Salt Casting

By Callie & Dennis Chapman, Tooele Gem & Mineral

Direct casting is an easy, low tech method of making beautiful freeform jewelry. In this article I will focus on using Sterling Silver and course rock salt. This salt casting gives you a great spiky, nugget effect (if you can set faceted stones, you have natural prongs). The disadvantage is you practically need to 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 magnesia block, or a well used charcoal block. Make a little indent near one side to melt your silver in the wood or magnesia block.
- **Empty Soup Can**
- **Extra Course Rock Salt:** Like you use for home made Ice-cream or water softeners.
- **Casting Flux:** Borax works fine for the 2x4, but is too messy for the magnesia block or charcoal block, there I use regular Casting Flux (it only uses a few granules to clean the molten metal).
- **Torch:** Hand held propane torch will work fine or an acetylene & air torch. magnesia blocks melt at 2000 deg., and acetylene & air torch flame is also around 2000 deg., so it will eventually melt the block.
- **Coffee Can With Water:** To drench the 2x4 after use, soak the salt off of the piece.
- **Soldering Flux:** To clean the metal, and 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.

Polishing Supplies

- **Polishing Cloth**
- **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 cost 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).

Extras

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

Let's Make Some Sterling Silver

Preparing crucible: If you use a 2x4 chisel or grind a small cup to melt your Sterling in. A screwdriver or key will work on the magnesia block.

Get some **Fine Silver** (shot or 1 oz. coin). Divide the weight of the silver by 12.5 to determine how much copper to use (1 troy oz., 31 grams/12.5 = 2.48 grams of copper). Put it in your crucible and start melting. The silver will start melting before the copper so give it a quick stir with a pick (my pick is an old bicycle spoke glued in a dowel) to make sure copper is melted. Then pour in a coffee can full of water. Drain water and look for interesting pieces to save for future jewelry. Now you have very near 925 Sterling Silver (pickling will remove the discoloration but we will take care of that later).

Time For The Salt Casting

This is done like making the Sterling Shot.

Almost Fill Soup Can With Salt

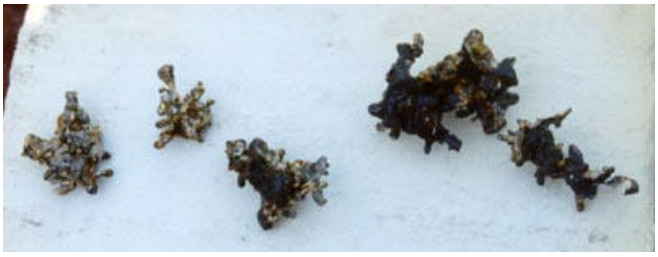
Melt & Pour Silver:

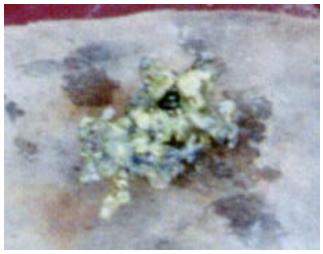
1. Put some of your Sterling Shot into the bowl in the crucible (I like to use no more than a 1/3 oz. on each piece, and do several in a sitting).
2. Light torch and begin melting. When melted together remove torch, add casting flux (a pinch of Borax or a few grains of casting flux), then reheat.
3. When it starts getting fluid, lift crucible to edge of the can of salt. While keeping the torch on the metal, you will see the spin, quickly tip and let the metal roll off the crucible.

Important: you have 3 visual levels of the metal.
1st Crusty ball.
2nd Spinning, it is actually the copper & silver separating, **this is when you pour**.
3rd Boiling, TOO HOT, it jumps around and looks like tiny fireworks coming off the metal, the metal is actually vaporizing. If it get 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 on direct casting, but stirring with a carbon rod will reduce air bubbles.

