

# PEN MAKING 101

After reviewing these instructions we recommend viewing one or more of the video links from our web site. If you are new to pen making the videos will help immensely.

## Tools

**Lathe** – New or Used

**Mandrel** – A pen mandrel, fits between the centers on your lathe and holds your pen **Blanks** - for turning.

**Bushings** – Bushings, the appropriate size for your pen kit.

**Drill Bit** – Appropriate size for pen kit

**Drill Press** – or a hand drill with a good steady jig

**Table or Band Saw** – Bench top tools work just fine.

**Barrel Trimmer** – For squaring blanks

**Clamps or Bench Vice** – For pressing the parts together

## Parts and Supplies

Pen Kit(s)

Pen Blanks – Start with wood (Cocobolo is a great first time wood)

Glue – usually CA (superglue), Polyurethane Glue, or Epoxy

Sandpaper – (150 – 600 grit)

### Step 1 – Prepare the blank

The first thing you need is a "blank", (a piece of material you use to make the pen out of). The most common blanks are made from wood, or acrylic. The blank will usually be  $\frac{3}{4}$ " x  $\frac{3}{4}$ " square and around 5" long. You can purchase pre-cut blanks, or they can be cut on a table or band saw from wood in your shop.

### Step 2 – Cut the blanks

Next, you need to cut the blank to length for the pen. (Read the instructions that came with your pen kit for the exact length.) Cut the blank  $\frac{1}{4}$ " longer than the specified length to allow for squaring both ends. Before cutting, mark the blank so you can match the grain pattern when assembling the pen.

### Step 3 – Drill the blanks

Now you need to identify the center of your blank for drilling. To do this, draw an X from one corner to the opposite corner. The center of the X is the center of the blank! Make sure that your drill press table is perfectly perpendicular to your drill bit. It is very important that you drill the blank accurately. We recommend using an inexpensive drill press vice. (Harbor Freight \$12)

**Note:** Drill slowly and pull the bit out often to remove chips. You can ruin a blank by drilling too fast.

#### **Step 4 – Glue the blanks**

Now you're ready to glue the brass tubes into the blanks. Test fit the tubes to ensure that they slide in easily. Rough the outside of the blanks up with a coarse grit sandpaper to ensure proper bonding. Start with polyurethane or epoxy glue and move to CA after you have a little experience with gluing. Coat the tube with glue and slide it in the blank with a twisting motion and set them on wax paper to dry. Try to keep glue out of the ends of the tube. (A pen tube insertion tool makes this easy)

#### **Step 5 – Square the ends**

Now that you have cut the blanks to length, you need to square the ends. **THIS IS VERY IMPORTANT!** If the ends are not perfectly square, the pen will show gaps where the blank meets the fittings. The easiest way to do this is with a barrel trimmer. Trim only to the brass tube. If you take off too much of the brass the pen may not work properly.

#### **Step 6 – Turn the blanks**

After the glue dry's, assemble the blanks on the mandrel with the proper bushings. Tighten, but do not over-tighten the nut on the mandrel. Now secure the mandrel in your lathe. Position your tool rest as close to the blanks as you can without making contact. Turn the blanks by hand to ensure they will not contact the lathe. Set the lathe to its highest speed.

To begin turning, use a  $\frac{3}{4}$ " gouge to bring the blanks to within a  $\frac{1}{16}$ " of the bushings. Be careful not to go too far! Re-position the tool-rest closer to the blanks as you turn. Now switch to a skew chisel to finish off the blanks. If you are not comfortable finishing the blanks with a skew chisel, you can use a  $\frac{1}{4}$ " thick board wrapped in sandpaper to finish the job. Be careful not to sand the bushings this will reduce their size over time.

#### **Step 7 – Sand**

Sand the blanks starting with 150 grit and work your way thru to 600 grit, until you reach a smooth fine finish.

#### **Step 8 – Finish the blank**

There are many different pen finishes available on the market. For wood we recommend using a friction polish to begin with. Then move to other finishes as you gain experience. You can also use spray lacquer available at most Home Centers.

#### **Step 9 – Assemble the pen**

Refer to your pen kit instructions. Different kits contain different parts and are assembled in different ways. For pens that push together a bench vice or "Quick Grip" clamp are excellent.