

## ORCA 2012 MATERIALS LIST (edited 9/14/13)

Nelson Hobby, [nelsonhobby@gmail.com](mailto:nelsonhobby@gmail.com) has Harley's original canopy plug/mold. Inquire about availability & cost for molded canopies, pitcheron cam pairs & steel pivot rods. (Mentioned below.) Other commonly available hobby or hardware items needed are as follows:

**HARDWARE:** 12" of 11/32" OD brass tube. All-thread 2-56 steel rod for pushrods. A 10-1/2" piece of 5/16" steel for pivot rod. About 9" of 1/8" music wire. 4 Dubro #181 package. Two 1/8" wheel collars. Two 6-32 x 1/4" socket head machine screws for setscrews. Allen or ball socket wrench for those. Two 6-32 thin-walled threaded brass inserts & 6-32 x 1/2" pan head nylon bolts to secure stab. A #30 & a 11/32" bit.

**NON-BALSA WOODS:** In birch ply: (1) 6" x 36" x 1/16" for fuse slab sides, (2) 1' x 4' X 1/64" sheets for wing skins. (1) 5 ply, 1/8" x 6" x 12" to laminate for two 1/4" endcaps and to make the two fuselage formers. (1) 12" x 24" X 1/32" for the 16" stab core & fuse bottom sub-decking. (1) 3/4 sq. x 48" stick of bass for drilled blocks for fin threaded inserts & wing drive pins. Also to cut 3 pieces to join s/b/s for the hard contoured fuse bottom front end. Also to cut 4 pieces to join to make the hard nose block. (1) 1/4" x 3/8" x 12" piece of bass or spruce for servo rails. Two 3/16" x 3/8" x 36" strips of spruce, bass or very hard balsa for wing LE's. If you are into vacuum bagging overall cloth skin to foam cores, LE wood may omitted, if preferred.

**IN BALSA:** AAA, graded light, medium & hard. For the bottom behind the bass block, get a hard 3/4" x 3" x 12 block". Behind it, use light balsa. For there & the fin, preferably use 5/16" balsa. Get a light 3" x 36" piece. If available, for the fin, use ultra-light, 4-6 pound, so called "contest balsa". Scrap of 1/16" balsa for fuselage doublers, stab platform & slot facings the wing tubes go between. For doublers over the ply slab sides, get (2) medium sheets of 1/8" x 3" x 36". (1) pair of medium 1/8" x 3/8" x 36" strips for wing sub-LE's. (1) Light 1" x 3" x 36" plank for the fuselage top. (1) light 1/8" x 4" x 48" for stab top & bottoms.

**TRIANGULAR STOCK (TS):** Stock TS is usually the wrong size or density for this application. See page 6, GCF#1 about making a tool to hold square strips to cut into triangular stock with a band, jig or scroll saw. Get a sheet of light & medium 5/16" x 3 x 36" balsa. Rip into 5/16" square strips as stock. Use lighter stock behind the rear former.

**MISC:** Get a linear yard of 36" wide 1.4 oz. plain weave glass cloth for the fuse. Lighter cloth, 1/2 oz. or so, is preferred for the fin & stab. If you intend to optionally glass over the ply wing skins, you'll need light cloth for that. You'll then need a couple of 36" wide linear yards of it, all total. If you have bagging equipment, you probably have thin epoxy with which to glass over the fuselage/tail. If not, the thin, Sig Polyester Finishing Resin can be used, but it eats foam. Lacking bagging equipment, the 1/64" ply skins can be attached to the wing cores with Dave Brown's Southern's Sorghum, a water-based contact cement. A 7 oz. bottle is lots. Use cheap, throw-away, metal-handled "acid" or "epoxy" brushes on resins. Acetone/nail polish remover is a solvent for polyester & epoxy resins, but eats foam. Other useful adhesives include instant CA, CA+, 5 min. epoxy, common yellow wood glue, etc. If you are into vacuum bagging overall CF & glass cloth to foam cores with epoxy resin, Mylar carriers, etc. use your preferences to skin the wing.

**WING CORES:** Anker Berge-Sonne, [bostonsearover@gmail.com](mailto:bostonsearover@gmail.com) offers superb 60# CNC cut cores cut in 2 sections that are easily joined as ORCA instructions detail. See root/tip airfoils on plans. Cores are available (1) Trimmed 5/16" for sub-LE/LE & 1/64" ply skins as plans show. (2) Untrimmed for those who know vacuum-bagging & prefer overall glass/CF cloth skin without a wood LE.