

Home Clay Studio III

Hand building techniques often make use of coils or slabs as basic building components. There are a number of ways to make these and some involve tools that can be purchased, repurposed or made at home. This document will discuss techniques and equipment for making coils and slabs. Specific information about actually building projects will be handled in another document or in a class.

Coils (often described as snakes or worms) can be easily made by hand by stretching and rolling on a flat surface. Most of you have had some experience making coils. The more consistent the coils are, the easier they are to work with and the more control you will have over your project. Small diameter (under 1 inch) coils can be started by squeezing a lump of clay in your fist. This will leave finger indents which can be evened out by being selective about where you apply pressure. Larger coils can be started by slapping a lump of clay onto your work surface. You want one end of the lump to hit the surface first so that the continued movement will stretch the clay into a longer shape. If you make a loud slapping noise, then you know you goofed and the clay hit all at the same time. By rotating the lump you can stretch parts of the clay that need more attention. You can tap the ends on the work surface to compress them if they are getting too thin.

Coils can then be finished by rolling them on a flat non-sticky surface with a light, wide spread, flat hand. The goal is to even out the various bumps and size inconsistencies to get a smooth surfaced and even diameter coil. Pressure on thick parts will thin them out. Moving your hands away from each other while rolling will thin the coil evenly and moving them toward each other will thicken the coil between your hands. If you have flat spots (you will if you use the slapping method) you can make a significant twist by holding one end stable while rolling the other end. The twist creates a round shape that can be rolled smooth with a little effort. It may be convenient (especially for large forms) to roll out a number of coils before starting to build. Keep everything wrapped in plastic as they tend to dry out quickly.

There are two other methods for making coils. One is to cut them by drawing a round loop tool through a lump of clay. This is great for small numbers of coils or if you like to wedge as there is quite a lot of clay left behind. The other method is to extrude them through a round template. There are a number of manufacturers and styles of extruders. For small diameter extrusions there are some based on a caulk gun design. Larger ones are more like an old car jack with a long arm for leverage and often a ratchet mechanism. The one we have at the White Bear Center for the Arts studio is the largest manual one I know of. It is made by North Star and will take a 25# bag of clay. Extruders can be used for many more things than simple coils and there are whole books dedicated to exploring this tool. If you are thinking of purchasing or making one consider how you will use it. They all have different clay capacities. Adding a second lump of clay to the chamber can sometimes make an air pocket that will affect the extrusion. They also

have different ways of holding the template during extrusion and can vary significantly in the ease of clean-up.

Slabs are simply clay lumps flattened to resemble pancakes. They can be made any number of ways. Smaller ones can be made, like tortillas, by simply squeezing and padding them between your two flat hands. They can be stretched in a similar way to the stretched coils, but with the goal of making it wide and thin and not long and round. They can also be pounded with a mallet or block of wood. The trick is to pay attention to how the clay is responding. Make small repeated movements and keep moving the direction of pressure so that compression and thickness are even. A cloth or paper release surface under your clay will prevent your slab from getting messed up when you try to get it off your work table. Larger slabs can be made using a rolling pin. Having shims (2 strips of wood with equal dimensions and an even thickness) will allow you to make very even slabs. It may be helpful to use one of the other forming techniques first then even it all out with the shims and rolling pin. Large rolling pins may be difficult to find. A less expensive option may be to make one from ABS (black) or PVC (white or grey) plastic pipe. You can find this pipe sold for plumbing at any hardware store and it comes in a variety of diameters and can be cut to length. ABS tends to be a bit stiffer and won't flex as much as PVC under pressure. The down side to plastic versus wood is that it is light and won't compress the clay well by itself, so more work from you. One possible solution is to glue caps for the ends and to fill the pipe with sand or concrete.

If you are set on making many or large slabs you might consider a slab roller. There are a number of manufacturers and they come in a variety of sizes. The one we have at the White Bear Center for the Arts studio is made by Bailey and is 24 inches wide with 2" rollers. This tool makes it simple to make many slabs of significant size and consistent, even thickness. It can be expensive to buy and takes up a lot of room (though you may be able to use the table for other work). Large slabs can also be made by using the pounding technique mentioned in the first section. If you have a form the correct shape size and height, you can press and pound clay to fill the form. The top surface can be scraped flat and even with the top of the form using a stiff strip of wood or metal. Having a release surface under the form is critical to being able to use the slab. Slabs can also be made using an extruder. Manual extruders tend to be small in diameter, so the width of the extruded slab is necessarily narrow, but can be very long. Unless you will be making your own extrusion templates, you are also limited in width and thickness to what the manufacturer makes.

