

Spark Makerspace Woodshop Class: Laminated Mallets

This class is aimed at the complete woodshop novice. Students will build a laminated wooden mallet using oak and epoxy. At the end of the class, students will take home their mallet. As part of the class, students will be signed off on the compound miter saw and the bandsaw, and will get an introduction to the drill press, router, and table saw.

Materials Required:

- 1x6x18 hardwood; red oak will be used in this class
- 5 minute epoxy (standard wood glue can be used if the head is allowed to dry overnight before fitting the handle)

Tools Used:

- Miter ("chop") saw
- Table saw
- Bandsaw
- Router table (with roundover bit)

Class Outline:

Session #1 (3 hours) :

- Introduction and tools
- Head
- Handle
- Assembly



- 1. At the chop saw, cut 18" of 1x6 red oak
- 2. The instructor will set up the table saw, and assist in ripping the oak into a 3 inch strip
 - a. This will be the head of the mallet. The offcut, a little over 2 inches wide, will be made into the handle
- 3. Cut the 3 inch wide board into the four pieces required for the head
 - a. Set the chop saw to 5 degrees
 - b. Cut both ends of the board to 5 degrees
 - c. Measure 2 inches from the point of the 5 degree edge on each end
 - d. Cut the 2 inch pieces off each end
 - e. Measure $5-\frac{1}{2}$ inches from each end of the remaining 3 inch wide board
 - f. Cut the two $5-\frac{1}{2} \times 3$ inch blocks
- 4. Mark the head parts for assembly
 - a. Take one of the $5-\frac{1}{2} \times 3$ inch blocks, and mark a middle line $2-\frac{5}{8}$ from one end
 - b. Alternatively, the attached template sheet can be cut out and used as a position guide
 - c. This will be the reference block for assembling the rest of the head



- 1. Pretend that the numbering system on this handout isn't a little screwy. Shouldn't this be #5?
 - a. Yes, but Google Docs is a little special. Just roll with it.

2. Glue the head together

- a. Wearing gloves, mix equal parts of the resin and hardener with a popsicle stick for at least 60 seconds
- b. Spread a thin layer of epoxy on each flat face of the tapered head pieces
- c. Line the points on the tapered head pieces up with the marked lines on the larger reference block, as shown at the top of the page
- d. Place the second $5 \frac{1}{2} \times 3$ inch block on the other side of the tapered head blocks
- e. Gently clamp all three layers together, taking care to ensure the tapered blocks don't shift position as the clamps are tightened
- f. Leave the assembly alone for at least 30 minutes; an hour is even better
- 3. Cut out the handle

d.

- a. Cut out the template for the handle
- b. Use a glue stick to stick the template on the 2 inch wide piece of wood left over from the table saw cut
- c. Using a bandsaw, carefully cut along the lines of the template
 - i. If new to the bandsaw, leave a little room outside the lines which can be taken off with sandpaper in the next step
- d. Sand the handle on the faces you just cut
 - i. Make sure to use a sanding block to keep the faces as straight as possible, particularly in the tapered portion of the handle
- e. Use a punch or awl to mark the center of the hole at the base of the handle
- f. Use the drill press to drill a $\frac{1}{4}$ inch hole in the handle
- 4. Round over the handle and head
 - a. Once the glue is set, gently slide the handle into the head
 - b. Mark the position of the bottom of the head on the handle
 - c. Using the router table and a ¹/₈ inch radius roundover bit to round all edges of the handle below the head
 - i. Start the cutter bearing at the line, and run it all the way around the handle until you reach the same line on the other side
 - ii. Flip the handle over and repeat on the other side of the handle
 - Trim the ends of the head with the chop saw, if required
 - e. Round over all edges of the head
- 5. Assemble the mallet by slide the head onto the handle, and seating it with a gentle tap

Mallet Finishing

A common finish for woodworking tools such as this mallet is BLO, or boiled linseed oil. This finish soaks into the wood before drying, which gives a good feel for the hands as well as a finish that won't chip or flake off the striking faces. However, there is a distinct odor that many non-woodworkers find unpleasant. There is also a potential fire hazard - rags used to apply BLO must be spread out and allowed to dry before disposal. Oil soaked rags dumped in a pile may spontaneously combust. For both odor avoidance and fire prevention, BLO is not currently allowed in the Spark shop.

Students will take home an unfinished mallet at the end of the class. They may choose to finish it at home, or leave it unfinished. Wooden mallets left without a finish may have a slightly higher chance of splintering, but the wood will also age naturally and pick up a patina with regular use.

Mallet Uses

Wooden mallets have a number of uses around the shop, most commonly driving chisels or taping wooden joints together. A wooden mallet should never be used to strike metal parts, or the head may be damaged. Used properly, a wooden mallet will last many years; however, they do wear out and may need to be replaced in the future if used heavily.

Other Mallet Methods

The design used in this class was developed to be simple and easy for the novice woodworker. Material and methods of building can both be changed. Any number of hard woods will work for mallets, with Osage orange being a traditional favorite in America.

Mallet heads can be laminated, as in this class, or carved out of a single large piece, with a mortise drilled and chiseled to match the handle size and angle. For a heavier mallet head, steel rods or lead weights may be added during the build.

The handle of the class mallet is restricted in size and style as all of it must pass through the hole in the head. By using a tenon and wedge system, as shown to the right, the handle can be made in almost any shape. When building the head for such a handle, the 5 degree angles used in the class should be limited to 2 degrees so the handle tenon does not have to flex too much to fill the eye of the head. Wedges should be cut around 3 degrees to provide sufficient compression to the joint.

Other forms of mallets can be turned on the lathe, forming a round head and handle from a single piece of wood. These are commonly used with carving chisels.



Spark members with approved shop access may use the shop to create items, like those described in this tutorial, at any time. If you have any question on methods, materials, or tools, please contact the Spark Woodshop Leads at: WOODSHOP@SPARKMAKERSPACE.ORG

Spark Woodshop Laminated Mallet Parts Template

