

# Broom Casting

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Direct casting is an easy, low-tech method of making beautiful freeform jewelry. In this article I will focus on using Sterling Silver and broom straw. This broom casting gives you a great stalagmite and stalactite effect. If you do larger pieces you will should bright burnish it to get a polish, and that is the most costly part, but I think it is money well spent, and can be used in other projects.

## Supplies

- **Silver:** I use silver scraps, or get a 1 oz. fine silver coin (.999) and add 2.5 grams of copper (I pay 35-50 cents over spot at a local refinery or coin store), or finally you can buy Sterling Casting Shot (about \$2+ over spot).
- **Crucible:** A block of wood (6 in. long 2x4), or a magnesium block, or a well used charcoal block. Make a little indent near one side to melt your silver in the wood or magnesium block.
- **Empty Soup Can:** To stand the bundle of straw upright.
- **Broom Straw:** Old straw broom, decorative broom straw from a craft store, long pine needles etc...
- **Dish Pan:** Or anything big enough for the straw to soak in water.
- **Rubber Bands**
- **Casting Flux:** Borax works fine for the 2x4, but is too messy for the magnesium block or charcoal block, there I use regular Casting Flux (it only uses a few granules to clean the molten metal). Optional
- **Torch:** Hand held propane torch will work fine or an acetylene & air torch. Magnesium blocks melt at 2000 deg., and acetylene & air torch flame is also around 2000 deg., so it will eventually melt the block.
- **Large Cup Of Water:** To extinguish the straw and cool casting.
- **Cookie Sheet:** Anything with a lip around the edge to catch the silver when you open the straw.

- **Silver Solder**
- **Soldering Flux:** For soldering.
- **Pickling Acid:** To clean the metal.
- **Copper Tongs:** A flattened copper tube will work. Flatten and bend, like tongs.
- **Baking Soda:** To neutralize the pickling acid.
- **Rotary Power Tool:** Smaller pieces you can just use a steel or brass wheel for a hand held rotary power tool, and some white diamond prepolish. (Optional if you bright burnish)

## Bright Burnishing Supplies

- **Small Rock Tumbler:** Flat sides inside preferable.
- **Steel or Stainless Steel Shot Mix:** Enough to fill tumbling drum 1/3-2/3 full. Seasoned with a little extra Pin Shot (stainless shot costs 3 times more, but doesn't rust).
- **Lapidary Soap and/or Burnishing Compound**
- **Abrasive Plastic Media Pyramids:** Medium & Fine (Optional, but will reduce bright burnishing time).

## Polishing Supplies

- **Polishing Cloth**

## Extras

Solder, Bails, Chains, Stones, etc... Wait until you are finished, and you have let your imagination loose.

## Let's Get Started

### Prepare The Straw

1. Bundle the straw (about 2-3 inch) in a rubber band.
2. Soak it in a pan of water for about 20 minutes.
3. Put bundle in the soup can and spread top end. The more the straw is spread, the larger and fatter the piece.

### Melt & Pour Silver:

1. Put some of your Sterling Silver into the bowl in the crucible (I like to use no more than a 1/3 oz. on each piece, and do several in a sitting).



2. Light the torch and begin melting. You will know if you need casting flux, if you have some bright glowing floaties on top of the silver when it starts to ball up. If needed, remove torch and add casting flux (a pinch of Borax or a few grains of casting flux), and then reheat.



3. When it starts getting fluid (it will jiggle when you can shake it), lift crucible to the top of the broom straw. While keeping the

torch on the metal, quickly tip and let the metal roll off the crucible.

**Important:** you have 3 visual levels of the metal.

**1<sup>st</sup> Crusty ball.**

**2<sup>nd</sup> Spinning,** this is actually the copper & silver separating, **this is when you pour.**

**3<sup>rd</sup> Boiling,** TOO HOT, it jumps around and looks like tiny fireworks coming off the metal, the metal is actually vaporizing. If it gets this hot you will have air bubbles in the silver that you won't see till you're done.

**Note:** I don't like to use a carbon rod on direct casting, but stirring with one will reduce air bubbles.

4. Set crucible down and pour water over the top of the straw to put out any fire and cool metal. It doesn't hurt to submerge straw in the same pan you soaked the straw in to make sure the metal is cool. If you are using a 2x4 you will need to drench it too.



5. Place bundle on the cookie sheet and take off rubber bands and look for the pieces of silver in there. The small pieces make nice accents for other jewelry.

### Finishing

1. Clean the pieces of all burned & unburned straw, you may need to reheat with the torch to burn it off excess. Be careful not to melt the small prongs.

2. Solder on a bail. And if you want, a crown or cup for a stone if you want.



3. Throw in an acid pickle to remove any dark oxidation on the silver. Pull out the piece with copper tongs and drop into the baking soda and water mixture to neutralize the acid. Then rinse.
4. Put a steel or brass wheel on your hand held rotary power tool, add a little white diamond prepolysh to the wheel and lightly work off any white residue left on the piece. You can skip this step if you bright burnish.

**Bright Burnishing:** Optional but better results.

1. **Steel Shot only:** Add ½ tsp. to 1 Tbsp. of burnishing compound, to your steel shot, and your pieces to the tumbling drum. Add enough water to cover shot. Tumble for 2-8 hours (depends on how much white residue you have).
2. **Abrasive Pyramids & Steel Shot:** Mix it same as above (except use lapidary soap for the pyramids), but tumble for 1 hour with medium pyramids, 1 hour with fine, 1-3 hours with steel shot. For a smoother texture double time with pyramids, more texture use only steel shot.

#### Reference:

Don Norris's Needle Casting: <http://pinneedlecasting.homestead.com/Main.html>

Jay Bown: <http://www.tech-inc.com/gcbook/>

And Many Other Good People

Thanks to Quartzsite Roadrunner Gem & Mineral Club for allowing me to photograph & use their equipment for this article.

3. **Drying Steel Shot:** If you use plain steel, rinse and put on cookie sheet, pop into a 250 deg. oven until dry. It will rust if stored damp!!!

**Note:** Vibrating Tumblers are faster, but finding one that can handle the weight of the shot is harder to find.

#### Polishing:

1. If you didn't bright burnish it, you will need to polish by buffing it with some zam.
2. When it comes out of the bright burnishing it is pretty well polished, but a good wipe with a polishing cloth will improve the looks.

#### Setting A Stone:



1. Put your stones in your setting. Small needle crystals & tourmalines look wonderful in the groves. You can set them with a little instant glue or epoxy.