Beginning Pewter Casting

HE Clare de Lacy
www.claredelacy.weebly.com
claredelacy29@gmail.com

THE THREE RULES OF CASTING
Hot metal looks just like cold metal
Hot rock looks just like cold rock
Avoid horrible foundry accidents

Welcome to my class notes on beginning pewter casting in soapstone. This handout is meant to get you started carving a basic two piece type mold and give you a reference point for steps to remember and tips to help you along after the class. There are also sources listed for more information on acquiring supplies and places to look for inspiration. Please feel free to contact me if you have questions or get stuck on any point in your casting and I hope you become as enamored of this art as I am.

Getting Started

Your supplies for carving-
Brazilian soapstone
A set of basic carving tools
A scalpel
A small chunk of putty
pencil and scratch paper
Sanding wheel or sand paper

Supplies needed for pewter casting-
Pewter alloy
Heat source (small propane tank with torch attachment)
Pouring ladle (cast iron can work)
Heat resistant surface!
Gloves (I use welding gloves)

A note on safety-

Soapstone can contain asbestos in it, and the dust from carving this rock should not be inhaled, not only due to asbestos but also due to the large amount of silica released when the stone is broken. Wear a mask when cutting large amounts of rock and use your best judgment as to whether you need a mask or safety glasses to protect your eyes from flying chips as you carve. The amount of safety measures you prefer to use are completely up to you. Casting pewter has many dangers, from using sharp tools, to carving stone to pouring hot metal (see the three rules above) so always be aware of the risks, know what you are doing and ask for help when you don't.

What are we making?

This class focuses on pewter pieces made from two piece molds. Your mold will have a front and a back and when carved, will stand vertically and have molten pewter poured into it through a "spru" or funnel carved between the two pieces. Molds can be registered so that a design can be placed on both the front and back, but that is an advanced step.

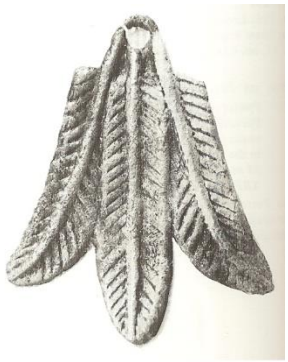
Molds can be used multiple times, so consider placing your design on your mold with room for future pieces and utilize the full size of the mold.

First Things First…

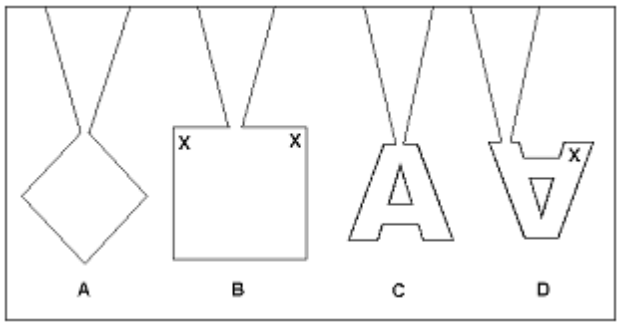
The first step is to prepare your mold for a design. The class soapstone is cut and sanded on a belt sander, and is not perfectly flat. Use a sheet of sandpaper on a very flat surface to sand the pieces completely flat so your stone will seal tightly when you clamp it together and not allow pewter to escape. And while you are sanding…

Choose a design-

Your final piece can be whatever you choose within the abilities of your mold. Pendants, coins and generally designs with a shape as a background (a heraldic bear on a heart shaped background for example) work well. Keep in mind your piece is solid with no holes or what is called “open work”. Open work is generally restricted to more advanced molds where the spru can be manipulated to allow the pewter to flow in multiple directions at one time. Master the two piece mold, and then there will be time for more advanced classes later. Here are some examples of pieces made from two piece molds.



So choose a design and sketch it out first.



Placement

Decide where to place your design on your mold. Keep in mind that molten pewter will need to pour into your mold and see the diagram on the right- Remember, gravity prevails and pewter will not willingly flow up.

Leave at least ¼” space from the side of your design and the edges of the mold, and at least ¾” space from the top of the mold to carve your spru.

Spru distance and size is important because it works as a funnel to pour the pewter into your mold, and it also provides weight to compress the pewter into your mold. As the molten pewter cools it contracts, and the spru provides a place for this contraction rather than in your carved mold.

BACKWARDS!!

Remember that your design is BACKWARDS! If you add text to your mold it will come out inverse and the deeper you carve, the higher the relief on your piece. Once you start carving you can press the putty into your mold as you go to check depth and detail and have an idea of what your final poured piece will look like.

