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Polymer Clay 101

Instructions for Beginners

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How to Start Working with Polymer Clay

So, you saw some impressive polymer clay works and would like to try some projects yourself. Where should you begin?

Do not run to a craft store (at least, not yet). Although there is quite an impressive list of tools and materials you can acquire for this new hobby, you will not need all of them (not right away, at least). This is good news, isn't it? Each little gadget does not cost much, but they add up very quickly. To make it easier for your budget, buy only the tools you need at the moment.

How do you decide what you need?

First of all, find a project or two that you would like to start with. There are many places on the Internet where you can look for those projects. I would recommend picking one that is graded For Beginners (for example, my tutorials for a polymer clay vase or for faceted beads).

Here are a few of the most common materials and tools that you will most likely find in the project description:

Polymer Clay

Obviously, you will need some polymer clay.

Most project descriptions avoid mentioning specific brands, yet you will find at least a few different types of polymer clay in a craft store and even more on the Internet. So which ones should you buy?

At this point I would recommend Premo. It is easy to find (it is usually available in your local Michael's, Joann Crafts or Hobby Lobby), it will work in any beginner project, it does not require long conditioning, and it is strong enough when baked properly. My second choice would be Fimo (not Fimo Soft, but Fimo Classic). Once you are more comfortable with polymer clay, you may want to switch to Kato polymer clay, as I did. I do not recommend Kato from the very beginning because it is not available in regular craft stores (you have to buy it from specialized PC stores or on-line). It is also stiffer in its raw form and requires more conditioning than other clays. However, Kato is one of the strongest clays when baked, and that is why I like it.

For more information, please refer to my pages about different types of polymer clay and how to choose your polymer clay. You may also want to check my Resources page for a list of places where to buy polymer clay.

Before you go to the store, decide what colors of clay you would like to use for your project. Each 2-oz. block of clay costs about $2.00 (if not on sale). You may have to buy more than one block if multiple colors are required for your project. Keep in mind, however, that different colors of clay may be mixed just as regular paints, so if your project sheet calls for yellow, orange, and red, you can simply buy yellow and red (and mix them to obtain orange). On the other hand, color mixing may be a bit confusing at first, so you may want to get a block of clay of every color mentioned in the project and master color mixing later.

A Working Surface

Another thing that you will definitely need for any project (although it may not be mentioned specifically on your project sheet) is some sort of a working surface. It is NOT the surface of your dining room table, for at least two reasons: raw polymer clay may stain porous surfaces and it is better to keep it separate from your food. The best surfaces for working with polymer clay are a smooth ceramic tile or a sheet of glass. Either one can be obtained in a local home improvement shop. If you get a few small white ceramic tiles, they can be used both for working on them and for baking your polymer clay items on. These tiles are usually available for about $0.50 a piece.

An Oven

To complete your polymer clay project, you will have to bake it. This means, you will need something to bake it in – a regular oven, a toaster, or a convection oven. Since baking is a very important step in working with polymer clay, I discuss it in detail on a separate page, Baking Polymer Clay.

General Tools and Materials

If you are doing other crafts, chances are you already have some of the tools and materials that are required for your first polymer clay project (such as stamps, brushes, mica powders, various paints, etc.). Cross them out from your list.

If you do not have these materials already, buy small quantities in a craft store. For example, mica powders are available in single colors and in sets. If you just want to try your hand in polymer clay, get only the colors you need first. If you decide to keep this hobby, you can look for a better deal on the Internet later and buy in bulk.

Some other tools may be borrowed from your kitchen or throughout the house. These include knives, spoons, cups, and so forth. However, to be safe, it is wise to designate these tools for polymer clay only. If you are ready to consider them *lost*, you may cross them out as well.

A Pasta Machine and a Roller

A pasta machine is used to roll out the clay quickly and accurately. If you have a spare $40.00 to $60.00 and/or are absolutely sure that polymer clay is going to occupy a good portion of your time in the future, buy this machine and make your life easier. (By the way, if you look for a coupon, you can save up to 50% on this purchase).

