

# DESIGN TO CAST JEWELRY LINE



by Holly Gage

*Casting in the jewelry industry is a tried and true practice for making multiples of a single design or several components that might be later put together. Several well known artists such as Barbara Becker Simon, Wanaree Tanner, Don Friedlich, and well known companies such as Tiffany, have used casting to create a line of jewelry that is distinctly their own.*

*My interest in casting started with a desire to have a line of jewelry, however the production mind set of physically making the same piece over and again didn't appeal to me, since it is the creative process and decision making that really fuels my fire. In addition, my style and speed of working is build more for comfort than speed, therefore, the ability to cast some of my designs appealed to me on many levels.*

*Now, I have the opportunity to take my time and really enjoy the process of making my master for casting with as much detail as I desire, and then reaping the benefits of duplicating it for not just one person, but for several people to enjoy. It has created a bread and butter line of jewelry that is as individual as I am, while opening up my jewelry-making schedule to produce another line of one of a kind jewelry pieces without the fears of having an empty booth due to my slower working style.*

*I can also offer a wholesale line of jewelry enabling my jewelry designs to appear locally as well as nationally expending my audience quite a bit.*

*However, there is an underlying message artist send to themselves that casting is somehow a cheat. So before we go much further, let me debunk this counter productive message. Artist, as well as people in other industries should never feel bad they are interested in financially supporting themselves. We do not need to apologize for enjoying our career and the fact that many of us would continue doing what we love regardless of the financial gain. But let's not confuse the issue, we need to value our creations and ourselves and just because we are creative and smart enough to be able to do what we love, by no means implied we should not be able to support our joy and our family. Whether you do the casting or you have another person do the casting for you doesn't change your role as the inventor, innovator or artist. Casting, in no way removes you from the creative process, it just enables you to make more for more people, PERIOD.*

## AN OVERVIEW OF THE CASTING PROCESS

1. Create a master of the jewelry to be cast.
2. Add a sprue(s) to the master, these are gateways which will allow the metal to flow to the main piece, the number of gateways will depend on how intricate the master piece.
3. Make a rubber mold of the original master with sprue attached.

4. Inject hot wax into the mold. After the wax sets it is removed. (More are made based on total quantity)
5. Add each wax mold to a central wax trunk to create a wax tree, add to a flask (large open ended can)
6. Fill the flask with investment (plaster like material). Let investment set up.
7. The wax is burned out in a kiln leaving an investment mold negative waiting to be filled with metal.
8. Molten metal is put into the flask of investment with centrifugal force.
9. The investment and metal is dropped in water, the investment dissolves and the tree of cast metal is left and then cleaned.
10. Each piece is cut from the tree, ground, polished, and finished.

### FINDING A CASTER

Under normal circumstances a business performs a job and if it isn't right you just move on and use someone next time. However make an uneducated decision in choosing a caster and you will possibly be staring at the poor quality of work performed in each and product made... This could be 100's, so lets talk about the qualities in a caster you are seeking.

1. A Good reputation and years of experience are your best line of defense for finding a good caster. Here is a good instance of you get what you pay for, so ask around among other jewelers who they recommend.
2. View samples of the caster's work. Casters specialize in down and dirty to more refine finishes. Does the caster typically make key rings, toy parts, and hobby level goods or do their goods echo a high degree of difficulty and museum quality.
3. What is the cost of the mold? Typically if the caster makes a mistake in making the mold he pays, but ask to be sure. If you ask for a change to the model and need a new mold, you pay.
4. Do they require a minimum number of pieces to cast? Ask how many.
5. Are there price breaks for larger quantities and what are those price breaks?
6. Be clear of their policies. If this is your first time casting, it may be a good idea to discuss this with your caster. Let them know you are educated about the process (and you will be after this), but you want to be clear about their services and what you can expect from them as a caster.

### COMMUNICATION WITH YOUR CASTER IS KEY.

Asking the right questions can take you a long way and save you lots time and money.

1. Ask for an estimate of the cost. Since metal market rates change on a daily basis your caster probably can't give you an exact quote unless you are casting on that day, but he can give you a breakdown for the weight of the item, labor, molds, and other costs.
2. Discuss the process. For instance, after you give him a piece...
  - Can you ask for him to make changes or adjustments?
  - How many and at what cost?
  - What if you don't like a production sample? (Remember you will usually pay for samples made)
3. What is the turn around time, and does that change at anytime throughout the year? (I.e. Certain seasons have longer lead times due to fulfilling holiday rushes)
4. When is the product billed? The day it arrives, the day it ships? Since metal prices change daily this number will vary as well.
5. Ask if you can see a sample of your piece before production.
6. Can they show examples different finishes?
7. Be aware of shipping costs for back and forth for viewing samples and the time involved in this process

### DISCUSSING PROJECT DETAILS

Avoid problems from the get go by discussing the details of what you are looking for with the caster.

