



Spark Makerspace Woodshop Class: Sharpening Workshop

Students will be introduced to the basics of woodshop sharpening. The instructor will discuss the available methods and techniques, and introduce the sandpaper-on-glass method available in the Spark woodshop. Students will practice by bringing one of the Spark woodshop's dull chisels back to a razor sharp cutting edge.

SAFETY FIRST!

The tools used in the sharpening workshop may be “dull” by woodworking standards, but they can still cut you! Keep the following safety rules in mind:

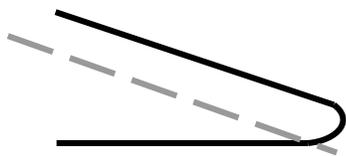
- 1) If you drop it, let it go. Step back to keep your hands and feet clear of falling tools
- 2) Always sharpen (or cut) with the sharp edge pointing away from your body
- 3) If you test the edge with your finger, always go across the edge, not along it

Types of Sharpening Surfaces

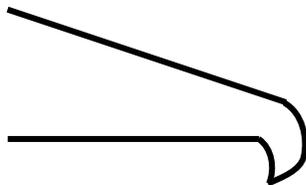
Type	Lube	Speed	Cost	Notes
Wet Stones	Water	Fast	\$\$	Needs: presoak, regular flattening
Oil Stones	Oil	Avg	\$	Oil can contaminate wood
Diamond Plates	Either	Fast	\$\$\$	Quality counts
Sandpaper	Either	Avg	\$ / \$\$\$	Low start cost, high consumables cost
Power	None	V. Fast	\$\$-\$\$\$\$	Types and consumables vary

Note: Grit ratings may not have the same meaning between surface types, or even different brands of the same type. Different methods are used to characterize the abrasive particles.

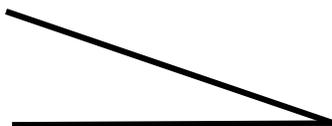
Stages of Sharpening



Dull: the edge is rounded over. The dotted gray line shows where metal will be removed

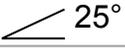
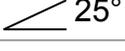
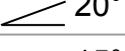
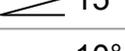
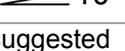


Burr: The top bevel has been sharpened enough to raise a wire edge, or burr



Sharp: The burr has been removed, and the edge is sharp

Sharpening Bevel Angles

Scissors		70°
Planes and Chisels		25°
Pocket Knives		25°
Kitchen Knives		20°
Paring or Fillet Knives		15°
Hobby Knives (X-Acto)		10°

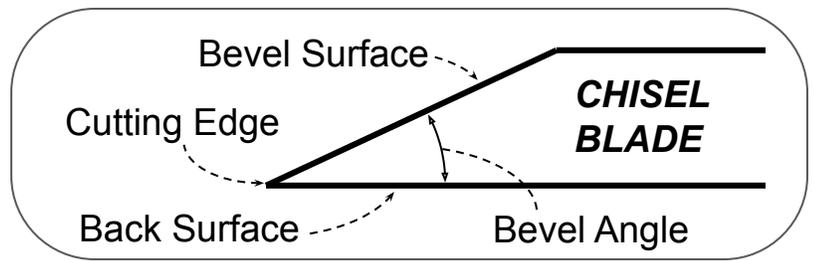
Bevels may vary from the suggested angle depending on application. A sharp “wrong” angle is better than a dull “perfect” angle.

Knife bevels are measured on each side, so the total angle between the bevels on a pocket knife would be 50°.

More on the back!



THE PROCESS OF SHARPENING



Start with the coarsest sharpening surface for the job, and work towards towards the finest. For each stage of sharpening:

- 1) Lubricate the sharpening surface
- 2) Hold the bevel of the chisel flat on the sharpening surface with light, consistent pressure
- 3) Grind the bevel until a burr is raised on the edge
- 4) Flip the chisel over, and lay the back flat on the sharpening surface
- 5) Keeping light, consistent pressure, remove the burr with a few strokes of grind
- 6) Move to a finer sharpening surface and repeat

What Grit?

Spark uses sandpaper in **320, 600, 1000, and 2000** grit in the shop. Grit ratings for oil, water, or diamond stones will vary by manufacturer.

For brand new chisels, a medium grit might be the appropriate starting point. For a quick touch-up the middle of the job, a fine grit may be all that's needed. For worn or abused chisels, start coarse. Don't be afraid to start with a coarse grit at any time, though - a little work on a coarse surface can save a lot of work on a fine surface.

Final Stage: The Strop

A woodworking strop is made by gluing a piece of leather to a flat board, and applying a polishing compound. Spark has several strops available in the woodshop, as well as a supply of green (chromium oxide) polishing compound, sometimes also sold as green jeweler's rouge.

To use the strop, place the bevel flat on the strop, hold the bevel down gently, and pull it through several strokes. Then place the back of the chisel flat on the strop, and do the same.

Notes and Tips:

- a) As long as the surfaces are flat, the grind method (push, pull, side to side, back and forth) will not matter
- b) To ensure that the entire surface is being sharpened, use a pencil or marker to color the steel. Sharpening will remove the color, and areas needing additional work will be seen
- c) The 1/8-inch closest to the cutting edge is doing nearly all the work - focus efforts there
- d) The first time a chisel or plane iron is sharpened, the bevel and back should be flattened.
 - i) A coarser starting point is recommended, to remove material faster
 - ii) Each stage should be ground until the scratches from the previous stage are not visible
 - iii) Changing grind methods and angle of travel between stages will make it easier to see when the previous scratches have been removed
 - iv) Instead of just a few strokes, Step 5 should consist of grinding the whole back surface until the back is flat and a burr is felt on the bevel surface
- e) The bench grinders at Spark should not be used to sharpen chisels. They will destroy the temper of the steel.
- f) Gouges and carving chisels with a convex back will use a fine curved or angled slipstone to break the burr