



“YOU SUPPLY THE TALENT... WE’LL SUPPLY THE REST!” THE COMPLEAT SCULPTOR

PMC Tech Sheet

What is PMC

Precious Metal Clay® (PMC), PMC+® and PMC3® represent a dramatic development in working with precious metals. PMC consists of microscopic particles of silver or gold suspended in an organic binder to create a pliable material with a consistency similar to that of modeling clay. PMC can be worked with fingers and simple tools to create a vast range of forms and surfaces that are unobtainable or laborious using traditional techniques. When it is heated to a high temperature, the binder burns away and the metal particles fuse to form solid metal that can be sanded, soldered, colored and polished like conventional materials.

Precious Metal Clay is a patented material developed in the early 1990s by Mitsubishi Materials Corporation of Japan. The principal ingredient in PMC is tiny metal particles only 20 microns in diameter. As a point of reference, it would take as many as 25 of these particles to make up a single grain of table salt. The rest of the material consists of water and an organic (naturally occurring) binder. After firing, both the water and binder have been completely removed, so PMC may be hallmarked and will assay as .999 pure. Dried-out PMC or unwanted fired objects can be refined just like conventional precious metal.

The firing process leaves a metal that is less dense than conventional sheet or wire. This means that a piece of jewelry made of PMC is lighter than the same piece made by fabrication or casting. Because it is less dense, PMC is not recommended for applications that require high tensile strength such as findings. PMC is available in three versions: standard PMC, which provides the best modeling and greater shrinkage characteristics; PMC+, which is denser, has less shrinkage and offers several firing options; and PMC3, which fires faster and at a lower temperature. All three kinds of clay are worked with the same tools, may be fired in the same kiln, and can be finished in the same ways.

Three Kinds of PMC

Precious Metal Clay is now available in three different versions called PMC, PMC+ and PMC3. Each is sold in lump form; PMC+ is also sold as slip (liquid clay), paste, paper and sheet. Each version offers its own unique benefits:

PMC has ideal workability and a relatively high shrinkage that allows wonderful detail. It is the least expensive version.

PMC+ fires very quickly and results in a dense and durable material. It also allows for firing at three different temperatures, the lowest of which makes certain implants and enamels possible.

PMC3 fires at an even lower temperature (1290°F) which not only allows implants but means alternative, low-tech firing devices become possible.

Not every artist will need all three versions. Some find a preference and stick with it, while others use different materials depending on the nature of their work. TCS only carries PMC3.

How do they do it? In the end is it all silver?

Yes, all three versions yield the same metal, 100% silver. The difference is not in the ingredients but in the shape of the particles.

Original PMC is made with flake-like particles that allow plenty of room for the binder, which gives the material its workability.

PMC+ is made with particles that have more neatly defined edges. This allows for quicker fusing and a denser material. Notice that the spaces between particles are smaller—this will result in more durable jewelry.

The newest member of the team, PMC3, uses particles that are even smaller than the silver dust used in other versions. The denser packing allows this material to fuse at very low temperatures.

How Do I use PMC3?

You can use PMC® in just about any stable, well-lit area; a table or desk is ideal. A sheet of plastic or a kitchenware lid makes a convenient work surface that allows you to rotate the work easily. Avoid using cardboard because it will draw water out of the clay and stiffen it. For this same reason, avoid working in a draft from a heater, air conditioner or fan.

A thin film of olive oil on your fingers prevents the PMC from sticking to the skin and seals the surface against dehydration. Other useful tools are a plastic rolling pin (such as a piece of PVC pipe), a razor knife and a small burnisher. Various pencil-like tools can be devised from toothpicks, skewers, chopsticks, popsicle sticks and scribes. You might find yourself collecting bits of fabric, plastic and wood to take advantage of PMC's wonderful ability to pick up textures.

Firing

PMC can be fired in any furnace that will sustain the required temperature with reasonable stability. Almost any kiln with a pyrometer, like those used for burnout or enameling, will work. The kiln should be located away from combustible surfaces and plugged into a properly wired socket so that its cord cannot be snagged or tripped over. It's helpful to have work gloves, long-handled tongs and a heat-resistant surface (like a brick) in front of the kiln to set work on when it comes out of the kiln. Though not essential for success with PMC, this unit is designed specifically for silver clay and makes the firing process as foolproof as the modeling. PMC3 can be fired at three time/temp settings:

- * 10 minutes at 1290oF (700oC)
- * 20 minutes at 1200oF (650oC)
- * 30 minutes at 1110oF (600oC)

Shrinkage

When PMC is fired, the water and binder vaporize and disappear completely. Because these together make up some % of the clay, the object after firing is reduced its original size (see photo at right). This offers exciting possibilities because the shrinkage is proportionate.

All the images, textures and details you create in the clay original will be retained in the final version—only smaller! This is a little like using the reduction button on a photocopier and nearly as easy. PMC+ and PMC3 have a higher metal content. Once fired, PMC+ and new PMC3 pieces shrink to only 88% of their original size. Instructions on using the clay are included in the product packaging.

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