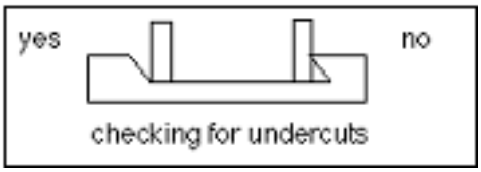
Carving

Once your soapstone is sanded, your design is chosen and placed properly on the mold, you can begin to carve. Almost any tool can be used to carve soapstone as it is very soft. We have tried a variety of tools and often have personal random tools we prefer. Dental, wood cutting, leather and other tools all work, and experiment until you find what works best for you. We have found that scalpels work great for most pieces.

Carve in layers- carve the large section of your base design and keep it as equally deep as possible. Then draw on the next layer down of your design and carve that in. Refer to your sketch when necessary and use the putty to check your

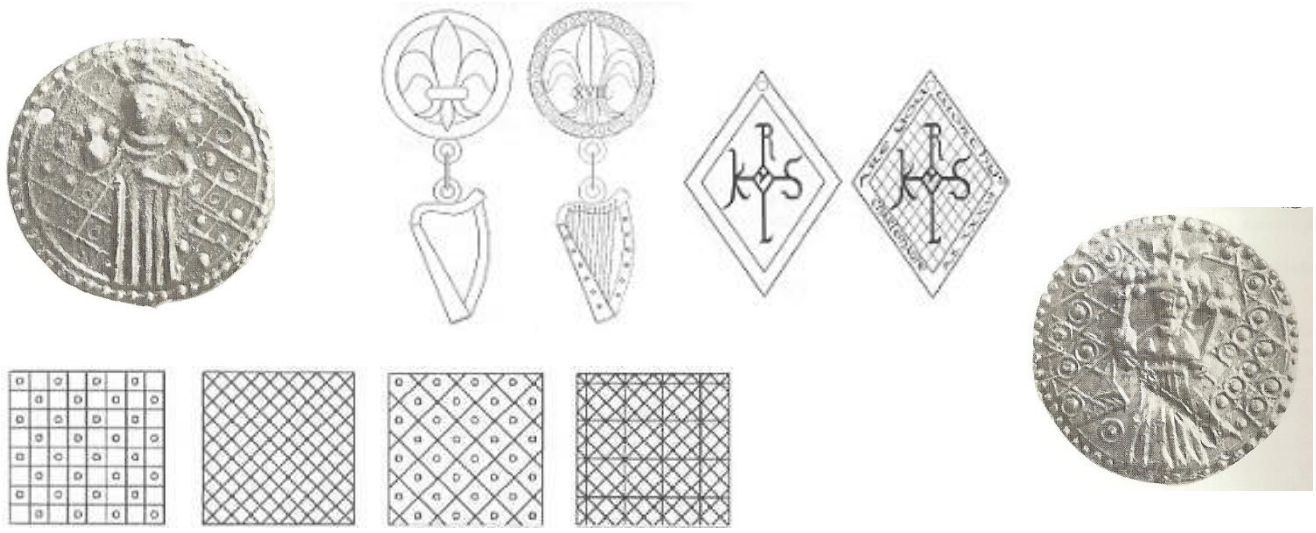
work. Remember your deepest layer in your mold is your tallest layer in your final piece. This is most important when doing EYES! Carve in the whites or outsides of eyes, not the pupil, or you will have very distressed-looking faces (unless that's what you're going for).

Undercuts- beware of carving under the edges of your design, called undercutting. When the mold is poured you may have a great piece, but it will break the mold when being pulled out. Keep it in mind as you carve and check again for them right before pouring.



Adding Details

Addition of small details makes a big difference in your final piece. Consider adding a patterned background, called diapering, or small dots and edging to help make your design more substantial. These were often done in period to add more to a design, so consider giving it a try. Tools like hand drills, drill bits, needles and ice picks work for these effets, and a small ruler can help make lines in diapering straight. Here are some examples of additional details you can consider-



Casting your Piece

When your design is carved in, then you carve in your spru. You can use a dremel tool for this part, but remember once stone is carved off, its gone for good, so start with a smaller spru and carve larger if needed.
Check once more for undercuts.
Make air vents. These are thin lines that radiate from your carving to the edges of your mold. They allow air to escape the mold when you pour the pewter and are very important. So far we've found you can't have too many.

Pewter

Pewter is a metal alloy that can be a combination of many different elements. I use an alloy with a mixture of 95-98% Tin, 1% Bismuth, trace Copper and .2-2% Silver (no Antimony). Different combinations of pewter alloy will change your melting and cooling points and allow you to cast very different pieces, so don't be afraid to experiment as long as there is no Lead included. Lead was used in period, but not now due to lead poisoning. See the reference section of these notes for our preferred source for pewter and tin.

Let the fun begin!

1) Begin by heating your mold both the carved side and the smooth back with your torch. Heating the mold allows any moisture to be released from the stone surface and keeps your mold from exploding. Reheat your mold after you have poured and set it down or done carving touch ups.
2) Hold the mold together with your gloved hand and with decent gloves you can even pour the pewter on you and be safe.

