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# Chapter 1

## Sculpture Materials

Sculptures can be created using wood, stone, paper, metal, glass, clay, plaster, concrete, all kinds of materials. Many sculpture materials, such as stone and glass, are “one of a kind” pieces, with the features of the material itself (the colors of the glass, the grain of the stone) being part of the design. You can make a mold of a sculpture in any of these materials and cast it in bronze, plaster, resin, paper, concrete, etc., if you want. However, most pieces intended for casting are originally created in clay of some kind.

## Clays

There is a wide variety of clays on the market. I will explain the basics of how to use three of them: water-based clay; polymer clays like Sculpey® and Cernit®; and professional plastilene (also called “plasticene” or “plastilena”).

Clays are wonderful to use because you can do both *subtractive* sculpting (where you remove material from the original sculpting medium as you would with stone or wood, for instance, until you get to the finished look you want) and *additive* sculpting (where you add to the original sculpting medium, as you do with clay, metal, or paper). If you make a mistake in clay, you can fix it easily because the medium is so forgiving. If you make a mistake in stone, you have to change your design to accommodate the changed area – or try to reattach the extra stone you removed and try to hide the mended spot (it can be done in some cases, but it’s hard!)

## Water-based Clay

Most school children start doing three-dimensional work with water-based clay, which is air dried, then fired in a kiln. This is the same general type of clay used by potters. There are many types of water-based clay (some of these clays are called “terra cotta,” “raku,” “sculpture clay” or “stoneware” clay depending on their consistency and numerous other variables). Essentially, this type of clay is clay soil harvested from the ground, then cleaned of rocks and debris, made a uniform texture and wetness (with water), then marketed in 25 lb. blocks in plastic bags. Potters who work on a wheel usually use very smooth *clay body* (type of clay) with no “grog” in it, sometimes called “throwing clay” (because they use it to throw pots on a wheel). Sculptors most often use “sculpting clay” which includes *grog* (pre-fired and pulverized clay) to give it more *body* (tensile strength). Some clays, such as raku, are too porous to be used as vessels for fluids and always have a coarse feel to them. Sculptures can be done quite well in raku clay, but those pieces will have a rougher surface texture than if they were done in

sculpture clay. (However, because raku is so porous, it's also more forgiving about trapped air, which means less chance of it blowing up when it's fired. This attribute of raku makes it a good clay for beginners, in my opinion.) These different characteristics are things you need to consider when choosing your clay, if you choose to work in water-based clay.

Water-based clay must be kept moist by misting it lightly with water from a squirt bottle every so often while you're working on it. Then the finished sculpture needs to be hollowed out to no more than a one-inch thickness in any part of the finished sculpture for the piece to fire properly. The piece must be allowed to dry out slowly, with the piece wrapped in plastic at first so it doesn't dry too quickly. After the clay has dried a few days (depending on its size and thickness), the plastic can be loosened, then removed completely, as it dries out. Thin places (like the edges of tiles, or extended parts like arms on a figurative piece), need to be kept wrapped in plastic longer so they don't dry faster than the body of the piece. (If they dry faster than the rest of the piece, they may crack or fall off the piece.)

When the piece is completely dry, it is fired in a kiln (*bisque firing*) which is the only firing needed if the piece is sculpture and will be stained, painted or patinaed somehow. Bisque firing will harden the piece adequately for display, but if the piece is to be functional or displayed outdoors, it will need to be fired to near the point of *vitrification* (where it's almost liquid – the highest cone level marked for that kind of clay) to be as non-porous and hard as possible. If the piece will be glazed (like pottery or tiles), it will need a second firing (after the bisque firing) for the glazes to be fired.

The *cone* referred to above is the measurement of heat in a kiln. A cone made to melt at a certain temperature is installed in a cut-off switch in the kiln for each firing of the kiln. When the kiln reaches that temperature, the cone slumps, thus tripping the switch and turning off the kiln. Cones are rated at .06 (very low fire) to 10 (very high fire). It's safest to have an experienced person fire your pieces when you're first learning. Working with a kiln is a complicated business and can be dangerous if you aren't aware of all the safety precautions required.

Water-based clay is touchy and will blow up in the kiln if you trap air inside the piece. That's why I recommend beginners who are teaching themselves to sculpt to start with polymer clay like Sculpey or Super Sculpey – it's a more forgiving medium. There is a detailed discussion of water-based clay on **page 11**.

## **Polymer Clays**

Sculpey®, Super Sculpey®, Sculpey III®, Cernit® and Fimo® are some of the best-known polymer clays currently on the market. They all bake in a kitchen oven to a hard finish. The finished products can be sanded, drilled, painted, stained, etc.

The processes of using the polymer clay products are simple and work basically the same for all the polymer clay products. I recommend regular (white) Sculpey for children because it's soft and easy to work with, as well as being non-toxic. It also has a decently long shelf life and is fairly inexpensive. Super Sculpey (which is peach or "flesh" colored) is the professional grade material, used by doll-makers and sculptors because of its durable nature. Sculpey III, Cernit or Fimo, which come in numerous

colors, can be used as they come from the package, or be kneaded together to make more colors. These colored polymer clays are used to make ornaments, milleflore beads or buttons, jewelry, all kinds of things. These Sculpey III-type products are too expensive, in my opinion, to use for serious sculpture, but they are fine and a lot of fun to use for small pieces like cartoon or holiday-type figurines (snowmen, teddy bears, etc.). The nice thing about using the colored clays for Christmas trees, Santa figurines, etc., is that no finishing is needed because the color is in the clay.

