

## Create with Clay: THE BASICS

### Where do you get ceramic supplies?

- Your local ceramic supply store will be your best bet. They will have everything you need and are much cheaper than art supply stores that don't specialize in clay, plus they can answer all your clay questions.
- Many ceramic artists will mix up their own clay and glazes so there are lots of bags of powders and chemicals for sale at ceramic supply stores, don't be intimidated; clay and glazes come premixed in consistent, affordable, and understandable packaging too, but it helps to know what you want.

### What if I don't have a kiln?

- A lot of ceramic supply stores will fire your work for you, the price is usually based on how much room it takes up in the kiln and what temperature you are firing to. So if you don't have a kiln, you can still create with clay in your classroom!

### What kind of tools do I need?

I believe that there are so many similarities between cooking and working with clay. The tools seem interchangeable between the two, so take a look at some of the extra kitchen items you might have or pick some up at a yard sale. Over time you can add to your collection of tools but in the beginning, a few basics will do. My basic tool list:

- A knife for cutting
- A fork for scratching
- A skewer, pencil or sharpened chopstick
- A plastic or metal scraper (credit cards work!)
- A sponge
- Texture tools (shells, stamps, pinecones etc...)



### About Clay:

- Clay comes in all different colors and textures, but more importantly they come in different temperature ranges, usually labeled as low fire, medium fire or high fire. The basics of choosing a clay body are temperature range, texture, plasticity and color. Your ceramic supply store will help you find the best clay for your classroom.
- The temperature of clay is measured in cones which are often represented on paper as a triangle; the cone ranges are on a negative and positive scale from  $\Delta 022$  being the lowest to  $\Delta 22$  being the highest.



- A low fire clay, which is what is best for classroom purposes is labeled as Δ05 and reaches about 1900°F. Most educational programs use low fire clays because they don't have to be fired as long of a time which means less money spent on running the kiln.
- When you pick a clay to use you need to know its properties, meaning that you need to know if it is good to hand build with or if it is better used as a wheel throwing clay body, this will be determined by the plasticity of the clay and the amount of grog or sand that is added to the clay. If you are wheel throwing you want a clay body that is smooth to the touch and has plasticity, when you chose a clay body for hand building you want to have a bit of grit to it so that it holds up the structure you are building.
- The color of your clay is a factor because when you glaze dark clay it will darken your glazes and possibly make them muddy looking while light colored clay will keep your glazes holding their true color. The color of the clay when it is wet may change after it has been fired.
- Premixed clay comes bagged in 25lb bags, I usually budget .5 - 1lb per student per project.
- Clay will never go bad if kept wrapped tightly in its plastic bag. If it does get dried out to the point of not being workable, it can be reclaimed with water. If you add enough water to it and let it sit in a bucket or the same bag it will soak up the water and will probably be too mushy. At that point you can lay it out in an even layer on a board and let it dry to the right working consistency again, you have to watch it, but you can use clay over and over again in this way. If you recycle your dry bits of clay to a working consistency, you will need to wedge (similar to kneading bread) your clay to get out any air bubbles that have been trapped in the clay. Once it is fired, you cannot reuse it to build with.
- Clay that is almost dry but still slightly workable is called leather hard clay. When it is completely dry but not fired yet, it is called bone dry. When it has been fired once the clay is now ceramic and it is called bisque or bisque ware. When it has been fired again with glaze it is called glaze ware.

### **Building Basics:**

There are a few basic rules that you need to follow with clay to have success with even the simplest project.

- Clay can explode when you fire it, if it is not built properly. If you have an air pocket in the clay that was created during the building stage, the air pocket explodes because when the water in the clay is heated in the kiln, it turns to steam and if the steam can't get out, it blows itself out. This can also happen if the clay is too thick. Anything that is built big must be hollow in the center and that hollow space needs an air hole to allow the steam to escape. I try to keep the thickness of the clay to ½" or less to be safe.
- All parts that are connected together need to be scored on both sides before attaching. This technique is typically called scoring and slipping, to help my students remember this important step, I call it "scratch-to-attach". If you skip this step, all of the parts you've added on will fall off when the clay dries.

