Welcome to the exciting world of

Precious Metal Clay

Ideas and inspiration at www.PMCguild.com

Precious Metal Clay (PMC™) is manufactured by Mitsubishi Materials Corporation of Japan.

Congratulations!

If this is your first exposure to Precious Metal Clay, you' re in for some excitement. If you are familiar with fine silver clay, prepare to be impressed by the great workability and impressive strength of PMC™ Sterling. For those with experience, the instructions are simple:everything you know about working with metal clay holds true here.

Use the same carving and modeling tools, the same techniques, and the same construction methods as with other clays. Wipe tools with a damp cloth when switching between clays, and reserve brushes, sandpaper, and sanding sticks for each type. See the following pages for specific instructions for the required two-step firing process. If you are new to metal clay…

Start Here

PMC™ Sterling combines microscopic particles of metals in the precise proportions of 92.5% silver with 7.5% copper—the same proportions as traditional sterling. The metal powders are mixed with water and a nontoxic binder to create a material that can be worked as easily as modeling clay. Objects can be made with simple tools, then they are dried and sometimes refined further. The pieces are then taken through a two-step firing process that drives off the water, burns away the binder, and fuses the particles into solid metal.

The result has properties very similar to cast sterling silver. It can be polished, soldered, and patinaed just like any other precious metal.

Tools and Work Area

One of the great things about PMC™ Sterling is the fact that you can use it almost anywhere. Choose a comfortable location with good lighting and you're all set. Modeling tools can be as simple as rubber stamps, children's toys, cookie cutters, and household items such as pens, playing cards, and toothpicks. Avoid aluminum foil and aluminum tools, but otherwise you'll find that you will discover the tools you want as you go along. A basic starter kit will include a needle tool, a rolling pin, one or two small paintbrushes, and a craft knife. You'll want a roll of plastic wrap, a small cup for water, and olive oil or mold release. A piece of plastic, glass, or ceramic tile makes a good work surface.

Working with Fresh Clay

The most obvious way to use PMC™ Sterling is to form it while it is most malleable. Fresh from the package, the clay can be rolled to make sheets of whatever thickness you need. Press the soft clay against textures for dynamic effects. Soft clay can be rolled into rods and tapers, curled, twisted, and joined. To combine parts, sweep a damp brush across the join several times. For larger joints, make a slip by adding water to the PMC™ Sterling until it has the consistency of thin paste. Either smear water into fresh clay (like creaming butter when cooking) or mix small bits of dry clay such as the dust created with sanding. Spread this slip onto the joint and allow it to dry. Use several coats if needed.

Working with Dry Clay

It is also worth noting that PMC™ Sterling can be worked in its dry, unfired state. The typical approach is to do some forming while the clay is soft, then to allow it to dry so it can be handled safely. At this point, edges can be sanded smooth, holes can be drilled, textures deepened, and parts added.

PMC™ Sterling is especially good for carving. Use knives, gravers, or miniature gouges to incise designs. The clay carves easily, but if you make a mistake, simply press fresh clay into the groove, allow it to dry, then you can carve it again.

To join dry parts, dampen them slightly, brush on a small amount of slip, then press the parts together. The slip acts like mortar between bricks and makes a smooth joint when dry.

Firing

PMC™ Sterling requires special firing because of the copper content of the alloy. For proper firing you will need a controllable kiln, a steel firing container, and granules of activated carbon.

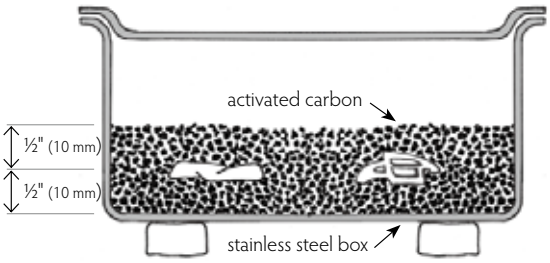
STEP ONE

To remove the binder and start the solidifying process, fire work on a shelf in atmosphere. This will be familiar to anyone who has fired fine silver PMC™. When you are sure the work is completely dry, heat to 1000° F (538° C) for 30 minutes, more for thick pieces. After firing, please handle very thin pieces with care because they can be fragile.

STEP TWO

Allow the work to cool so it can be safely handled, then transfer it to a firing container that has a half inch (10 mm) layer of activated carbon. Set the pieces at least ¼" apart. Sprinkle more activated carbon over the pieces, again creating a layer about a half inch deep (10 mm). It is possible to fire multiple pieces in layers, but do not make more than three layers, and provide a half inch of carbon in between each layer.

Cover with a lid, heat to 1500° F (815° C), and hold for at least 30 minutes. When firing more than three or four pieces, or when the work is more than 3 mm thick, extend the firing time to an hour or longer. Allow the work to cool while buried in the carbon. Not only will this prevent burns, but it leaves the PMC™ Sterling a clean white color. Ventilation is recommended during firing.



Finishing

PMC™ Sterling can be filed, sanded, tumbled, and polished using traditional jewelry techniques. Filings and scraps can be sent for refining just like other precious metals. Use liver of sulfur or a proprietary oxidizer to develop a dark patina. Because PMC™ Sterling is the result of sintered powders, it does not create firescale.

Rehydrating

If PMC™ Sterling dries out, or if you decide before firing that you want to start over, grind the clay into small pieces (a coffee mill works well) and gradually add clean water. Roll the stiff clay as thin as possible to force the water into the clay. Repeat, adding water sparingly as needed until the clay is ready to use.

Special Techniques

Artists with advanced metalsmithing skills will find that PMC™ Sterling works well with all traditional techniques. It can be soldered with any grade of silver solder. It also invites enameling, keum-boo, stonesetting, and plating. Simply put, there is no technique in the metalsmiths' arsenal that cannot be done on PMC™ Sterling.

Health and Safety

PMC™ Sterling, like all other forms of PMC™, contains no toxic chemicals. It has been extensively tested to insure that there are no harmful ingredients. Though rare, it is possible for some individuals to experience skin rash or itchiness after contact. If you have a reaction, discontinue use and see a physician. Wash hands after use, do not ingest, and keep out of the reach of children. Take care to avoid burns.

Reference Information for PMC™ Sterling (after firing)

Melting point	1640° F (893°C) *
Tensile strength	190N/mm^2 **
Bending strength	160N/mm^2 **
Surface hardness	50HV **

* From published data

** Results may vary depending on firing and measuring conditions.

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