When you buy polymer clay, be sure to open the box and press on the clay – if it's soft and gives easily to pressure, it's fresh and will be good to work with. (If you're buying Sculpey III or one of the other clays that come in cellophane wrappers, just press on the wrapper, don't unwrap the clay.) If the clay is stiff and hard, it may be old, or it may have partially baked in the delivery truck (I know of cases where this has happened). Don't buy stiff, hard polymer clay, you'll just frustrate yourself. You can get a lot of information on using polymer clay on [www.sculpey.com](http://www.sculpey.com). There is more detailed information on using polymer clay on **page 14**.

### **Plastilene**

Plastilene (also called "plasticine") is the clay used by most professional sculptors who will be producing castings in bronze. It's an oil-based clay that doesn't harden or dry out. I've used some plastilene in four or five pieces before I felt it was too dry to be useful anymore. I get my original sculpture and armature back from the foundry once the mold is made so I can reuse the materials as much as possible.

Unlike water-based clay and the polymer clay products, plastilene will never give you a "finished product" – a mold and casting must be made. Professional sculptors also work in wax, plaster, stone, wood, metal, water-based clay, polymer clays, epoxy resins, and anything else that does the job. For the purposes of this book, we will stick with plastilene, polymer clay products and water-based clay as an introduction to sculpting.

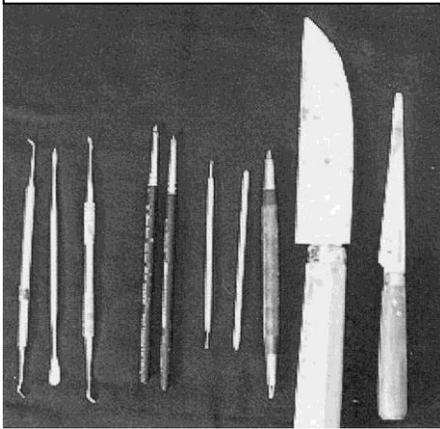
As a sculptor who produces sculptures mostly in bronze and cold-cast porcelain, I use plastilene nearly all the time. I prefer plastilene that is non-sticky, soft enough to get the flow I want in manes and tails (since I mostly do equine art), and firm enough to hold thin, tiny details like ears and eyelids. I often combine clays, using relatively soft clay for most of the body, and harder clay for ears and anything else that "sticks out," such as a hoof that isn't attached to the base. I may use very hard clay or wax for horseshoes so I can sculpt them off the horse and then attach them without the hoof or the shoe losing detail or shape.

No matter what color, hardness or brand of plastilene clays I use, I only use *non-sulphur clays*. Clays containing sulphur not only can react badly with mold rubber, but many people (particularly those with lung problems like asthma) have allergic reactions to the sulphur in the clay. If you do use sulphur-bearing clay, you or your foundry will probably have to coat your finished sculpture in shellac or varnish to make a seal between the sulphur and the rubber mold material. This barrier layer can soften fine detail, so just avoid the problem by using non-sulphur clay in the first place. Talk to your foundry about which clays work best with their mold material.

You need to do your own research to find out which clay suits your needs. There are a lot of companies producing plastilene. Most will send you small samples if you request them. Chavant is one such manufacturer. To receive a sample kit of Chavant clays, you can call 1-800-Chavant or visit their Website at [www.chavant.com](http://www.chavant.com). Sculpture House and The Compleat Sculptor (see “Tools” below for contact info) both carry a variety of clays. The one I use most of the time is Classic Clay which I order from Arizona Sculpture ([www.arizonasculpture.com](http://www.arizonasculpture.com)). It’s listed under “J.F. McCaughin Clay & Waxes.” Classic and Chavant are the preferred clays of professionals, although many still use Roma Prima (available from Sculpture House and The Compleat Sculptor – see the “tools” section below for contact info).

## Tools

From left: dental tools, rubber “clay shapers,” minirettes, clay knives



Tools can be anything – your fingers, plastic flatware, wooden rods, lengths of wire – but having an assortment of shapes in wooden or nylon tools is a good start. These can be purchased at many art or craft stores. If you can’t find what you’re looking for there, go to [www.sculpt.com](http://www.sculpt.com) (or call 1-800-9-SCULPT) to see The Compleat Sculptor’s line of tools, or check Sculpture House’s line (see [www.sculpturehouse.com](http://www.sculpturehouse.com) for a list of their retailers near you). These are two of the biggest suppliers in the country. There are many others, as well.

Don’t get overwhelmed by the variety of tools you see. Buy a couple of things at a time, find out what feels best in your hand, then buy accordingly. I prefer stainless steel dental tools, large to tiny (actual dental tools, usually spoon shaped or a small rounded blade bent at a 90° angle), and certain *ribbon* (with a loop of rounded or flattened wire at each end in a variety of shapes) tools. These are good for smoothing and removing clay quickly. The spoons are good for detail work (The first two tools in each of these pictures are the ones I use the most).

You can find sets of dental tools for sale on auction sites like [www.ebay.com](http://www.ebay.com) from time to time, or at flea markets. Many of the tools in these sets are useless for sculpting in plastilene because they’re small sharp-edged wires bent in various shapes for cleaning teeth. These may be great for cleaning teeth, but I find them of little use for the kind of sculpting I do. The dental tools that work best for me are the ones the dentist uses to create and shape fillings – he’s sculpting when he’s doing your fillings, and the tools he uses are great for sculptors too. Sometimes your dentist may give you old tools that aren’t worth sharpening anymore. I’ve gotten several from my dentist, and he’s even ordered special tools for me I couldn’t find elsewhere. Make a friend of your dentist – it may help your sculpture!