If, however, you are savvy and/or not sure about this new hobby of yours, I would suggest getting a roller for now.

A good clear plastic roller can be found right next to polymer clay in a craft store and will cost you about $7.00. If you decide to buy the machine later, the roller will still be useful, so this money would not be wasted.

Shape Cutters

There are two main types of shape cutters. The first ones look like cookie cutters. They come in various shapes and sizes and may be found in the polymer clay section in most craft stores. These shape cutters are sold in sets, and the price varies a lot. Expect to pay about $5.00 for a set of this type of cutters.

The other type is called *Shapelets* and is available in sets of different stencils that need to be used with an X-acto knife. Some people like them better than the cookie-cutter type. Shapelets are available in sets for about $3.00 or $4.00 each. They also come in *Stamplets* kits (together with a few blocks of clay, some stamps, and an instruction booklet), for a little under $20.00.

The way Murphy's laws work for these cutters is that any two shapes you need at the moment are usually packed in two different sets. So, be prepared – you may have to buy more then one set.

Alternatively some shape cutters may be substituted with cookie cutters from your kitchen. The smallest round ones can be made out of plastic straws. Some shapes may be cut out with a knife or even with scissors.

An X-acto Knife

The cheapest X-acto knife I saw was about $2.00. It is a pretty useful tool, but you may want to substitute it with a regular knife from your kitchen for now.

Blade(s)

Blades for polymer clay are available for about $5.00 per pair in craft stores, but for some projects they

may be substituted with a disposable cutter from a home improvement store for about $0.50 (if there is a handyman in your house, check with him first – I bet he has a few of those already).

For safety, I suggest marking the dull side of the blade with some nail polish. Trust me – these things are very sharp, and grasping a wrong end of them is not a good thing.

A Ripple Blade

Sorry, no substitute for this one. Either find another project or spend $2.00 on this blade. By the way, it is one of those special tools that are only needed for one type of a task. The results are beautiful, though.

A Clay Extruder (or a Clay Gun)

No substitute again. The ones used for cake decorations or in Playdoh sets will not work (no, I did not try them myself, I just heard about other people's experience). Price: about $10.00. Use: limited to special projects. If you decide to buy one – take my advice and buy a metal, but not a plastic one (I broke a wing on my plastic extruder the very first time I used it).

Push Molds

There is a wide range of them, in a wide range of prices. I prefer sculpting everything by hand, and the only mold I happen to have had never been used. Buy a mold, if this is what you need for the project. Otherwise try sculpting by hand – it is a lot of fun. You may also make your own molds either out of polymer clay or special molding compounds.

Stamps

The price range is really wide – just pick and choose. Also, if you decide to use some ink on your stamping project, use the permanent types (such as StazOn) – non-permanent ink will most likely smear either when you will try to cover it with a sealant or simply during the life of your finished piece.

Bead Rollers

Bead rollers come in different shapes and sizes, and usually two or three of them are combined in a set. These sets are available in craft stores and on line; price range is $7.00 to $12.00, I think. It is a nice tool for the right project.

Acrylic Sealants and Resin

Please read about acrylic sealants and resin on my page about finishing polymer clay items.

As you can see, all you need to start playing with polymer clay is a few basic tools and materials. That is one of the exciting things about polymer clay! I also like versatility of this material – you can use it for all kinds of projects, from jewelry to home decor items, and the number of techniques to try is nearly endless. I do not know any other material that stimulates creativity as much as polymer clay does.

If you like my style and would like to learn the techniques I am using in my work, consider my project tutorials. They are extremely detailed, and can be mastered by both experienced and novice polymer clay artists.

How to Choose Polymer Clay

There are so many types (or brands) of polymer clay available on the market today, that novice clayers are sometimes confused and are not sure which brand to choose.

If your project description does not specify any particular brand of polymer clay, my advice is to consider the following questions:

What techniques are you planning to use?
For caning, choose stiffer clays (such as Premo or Kato). For other projects, softer clays would work as well.