1. Metal Clay as a master can be a good choice for casting as you can see what the final will look like before you send it off. Metal Clay is more porous than a wax model and depending on the clay you use, you should be aware of how thin or delicate the master is, as it could get distorted in the process especial if it is fine silver.
2. The caster may want to see the piece before you begin to avoid typical design-casting problems that might arise, such as undercuts, pieces which are too thin, etc.
3. Discuss the type of mold with the caster. RTV molds are often suggested for use with Fine silver metal clays. Ask what molds are best for pieces using clays with more tensile strength. Vulcanized molds are put under more pressure than RTV molds and there is more shrinkage then RTV silicone molds, so several casters suggest the RTV mold. The down side RTV molds will need to be replaced quicker than a vulcanized mold. (You'll still get several hundred impressions, so this shouldn't be too much of an issue)
4. Is shrinkage an issue? Ask the caster if there is any and how much. You may have to consider this when designing your piece and compensate for it, especially if it is a ring or an item with a tight tolerance
5. Do you want "Clip and ship" In this instance the casting sprue is still attached, there is no cleaning up, ground edges, or finishing. This will be less expensive, but more time on your end. On the other hand you have more control of the finishing.
6. If you want a fully finished product, does your piece need to come back from the caster perfect or are small imperfections acceptable? Some casters only do mass work. That means they will not take the time to pull a piece off the line having a small ding or ping in it. Other casters can do volume work, and can check all the pieces, but this also means that they will throw away or melt down unwanted pieces, this will also increase your per piece cost.
7. On a highly detailed piece, a caster can usually capture most of the detail but some can get lost. They may also lose some more

detail in the mass polishing depending on the type of finishing and the tumbling medium they use for finishing. For example a matte finish medium can be more aggressive than others.

#### DISCUSS FINISHING OPTIONS IN DETAIL.

- Should you do the finishing?  
Should they do all or a portion of the finishing. For example just shining allowing you to add the patina?
- Which tumbling medium is best for the look you are seeking, find out your choices and what they look like?
- Is loss of detail a major problem for this particular design? If you are unsure, ask the caster to send a sample of your completed piece in different finishes.

#### DESIGN TIPS

Your caster can help you best in trouble shooting potential problems and often can come up with creative solutions of spruing and gating the piece, but here are some general tips to direct you in the process.

- Make your master at least 2 mm thick
- Avoid deep undercuts, which is where the rubber mold would have difficulty pulling away when demolding the piece.
- Think in terms of the flow of molten metal and beware of sharp transitions in the design such as thin sharp corners, and extreme transitions of from thin to thick or visa versa.
- To preserve a highly detailed piece, you may want to make your prototype details slightly deeper and more defined. In some situations, the caster may ask you NOT to put a mirror finish on the prototype and leave that up to him, so when they polish it, it will retain more detail. (Remember as you polish, you are removing some material, and then they will remove more material when they polish. If you leave the polishing to them, then you only lose material once.) In this case, when using your polishing paper in the greenware stage before my firing, you may want to stop at 600 to 1200 grit.
- Work harden your pieces before sending them to the caster. I put it in a plastic bag, just bigger than your piece and tumble it in a tumbler for 30 - 40 minutes. The plastic bag prevents the surface from being altered, yet makes the metal a bit stronger to hold up better to the whole process.
- Always ask for a sample before you O.K. production and make your expectations for the finished piece clear with the caster. Don't assume anything and you will have better results.

#### ETHICS, NOT TO BE OVERLOOKED

Respecting the artwork of another artist is our duty as creators ourselves. Forget the fact you would not like a piece of your artwork stolen, or you could be taking money from the pocket of another person, copyrighted artwork will have legal ramifications to effect your pocketbook if taken without expressed written permission. Copying another's artwork in portion or in full does not express your own originality, heartfelt efforts, and talents. Instead of concerning yourself about what percentage is allowable it will be much more gratifying for you as an artist to produce and reproduce artwork designed and created from a soulful place within yourself. The reason for wanting to reproduce your art is to allow more people to be able to enjoy and have a piece of YOU, so honor yourself and your craft by creating work which is uniquely you.

#### REFERENCES

Here are some casters. This is not necessarily an endorsement, just a couple of names I have used with success.

International Manufacturing Co. of Pennsylvania: 215-925-7558. A little more expensive, but will do custom work and finishing. They are very nice to work with.

Sierra Pacific of California: 510-444-0550. Has a good reputation. Good prices, mass work, pretty good quality.

A couple of sources that may help you out if interested in casting from Metal Clay are:

The PMC Guild's Spring 2004 issue of Studio PMC has two articles."Production PMC" and "Working with a Caster"

<http://www.PMCGuild.com>

AJM - The Authority on Jewelry Manufacturing - July 2004 issue, "Molding Multiples" <http://www.ganoksin.com/borisat/nenam-metal-clay-models.htm>



**Biography:** Holly Gage of Gage Designs creates contemporary jewelry and teaches her unique techniques with a gentle blend of art and soul. Holly brings her innovation; creativity and gift of helping others find their artistic voice through classes, mentoring programs, and master workshops available in the US and abroad. She is a full-time jewelry artist, Certified Metal Clay Instructor, author, and conference speaker. In addition, Holly holds a BS in Fine Art and Education. Her jewelry and articles on techniques and design can be found in over 60 regional and national publications including the Best of America Jewelry Artists, PMC Guild Annual Volumes 1 – 5, Metal Clay Artist, Metal Clay Today, Art Jewelry and Lapidary Journal Jewelry Artist, Making Jewellery, among others. You can find more information about Holly's jewelry, classes, awards, shows, and numerous free tutorials on her web site at <http://www.HollyGage.com>



Wax models have been removed from the mold and attach on the wax tree.



Burning the wax out in the kiln, leaving an investment negative.



After molten metal is poured and the investment is dissolved in water, the cast metal pieces are awaiting clipping from the tree and final finishing.