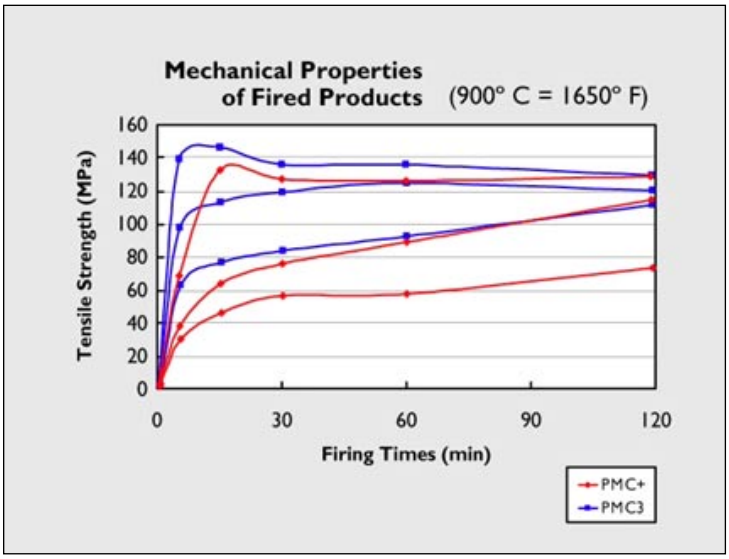
Density & Tensile Strength in Precious Metal Clay®

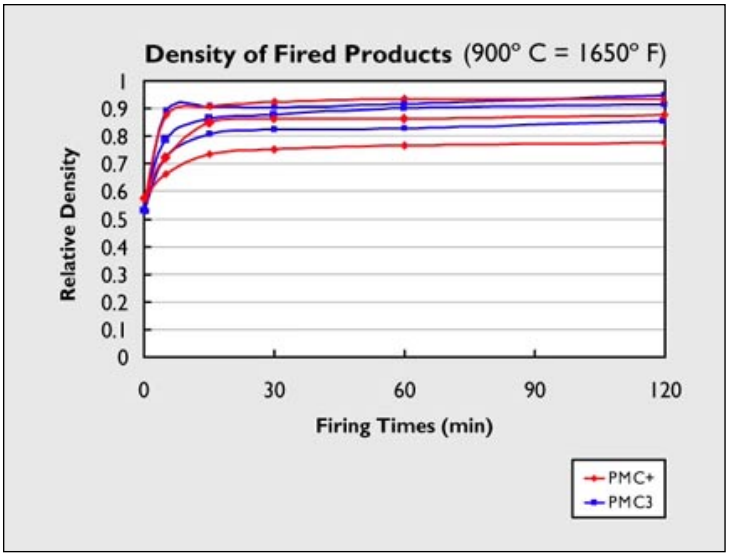
The scientists at Mitsubishi Materials Corporation have performed hundreds of tests on Precious Metal Clay (PMC®) to insure its strength and wear resistance. The PMC Guild has converted several of these tests into an animation that illustrates the interdependent role of time and temperature in firing PMC.



TENSILE STRENGTH CHART

Tensile strength refers to the ability of a metal to resist being broken when pulled. It is one of several ways to test strength. This would be especially relevant when making chain links, for instance, and less relevant when making button earrings. The format of this chart is the same as described above—the higher on the vertical scale, the stronger the metal. Each test was run at three specific temperatures.

When tested in this way, the range of firing temperatures shows greater differences in strength. The message is the same as in the previous chart: time and temperature both matter, but temperature matters more. Fire to as high a temperature as possible for maximum strength.



DENSITY CHART

In each case, the lines arc upward rapidly. This tells us that most of the hardening happens within the first fifteen minutes or so. Notice that the curve associated with the highest temperature is the steepest. This tells us that temperature is important—this sample gets harder faster than the others.

You also notice that as the lines travel across the page, they level out. This indicates that the hardening process is complete. To say it another way, five minutes early in the process makes a big difference. Five minutes, added or removed from late in the process doesn't make much difference.