How strong are your hands?
Softer clays (such as Sculpey III, Fimo Soft, or Ultralight) are much easier to condition than some other clays (such as Kato).

How much will your final product be handled?
You will need the stronger clays for projects such as jewelry, while a small sculpture (intended for sitting on a shelf looking pretty) can be less durable.

Do you like the colors available for the brand you are considering?
While different colors of polymer clays may be mixed to create a custom color, you are still limited by the original palette available for each brand. Some brands have brighter colors than others, and some do not offer metallic or pearlescent varieties.

How will you buy your clay?
For instance, Pardo is currently available online only, while Kato can be found online and in Hobby Lobby. Other clays, such as FIMO, Premo, and Sculpey lines are more widely available

and can be found in most craft stores as well as online.

Does the price matter?

Do not forget to check the package size when comparing the prices. Most clays are packaged in 2-oz packages, but some come in bigger or smaller packages.

For a brief description of the most common polymer clays available in the United States, please refer to the Types of Polymer Clay page.

Types of Polymer Clay

There are many types (or brands) of polymer clay available on the market today. Here, I will cover the properties of only a few of the most common polymer clays for general use.

Please refer to Polymer Clay Resources page for a list of places where you can buy these and other types of polymer clay.

Sculpey III

Sculpey III is soft and easy to work with. It is the easiest one to push through clay guns. This clay is available in 44 vibrant colors. The colors blend easily, which is good for color mixing, but is not that great for cane-work (millefiori). Being soft even in the package, it is a good clay for kid's projects. However, this clay is more brittle than others after baking. This clay is manufactured by Polyform (USA).

Original Sculpey

Original Sculpey comes only in white and terracotta colors. It is soft in raw form and pretty brittle when cured. I would not recommend it for jewelry making.

Super Sculpey

Super Sculpey is available in beige color only. It is as soft as Original Sculpey, but stronger when cured. Still not the best choice for jewelry making, in my opinion.

Sculpey Ultralight

Ultralight (by Sculpey Polyform) is a unique clay because it is very lightweight. This clay is extremely soft and easy to knead, but it becomes very hard after baking. This clay is available only in white, but it can be painted after baking. It makes an excellent filler for larger polymer clay beads.

Premo! Sculpey and Premo! Accents

Both Premo! Sculpey and Premo! Accents are softer than FIMO, but stiffer than Sculpey. Premo clays retain flexibility after baking, making small details less vulnerable to breakage. Each of these two lines has a rich color palette, with at least 24 colors, some of which have mica-shift particles. In my opinion, Premo is one of the best clays currently on the market, and a very good choice for a wide variety of techniques. Premo polymer clays are manufactured by Polyform (USA). This clay is available in most craft stores and on-line.

Granitex

Granitex is another clay by Polyform. It comes in 8 pastel colors resembling the colors of natural stones. It is a soft, easy to condition clay. Available on-line and in craft stores.

Fimo Classic

Fimo Classic is stiffer than any of the Sculpey clays, so it keeps the shapes and colors you want, making it a very good choice for cane-work. It comes in 24 bright colors. This clay is now manufactured by Staedtler (Germany) and available in most craft stores in the USA.

Fimo Soft

Fimo Soft is very similar to Sculpey III in its properties. It comes in 52 colors.

Kato

Kato is the stiffest of all of polymer clays, but it is also the strongest when baked. This is my clay of choice for all my jewelry projects. This clay comes in 21 colors, including translucent, metallic, and concentrates. The metallic and pearl colors have extra mica in them compared to other brands. The 8 basic colors are truly complementary, which makes them very easy to mix into virtually any color. I especially like the color concentrates, because they are literally packed with pigments, and create very rich colors when mixed with other clays (Kato concentrates do need to be mixed with regular clay because they are too brittle to be used in sculpting on their own). Kato polyclay is manufactured by Van Aken International (USA).

Cernit

Cernit is available in more than 60 colors, including pearlescent, neon, and natural colors. It is the clay of choice for doll makers and loved for its porcelain-like finish. This clay is easy to condition, but can be easily overworked (warms up and get mushy). It is very strong after baking; in fact, it is one of the strongest clays. Manufactured in Belgium, Cernit is less common in the USA than other clays. It can be found online.

