All About Balsa – Part 2

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In the first half of this tutorial we covered what balsa is, where it comes from and the different cuts and grades. In part 2 we will be looking at tips on how to work with it and when and where to use it.

Selecting Balsa for your Model

Most hobby shops have a large rack of balsa sheets, sticks, and blocks that you can choose from if you are going to build a model airplane from scratch. Unfortunately, because of the nature of balsa, the actual weight of each piece of wood of the same size can vary slightly. When you select the pieces you want to buy you should keep their final use in mind. Logically one should select the lightest grades for the lightly stressed model parts (nose blocks, wingtip blocks, fill-ins, etc.) and the heavier grades for important load bearing parts of the structure (spars, fuselage stringers, etc.). To a large extent, this selection is already partly done for you. Most balsa suppliers purposely cut the lightest raw balsa into blocks, and the hardest raw balsa into sticks. Sheets are cut in the entire wide range of density.

To give you an idea how much common sizes of balsa can vary in weight depending upon the density of raw stock it was cut from, the following formula has been developed. From it, you can calculate the weight of any sheet, block, or stick of balsa as long as you know the density of the stock. Typical densities range from 6 lbs/ft³ to 16 lbs/ft³.

$$\text{Wt (oz)} = \frac{\text{Thickness (in)} \times \text{Length (in)} \times \text{Width (in)} \times \text{Density (lb/ft}^3\text{)}}{108}$$

Formula for Calculating Weght of Balsa Member

With this tool in hand you can select the appropriate weight balsa in your stock for the job at hand. So to summarize you want to use hard/heavier balsa where strength is needed and soft/lighter balsa where weight savings is needed and strength is not required.

Tools of the Trade

Balsa is a very "friendly" wood to work with — light and soft compared to most other woods, easily worked into so many things. You don't need heavy-duty power saws and sanders like you would if working with a hardwood. You really just need seven simple hand tools for the majority of the work to be done. If you are just starting to build, here are the tools that I recommend you get:

X-ACTO No. 1 knife with No. 11 blade for general cutting
http://www.xacto.com/Product/x3601

X-ACTO No. 2 knife with No. 26 blade for carving
http://www.xacto.com/Product/X3202

The hobby knifes will work well for cutting balsa sheets and sticks up to 3/16". Always keep replacement blades on hand, the blades do wear our and a dull blade can make it impossible to do a good job. Remember those blades are SHARP so BE CAREFUL!

Zona Razor saw for cutting thick sizes of wood
http://www.zonatool.net/razor-saws.html

The Razor saw is used for cutting thicker balsa and will cut it very fast and efficiently. Do not waste your money on cheap razor saws. Get the Zona brand and they will last quite a while. Also NEVER use them to cut anything but balsa or medium hardness wood.

David Razor Plane for shaping
http://www.skykingrcproducts.com/accessories/david/david_razor_plane.html

This is in my opinion the FINEST razor plane on the market it will last for years and gives out big hands something to grab on to while planning. Again, don't skimp here and you will be satisfied for years with the tool.

18 inch Metal Ruler
http://www.staples.com/Westcott-18-Stainless-Steel-Ruler/product_104000

X-ACTO Triangle or Square Ruler
http://www.xacto.com/Product/X7725

http://www.xacto.com/Product/X7726

These rulers and squares are needed cut your balsa and measure what you need. Don't cheap out and use plastic rulers. The hobby knifes will bite into the cheap plastic rulers.

Balsa Stripper for cutting your own sticks
http://www.hobby-lobby.com/balsa_stripper_2482_prd1.htm?pSearchQueryId=1760491

With this tool you can cut your own sticks and can save enough to justify the cost of this tool in one or two projects! There are several available on the market but I have found the one from hobby-lobby.com is by far the best and easiest to control when cutting.

If any of these links are no longer working simply go to google.com (or your favorite search engine) and search for the item.

Sanding Balsa

Sanding balsa has only ONE important rule… Let the sandpaper do the work. As silly as that sounds it's very true. I see to many folks press hard on the wood sanding and this causes slight groves and uneven surfaces to form.. Sanding is NOT a fast operation. Take your time and do it correctly the first time so you don't have to come back and redo it again. Use some 80 grit sandpaper on the block during general construction. And 150 to 220 grit for finishing the wood.

Sanding Tools

In addition to the cutting tools, you will need an assortment of different size sanding blocks. These are indispensable tools for model construction. You can buy ready-made sanding blocks or make your own. The most often used general-purpose sanding block in our model shop is made simply by wrapping a full 9" x 11" sheet of sandpaper around a 3/4" x 3" x 11" hardwood or plywood block.

Here is a shot of some homemade sanding blocks. You sure don't have to put this kind of effort into making some but if you are going to be building a lot a nice assortment of homemade or purchased sanding blocks sure does help around the shop!

Another handy sanding tool to have can be made by gluing some 80 grit sandpaper onto a 24" or 36" long piece of aluminum channel stock. These are also available premade with the sanding paper already adhesive backed from Great Planes.

http://www.greatplanes.com/accys/gpmr6170.html

These long sanding bars are very helpful for shaping leading and trailing edges, and other large pieces, accurately. Last but not least, glue sandpaper onto different sizes of scrap plywood sticks and round hardwood dowels. These are handy for working in tight places and for careful shaping where a big sanding block is too hard to control.

Another thing to keep in mind is making "soft" sanding blocks from Styrofoam. These help you on both flat surfaces and slightly contoured ones. Simply cut the foam to shape and use some contact cement to attach the paper to the foam. They work great!

Use anything you can find to get the job done in tight places. Popsicle sticks with sand paper glued to them, emery boards, etc. The limit is only your imagination. Below is a picture of just a few of the sanding tools I have purchased and made. These make up about ¼ of my total "stash" of sanding tools and you will build up a great cache of them also over time.

I hope this tutorial has helped you to understand what tools you will need to get started in building. Be sure and check out some of the great threads on RCSCALEBUILDER.COM for more great tips and tricks from the world's best builders.

If you have any questions feel free to contact me using the "Contact Us" link on RCSCALEBUILDER.COM.

Happy building!