and it was used as stringers and for making laminated tail surfaces, wing tips and spars. It worked magnificently and I could not be happier with it as a replacement for balsa in certain areas of model building. I broke no stringers due to rough handling during the construction phase as I usually do. Sanding was so much easier as again no stringers snapped and no stringers got "eaten thin" and subsequently weakened by the sanding process.

After covering the Firefly, the basswood did not pull in either, giving that wavy "starved horse" look to the fuselage. The basswood also had enough rigidity to hold its position against the pull of a tight covering when one side of the stringer had tissue attached but the other side did not. However, all of the above was really to be expected. After all, basswood is three times as heavy as the hardest balsa. The crucial thing was the final weight. While I hooked my framework up to a gram scale, it was not without a bit of anxiety. While the strength was certainly there, was the price (added weight) going to be too high? As the needle on my scale mockingly swung back and forth, I wiped the nervous sweat off my lip. When the pointer finally settled on the magic number of 40 grams, I was truly amazed. Here I had a covered, doped framework with a sheeted nose and a 111 sq. in. wing area for a mere 40 grams! This may not be impressive to many expert builders in the hobby, but for me, who normally builds "lead sleds", this weight was almost unnerving. After checking my scale and assuring myself it was indeed working, I popped a cold beer in celebration.

After a bit of reflection, I think I have found basswood's two major strengths.

(1) It is heavier but stronger than balsa much like aluminum is heavier but stronger than wood. Just as full size aircraft moved from wood construction to thin metal and experienced a weight savings, so did I move from wood to "metal" (the basswood) and experienced not necessarily a weight savings but greater strength for the same weight.

(2) Basswood is more consistent in its strength than balsa. Balsa has to be very carefully selected first by weight then by cut to get strong but light stringers. To be quite honest, I find it very difficult to get consistently good stuff at the hobby shop. It's much easier to just pick the lightest sheet of basswood from a stores collection as its strength is so good that any cut is okay.

As a postscript, I feel the **wise** use of basswood is the key. Balsa remains the wood of choice for bulkheads, for stringers not bearing side loads (as in "cracked" wing ribs) and for areas in which bulk was required as well as strength such as leading edges and nose fill. In the Firefly I used balsa in the middle of certain laminations such as the wing trailing edges. I felt that basswood would hold a sharp edge better when the trailing edge was sanded down. I used balsa as the outside lamination on the tail surfaces to allow a rounded edge to be sanded easily. Finally, I also discovered that there were a number of uses for 1/64" basswood while building the Firefly. As models get smaller, 1/32" sheet is really too thick, as a square cross-section stringer is not as strong against side loads as a rectangular one of the same weight. Since it's very hard to cut less than 1/32" with a steel straight edge and razor, I came up with a sanding jig of sorts to sand 1/32" sheet down accurately to 1/64" thick.

I used a piece of old kitchen counter top (formica covered) as the jig base on which I put down two pieces of .015" diameter music wire parallel to each other and wide enough apart to accommodate a piece of 1/32" basswood sheet. The ends of the music wire are taped down firmly so that it doesn't roll around. I then lay the basswood between the two wires and sand it down with a sanding block big enough to straddle the music wires. When the wood is sanded down to the right thickness, the block will start riding the wires and you will know you've gone far enough. Now you can slice your super skinny stringers from the sanded sheet. The sanding jig is quite versatile as any diameter of wire can be used to obtain varying degrees of thickness in the wood you sand.

(Via the Scale Staffel, newsletter of the San Diego Scale Staffel Model Airplane Club)