Getting Salt Off Silver & Pickle: While hot, pick the piece out of the salt with the tongs and drop into water. Then let the salt soak off or pull it out and scrape it off. Now it is multicolored with black spots on the black (I only seem to get it with the salt casting), the best way to remove that black spot is to put soldering flux on the whole piece. Then reheat the piece (the flux will boil - foam - turn to syrup - then the piece will turn white, remove torch NOW! Next thing that will happen is the silver will start melting, but I've never had one collapse yet). Throw your pieces in warm or cold pickle, let it soak any oxidation that is left (warm pickle works faster). The copper tongs are a MUST to add or remove pieces from the pickle!!! After removing, drop in a baking soda and water mixture then rinse.

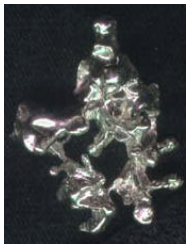


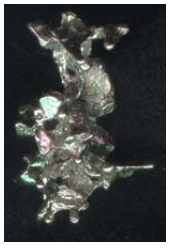


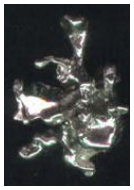
Bright Burnishing:

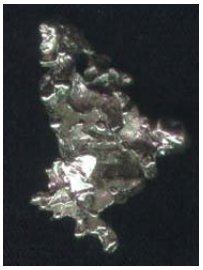
- **Steel Shot only:** Add ½ tsp. - 1 Tbsp. of or burnishing compound, your steel shot, and your pieces to the tumbling drum, add enough water to cover shot. Tumble for 16 hours or more.
- **Abrasive Pyramids & Steel Shot:** Mix it same as above (except use lapidary soap for the pyramids), but tumble for 1 hours with medium pyramids, 1 hours fine, 1-3 hours steel shot. For a smoother texture double time with pyramids, more texture use only steel shot.
- **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!!!

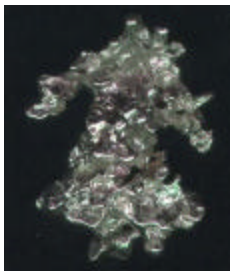
Note: Vibrating Tumblers are faster, but finding one that can handle the weight of the shot is harder to find.











Now Is The Time For Your Imagination: Look at your pieces, what do you want for the top, where and if a stone can be placed, where can I put a chain or hook it to something

1st Look for natural holes for a chain.
2nd Where can I drill a hole for a chain.
3rd Where can I solder a bail for the chain.

Solder or drill now, run it though the steel shot again for a couple of hours again. You can do this before bright burnishing, but sometimes it is easier to see what you what after a shine is put on.

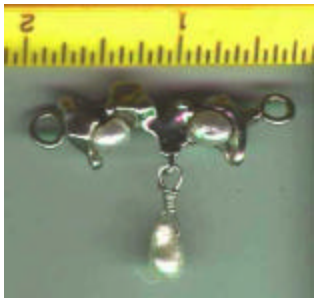
Polishing: It is almost useless to polish with a buffer, so just wipe well with a polishing cloth.

Finishing: Set or glue in any stones, and wipe with polishing cloth again.

Go out and buy the ingredients for homemade Ice-cream, use up the extra salt. Invite some friends over, and enjoy the friendship & Ice-cream.

TIPS:

It is always best to learn from several people and do what works for you. Here is a couple of good spots.



Bean Casting:

http://www.frii.com/~dnorris/beancasting.html

My suggestion to add: Use the beans dry. After 2-3 cast, the beans start to swell, and the casts start looking great, after 10, the beans are too swollen, they should be allowed to dry. Take out only the big pieces, as you cast more the metal will fuse to the smaller pieces, giving a great effect, they may need just a spot of solder for the ones that don't fuse together. I prefer to bright burnish as described above.

Pine Needle Casting:

http://pineneedlecasting.homestead.com/Main.html

I prefer using soft, decorative, broom straw. It only has a few thick straws, and the softer one leaves a nice pattern. Remember to soak straw for about 20 min. before casting. To bright burnish, you can just use a steel or brass wheel for a hand held rotary power tool, and some white diamond prepolish.

References:

Don Norris at http://www.frii.com/~dnorris
And many other good people.