3) Heat the pewter in either a ladle with your torch or a hot pot. Hot pots are excellent ways to heat a large amount of pewter at one time and easily ladle it out or pour it directly from your pot.
4) POUR YOUR MELTED PEWTER QUICKLY INTO THE MOLD. No need to be timid, and the faster you pour the less air issue you will have with your piece.
5) Give it a second, and check your piece. If you didn't get a good piece the first time, there are a variety of things to check and tricks that can help
6) Remember everything should be considered hot when you are pouring. Most burns come from picking up pieces that look cool but are not.
7) Trim off the spru and any "flashing" or extra pewter off the side of your piece and reuse it.

Help!

If you mold doesn't pour, try these tricks-

1) Check to make sure you made air vents! We forget all the time
2) Is your pewter hot enough? If you are using a hot pot, sometimes you need to give it a chance to heat thoroughly, especially if you are adding incomplete pieces back into the pot.
3) Use a "poof". We take a piece of cloth (anything works) and fill it with TALC POWDER. (Talc power is the same as soapstone dust) Take your poof and pat it on your mold, and the talc power will help the pewter flow through your mold by breaking the surface tension of the molten metal. General baby power with minimal additives is tal powder.
4) Is your mold hot enough? Reheat your mold or simply pour a few pieces and the hot pewter will help to heat up your mold enough to allow the pewter to flow.

If you're still having issues, contact me and maybe I can help.

Your Finished Piece

When your piece is done, sometimes you will notice a yellowish/white line running the length of your piece. This can happen from your pewter being too hot. You will also occasionally have small bubbles in your piece, especially if it has a large surface area. To combat this, pour the pewter into your mold more quickly and to get rid of tarnish marks, use steel wool or a wire wheel on a dremel to polish the piece.

Paint adds a great look to your piece, and I have used enamel model paints with great success. Also, pieces can be gold leafed for added awesomeness.

Supply Sources-

Many supplies for pewter casting are similar to those used in making fishing lures and bullets, so check local sporting shops for some of these also:

Cast Iron Ladle & Electric Melters
Lead Ladle, $6.98 Lee Precision, Inc- http://leeprecision.com or Amazon

Casting Pot (Hot Pot)
Lyman Big Dipper Casting Furnace- Amazon, $38

Blow Torch
Harbor Freight

Soapstone
HARD TO FIND
DickBlick.com- Sculpture House Soapstone, various sizes available

Pewter
Hallmark Metals- www.hallmarkmetals.net, I used MPK, comes in 7lb bars
Rotometals - http://www.rotometals.com (we have used R-92 alloy pewter)

Carving tools
Harbor Freight
Hobby shops
Art Supply stores
Pocket Hand Drill – www.hobbylinc.com

Sanding & Finishing Tools, Clamps, Gloves, Safety Glasses, Dust Mask, Stone Tiles
Harbor Freight
Home Depot

Modeling Clay
Art Supply Store

References-

Check out these books and websites for great inspirations and examples-

Egan, Geoff. Dress Accessories: c.1150 - c.1450. Stationery Office Books. London. 1996. ISBN 0-11-290444-0.

H.J.E. van Beuningen & A.M. Koldeweij, Heilig en Profaan. 1000 laat-middeleeuwse insignes uit de collectie H.J.E. van Beuningen, Rotterdam Papers 8. Cothen. 1993. ISBN 90-9006769-8.

H.J.E. van Beuningen, A.M. Koldeweij & D. Kicken, Heilig en Profaan 2. 1200 laatmiddeleeuwse insignes uit openbareen particuliere collecties, Rotterdam Papers 12. Cothen. 2001. ISBN 90-9014881-7.

Mitchiner, Michael. Medieval Pilgrim and Secular Badges. Sanderstead: Hawkins Publications. 1986. ISBN: 0904173194.

Spencer, Brian. Pilgrim Souvenirs and Secular Badges (Medieval Finds from Excavations in London) TSO. c1998. ISBN: 0112905749.

Spencer, Brian. Salisbury Museum Medieval Catalogue. Pt.2. Salisbury. Salisbury and South Wiltshire Museum. 1990. ISBN: 0947535128.

Read, Brian. Metal Buttons c.900 BC - c. AD 1700. Huish Episcopi, Portcullis Publishing, 2005. ISBN 0-9532450-4-7.

http://www.kunera.nl/ - A Dutch site with excellent period documentation sources including info from many of the above books.

http://myweb.cableone.net/amefinch/Giliana/index.html - Her Excellency Giliana's website with links to much pewter casting awesomeness.

And as always, if you need help or have questions, please feel free to contact me at claredelacy29@gmail.com and consider joining the Pewter Casters Guild on Facebook .