### **Bisque Firing:**

- There are two different firings that you need to do to finish your clay art, the first one is the bisque firing. The work must be completely dry before it goes into the bisque firing.

- The bisque firing turns your clay into ceramic by taking all the water out of the clay and starts to vitrify or close up the clay body so that it is not as porous. I usually bisque fire to a temperature referred to as Δ06 (called cone oh six in ceramic lingo). In this firing, you want to heat the kiln up slowly because if the temperature goes up too fast the artwork can explode.
- The clay can also explode if the clay goes through thermal expansion and contraction process too fast, just like a glass container going from the refrigerator to the hot oven, it will break. So when firing the kiln it needs to be turned up slowly and cooled down slowly to take care of the ware.
- When you are loading a bisque firing, the pieces can touch each other so you can carefully pile pieces inside or on top of other ones and fit as much as possible into the kiln. After the pieces have been bisque fired they are ready to be glazed.

### About Glazes:

- Glazes also have different temperature ranges and they need to match your clay body temperature. If you have a low fire clay, then you need a low fire glaze.
- When using glazes with children it is important to check that the glazes are food and drink safe, which means that there is no lead or other toxic ingredients in the glaze.
- Glazes also come with different surfaces such as glossy, matt or satin. The store where you buy them usually has a sample of what the glaze looks like after it has been fired to help you choose the color and surface you want.
- If you can it is always good to create sample tags for students that can hang on the outside of each jar so that you always know what the glaze looks like once it's fired. Many glazes change color quite a bit during the firing process.
- When you are glazing onto your bisque ware you want to be careful to not contaminate your colors by using the same brush.
- When you paint on the glaze it will go on liquid and dry rather fast to a powdery pastel surface, once each layer has dried you can put on other colors or layers. The more layers you use the richer the color is but you generally don't need more than three.
- When your glazed pieces go into the kiln and are fired, they will become liquid as they heat up and then turn to a solid hard surface when they cool. So glaze cannot go onto the bottom of the artwork or whatever surfaces touch the shelf it is sitting on, otherwise when the glaze cools it will get stuck to the shelf. I tell the students to not glaze the bottom of their pieces and if a little drips onto the bottom that it can be wiped off with a wet sponge.



- Before I load any glazed pieces into the kiln I check them all and wipe down the bottoms, you can end up with a real mess if one slips through. It will damage the artwork when you get it off the shelf as well as the shelf. When you are loading glazed pieces they cannot touch each other for the same reasons, two pieces will easily bond together with glaze. Once your pieces are glazed they are ready to go into the final glaze firing.

### Glaze Firing:

- The glaze firing is done to fuse the glazes to the clay.
- This firing will go to the temperature required to bring the glazes to their maturity which will be on the label of the jar and should also match the temperature of your clay.
- When the pieces are loaded they should have clean bottoms to keep them from sticking to the kiln shelves and they cannot touch each other or the sides of the kiln. This is really really really important!
- The kiln will need to be programmed for the cone temperature that you are going to and can be run slightly faster than you ran the bisque firing since if a piece makes it through the bisque it will not explode in the glaze firing.
- Allow the kiln to cool slowly once it has finished firing. If it cools too quickly the glazes will go through thermal shock and can flake off the clay.
- Once the kiln and the artwork have cooled they are finished and ready to use or display.

### About Kilns:

- Kilns vary greatly depending on the brand and type, the biggest difference is what fuel they run on; kilns can be electric, gas or wood. Most schools have electric kilns because they are compact, safe and often have computerized firing cycles.
- To use an electric kiln you would start by stacking your ware on the bottom shelf, use posts to hold up the next set of shelves to build a second layer and so on until the kiln is full. Pick the appropriate computer program on the kiln (see your user manual) to run your firing, usually slow for a bisque firing and med for a glaze firing.
- When your kiln is done firing it will take hours to cool off. Don't open the kiln too early or too fast so the work can cool off slowly.



**HAVE FUN & BE CREATIVE!**

