

# Cindy Drozda

"The Fine Art of Woodturning"

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## Safety (and other) metal working tips:

Always wear eye protection! This is serious! You only have one pair of eyes and they do a lot for you. Keep them working!

Protect your hands! Clamp the workpiece to the table or in a vise whenever possible. Remember that steel makes a very good cutter of human flesh, bone, and tendon.

Don't use your dust collector when cutting/grinding/sawing metal! You can start a fire, or an explosion!

Always use coolant and sharp tools. Using coolant will keep your tools sharp!

Any heat conducting fluid works as coolant. Using any kind of coolant is better than none. WD40, motor oil, salad oil, even water works! An inexpensive solution is a beeswax toilet gasket. A non-toxic solution is coconut oil. It is not a good idea to use volatile liquids such as acetone, lacquer thinner, gasoline, etc. The heat generated by cutting metal could start a fire.

Aluminum cuts and machines well at the same speeds and with the same tools as wood.

Steel does not cut like wood! Use slower cutting speeds, finer teeth, harder steel tools to machine steel.

Don't use the stone grinding wheel for aluminum and other non-ferrous metals.

Use a belt or disk sander to grind aluminum and non-ferrous metals

If you are planning to anodize your aluminum parts, don't use steel on the same de-burring wheel as the aluminum.

## Secrets to successful Silver Soldering:

Use the right solder and flux. Don't fail to use flux. Heat the flux, metal and solder up together so that the flux melts instead of boiling away or turning black. Apply heat evenly to the steel and not to the solder. Use a heat source capable of heating up the area to be soldered. Keep the heat source moving.

Do not heat the band saw blade to "bright red" when soldering. This will soften the steel too much. "Dull red" is hot enough to flow the solder.

Use a 45% silver content solder with cadmium for best results, and flux that is designed for silver solder (a blue paste). When using "cad-free" solder (a less toxic option), it is recommended to have 10% - 20% more silver content for comparable performance.

Silver solder is not intended to be "gap filling". Joints should fit closely.

Silver solder is not going to work on Aluminum. It will work on many types of steel, including stainless, and on brass and copper

## Suppliers:

<b>MSC Industrial Supply Co.</b> 800-645-7270 www.mscdirect.com General machine shop supplies, tools, material	<b>Speedy Metals</b> 888-744-4140 www.speedymetals.com metal stock in small quantities	<b>Shop Tools Denver</b> 800-443-7454 www.shoptools.com printed catalogue for \$10
<b>weldingsupply.com.</b> Esab 101 Right and Ready (Silver 45 coil), Item 1200-364 Silver 56 coil, 3/64	<b>airgas.com.</b> All-State #110 (Brazaloy) Blue Paste Brazing Flux	

Notice that the following are NOT on the list:

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Harbor Freight, Grizzly, Wal-Mart

With metal working tools, low quality is even more of a problem than it is with woodworking! If you want good results, buy good tools. Usually, at MSC, the lowest grade of USA made drills and cutting tools are at the bottom end of usable.