Ware boards have been mentioned in previous documents, but it is important to talk about them again in relation to slabs. It is convenient to have some boards large enough to accommodate the slabs you are working with, so that you can make up a few at a time or to move them to the area you are working. However, it is critical if you are trying to keep your slabs flat, as for tiles or sculptures. Clay is made up of flat plate-like particles. When you compress them into a shape, like a slab, you are stacking the plates on top of each other and giving them an orientation. If you disrupt that orientation, such as bending a corner, it creates tension between the particles. Often, even if you push the clay back to flat, that change will express itself when it

is fired. To keep slabs flat you need to be able to move them by sliding and flipping (like a pancake) not by bending and lifting. To this end you will need ware boards large enough to move your slabs around and a slip surface (newspaper or cloth). Plywood or other wood products can work, though many will warp from the clay dampness, but gypsum board (drywall) works very well. You can easily cut the correct size pieces from ½ inch material with a utility knife. Cut the paper skin on opposite sides of the board and snap it (no need to cut through the gypsum). The edges will need taping (duct or masking tape) to keep the gypsum out of your clay and out of your lungs.

Slip is a common component used whenever you are building with coils, slabs or attaching parts together. Often a little water or vinegar on a brush will be sufficient “glue” to bring pieces together, but there are times when you need the additional support of slip. Slip can also be used as a decorative element either piped on as slip trailing or brushed on to alter a surface. Slip in the simplest form is just clay and water blended to a smooth consistency. It can be made thick or thin and can be pigmented using oxides or stains to change the color. Slip can also be made from a different colored clay from the form, that is white slip on red clay or vice versa.

You can make slip by working water into wet clay, but the easiest way is to shave some clay into small pieces when it is wet. Let it dry to bone dry, then wet it in a container. The dry clay will wick the water through every pore space and break into a slurry within minutes. A whisk is a helpful tool for this process. If you need to make a lot you can use an electric drill with a mud (as in plaster) attachment. For medium sized batches you can use a blender (not for food anymore). The blender is aggressive enough that you can get good results with wet clay without drying it first. Immersion blenders can work too if the slip is on the thin side, but it will wear them out and can burn out the motor if the slip is thick.

At White Bear Center for the Arts we typically have a dense slip available. This is a little different in that it will shrink less than regular slip even though it has the same viscosity (fluid quality). Less shrinking means the patterns will stand out more and joints will be less likely to shrink and crack. This is made in the blender with about ¾ cup of water to start. Add wet clay a little at a time through the cap opening until the slip is too thick to move. Add a small amount about ⅛ teaspoon of sodium silicate or less (clay suppliers have it for sale) until the slip acts like water. Then add more wet clay until the slip is once again too thick to blend. Dump this out into a container (it will be about a pint). Now add about a teaspoon of epsom salt solution (pharmacies carry this as a dry powder that will dissolve in water). Stir into the slip until the right stiffness for your application. This whole process can also be done without a blender. Using a whisk and bone dry clay scraps will make it much easier. The sodium silicate is a deflocculant, which makes the clay particles slip past each other so it acts wet. And allows you to add more clay solids for the same amount of water. The epsom salts works the opposite (as a flocculant) and makes the particles clump up. This helps keep the water combined with the clay and allows you to adjust the viscosity to the correct level for your use.

Banding wheels are a convenient but not essential tool. They can be purchased from clay suppliers or possibly other sources. Restaurant or Kitchen supply companies often have things that can be repurposed for clay work. The banding wheel is essentially a Lazy Susan and you can often find working options (maybe just the turning mechanism) at hardware stores. The best and most expensive ones are made with sealed bearings and will turn smoothly for many minutes on their own. Banding wheels are a great convenience if you do a lot of altering, assembling from multiple pieces or surface decorating.

Pottery wheels come in three basic categories; Kick, treadle and electric. Kick wheels, as their name implies, are propelled by kicking with your foot. They have a flywheel or heavy weight that keeps the wheel turning so that you can stop kicking while you throw. The treadle wheel is also a leg powered wheel, but it has a mechanism like the old treadle sewing machines. Your leg remains in motion the whole time you are working (usually from the knee down). They may have a small flywheel to help smooth out the rotating motion, but they are designed to rotate with minimal effort. Electric wheels are powered by an electric motor and usually have a pedal to control wheel head speed. There are many manufacturers and options for pottery wheels. You can contact me if you have additional questions about them.

Kilns come in a variety of sizes and styles. They can be generally categorized by the type of fuel used. Wood, gas (natural or propane), oil, coal or probably the most common, electric. As with wheels there are many manufacturers and options and you can contact me if you have questions.

Pug mills and clay mixers are tools best utilized by large active studios. They facilitate the reclaiming of large quantities of clay scraps or custom mixing your own clay formula. The mixer is used to mix the clay into a consistent material at a density that can be used without additional drying. The pug mill is used to compact and drive out most or all (if it has a de-airing feature) of the air from the clay. There are some machines that will do both, which is what we have at White Bear Center for the Arts. There are some small versions that are intended to eliminate wedging for the small scale studio, but they are still very expensive. In general, if you manage your scraps as you make them you will not have more wedging than you can handle. There are some additional manual techniques that can be used if you are mixing your own clay or have larger quantities of scrap to process. Please contact me with any questions.