Portland Community College, Cascade Campus
Instructor: Sam Morgan
ART 253 Ceramics I & ART 256 Ceramics II

Clay and Engobe Information

Clay is an earth material, chemically composed of alumina, silica, impurities and chemical water. When water (physical water or water of plasticity) is added to it, clay becomes plastic and workable. There are a variety of clays mined all over the world. Some clays mature at a low temperature and some at a high temperature. Some have large amounts of impurities like Red Art Clay (an earthenware clay) and some have very little like EPK (a kaolin clay).

The **claybody** is the material you build your projects with. It's a blend of different clays and other ceramic materials. The blend imparts a number a good qualities such as workability, reduced warping and reduced wet to dry shrinkage, tooth, glaze fit, color and maturing temperature. Although the term claybody is the proper name for the wet stuff you'll be working with, most everyone refers to it as clay instead of claybody.

If low-fire clay accidentally gets into a high-fire glaze firing, the clay will melt and run, destroying your project, other people's projects and the kiln (the ceramic oven) equipment. For this reason, we do not allow low-fire clay in this studio…AT ALL! It's damaging enough to get low-fire and/or raku glazes on your high-fire clay project to then put it into a high-fire glaze firing. The clay won't melt but the low-fire and raku glazes will get over-fired (too hot) and run everywhere, damaging equipment and other student's work. This happened recently and ended up costing a few hundred dollars in equipment repairs. Keep alert and know what you're doing!

Wedging is a way of kneading clay to make it more homogenous, to remove air pockets and warm-up (like you warm-up before exercising) the clay. Warming-up the clay helps it perform better.

Leatherhard is a physical stage in the drying clay. As clay dries it shrinks, stiffens and hardens. It also gets more and more brittle. Leatherhard is the stage of your clay when it has dried to the point where it has a similar stiffness and flexibility to cheddar cheese, meaning the clay has some pliability but if pushed too far, it will crack or break. Realize that a thick slice of cheddar won't be as flexible as a thinner slice before cracking. It's the same with leatherhard clay, the thick piece of clay won't be as flexible as the thinner. You will also notice a good dampness to the leatherhard clay surface. Leatherhard is a perfect stage to carve, trim, and paint engobe on clay. Note: You have gone beyond leatherhard if the clay is completely dried out. It is virtually impossible to get the clay to come back to leatherhard by wetting it down if it's too dried out.

Getting clay to leatherhard for the first time can be a little tricky. With practice you'll get it down. Below are factors that affect clay drying time:

a) Absorbent surfaces such as newspaper, wooden work boards, fabrics, your skin and fabrics like the canvassed work tables
b) Air but drafts dry out clay even faster
c) Heat because warm air can hold more moisture
d) Time…the longer, the dryer
e) The amount of clay you have. The surface area and thickness will affect the rate of drying

There will be times when we want the clay to dry out a bit or all the way and there are times when we want to prevent drying. Below is a list of things that can help prevent your clay from drying too quickly:

1) Working efficiently. The more time the clay is on the canvassed tables, in your hands or just sitting out in the open, the faster the clay will dry.

2) When not working on your project, keep the clay covered in plastic, even the underside. Remember if your clay is at leatherhard and you're wanting it to stay at that stage, don't allow the clay to sit directly on newspaper or anything wooden. Get a piece of plastic between the board and the clay.

3) If you are planning on a lot of detailed work on your project, why not keep the areas where you're not working covered in plastic? Only expose the part that you're working on at that moment.

4) From time to time, you can lightly spray your work and the plastic with water. Don't allow the water to puddle because it can cause soggy spots in the clay. The soggy areas may crack or warp in the drying.

Engobes: There are basically two ways of adding color to your work. Engobes are one and glazes are the other. You can use engobes and glazes together to create depth. Engobes are essentially watery colored clays that have been formulated to be applied on your projects. It gives flat opaque color as house paints do on your walls. Some engobes are formulated to be applied on wet to leatherhard clay, whereas others are formulated for dry or bisqued clay. Engobes are also formulated for certain temperatures, such as low-fire or high-fire.

The large gallon containers of engobes that are found in the main classroom are for high-fire and must be applied on wet to leatherhard clay projects. The engobe colors won't mature until you've put the work in the high-fire glaze firing (2340 degrees Fahrenheit). You can use the same high-fire engobes on low-fire work but the resulting engobe colors will remain light.

Greenware: When clay is completely dry (bone dry), it is called greenware. This is a dramatic physical change and now your work is EXTREMELY FRAGILE. The clay is as fragile as crackers and must be handled with both hands. There is no guarantee that the work can be repaired if broken at the bone dry stage, so be CAREFUL!

Bisqueware: After the greenware goes through the first ceramic firing (called bisque firing), the work is called bisqueware. The bisque firing is taken to 1720 degrees Fahrenheit. Once bisqued, the work can be glazed and then glaze-fired. Note: No work is to be glazed without being bisqued first!

Softening and Reclaiming your clay:

<u>If your clay is too stiff or you have scrap clay that is wetter than leather-hard</u> but too hard to reuse, you can reclaim the clay yourself.

1) Cut-up the clay into golf ball size pieces and put them in a leak proof plastic bag. Do not compact the clay. You will need them to stay separated.
2) Add about ¼ cup of water for every 10 pounds of clay, more or less depending on how dry the clay is.
3) Making sure to keep the clay pieces loose, close the plastic bag and store for at least half a day.
4) Wedge up the clay and use it but if it is still too dry, repeat steps 1-4. If the clay is now too wet, wedge some stiffer clay in to get the right consistency or do the below.

<u>If you have very wet soggy clay</u> from failed attempts at throwing, it can be wedged in with some stiffer clay or smeared thinly on a plaster surface to dry out. Allow about 20 minutes on each side, depending on how wet the clay is and how much of it you are drying. Once it's dry enough, wedge the clay before using.