Craft Smart

Craft Smart is Michael's store brand. It comes in at least 28 colors and can be easily painted. This clay is more affordable than other brands, but it seems to be too soft in its raw form and too brittle once baked. Also, it seems to dry out much faster than other polymer clays, so while it is very soft when fresh, it quickly becomes pretty hard and difficult to condition. Overall, I would not recommend it to any serious clayers.

Pardo

Pardo is one of the newest clays on the market, and it came from Germany (Viva Decor). It has no odor before, during, and after baking because it is made with beeswax. When baked, it is strong and flexible, while in its raw form it is quite soft. This clay comes in 70 beautiful, jewel-like colors. Pardo translucent clay is one of the best (if not the best) translucent clays available right now. It is more expensive than other brands. In the USA, it can be purchased online only.

Souffle

Souffle is the new polymer clay introduced by Polyform in 2014. Its weight is light than most other polymer clays, but it is not as light as Sculpey Ultralight. It is strong and holds details quite well. After baking, this clay has suede finish (similar to that of Studio by Sculpey, whis is now discontinued). Souffle polymer clay comes in colors.

Where to Buy Polymer Clay and Tools

Below are just a few stores and online places to get you started.

Check your favorite craft store or do your own Internet search to find the ones you will be the most comfortable with.

www.polymerclayexpress.com – an excellent online source for polymer clay and many other craft materials and tools. They carry Kato, Cernit, and Viva Pardo clays, as well as Sculpey and FIMO. Besides the on-line service, there is also a "brick and mortar" store called *The Artway Studio* in Damascus, Maryland. Check the web site for directions and working hours.

www.clayalley.com – an online shop selling good variety of polymer and other clays, tools, and doll-making supplies. On this site, you will find Kato, Cernit, Premo, and Super Sculpey. Another difficult to find product that they have is PYM II spray. They ship from Pennsylvania.

www.clayfactoryinc.com – this is a Marie Segal's on-line polymer clay shop. It is a bit smaller than the first two. Here you will find FIMO products, Cernit, Artistic wire, and some other supplies. Ships from California.

www.munrocrafts.com – an online craft store with a great discount program. Their store is located in Berkley, Michigan. Check the web site for their working hours. This site and shop offer Pardo, Cernit, FIMO, Sculpey, Premo, Kato, and a few more types of clay. Among other supplies are Artistic wire, a few types of resin, and a lot of other interesting things.

www.polymerclaycanada.com – an excellent Canadian online source of the entire line of Sculpey clays and tools (including Premo, Sculpey UltraLight, Super Sculpey, Granitex, etc.). They ship from Ontario, Canada.

Michael's Arts and Crafts Store – an American chain of craft stores. Follow this link to a weekly coupon. Among their polymer clays are Sculpey, Premo, FIMO, and Craft Smart.

Jo-Ann's Crafts Store – another American craft store with locations throughout the USA and an online ordering system. Polymer clays in this store are Sculpey, Premo, and FIMO, and Granitex.

Hobby Lobby – one more American chain of craft stores. They have usually have Sculpey, Premo, FIMO, and Kato.

Polymer Clay Safety

All polymer clays on the US market have been evaluated by The Art and Creative Materials Institute, Inc. (ACMI) and found to be non-toxic. They bear ACMI's AP Seal (located on each package of polymer clay). This means that these materials were certified in a toxicological evaluation that they do not contain any compounds in sufficient quantities to be toxic or injurious to humans, including children, or to cause acute or chronic health problems.

Also, it has been mandatory under federal law since 1990 that if any craft materials are not certified as non-toxic, they should bear a hazard label on their packaging. No polymer clays have such a label.

Phthalates

After restrictions on use of certain phthalates took effect in 2008 in the European Union and in the state of California, some polymer clays were reformulated to meet the new standards. Currently, all polymer clays on the US market comply with Consumer Products Safety Improvement Act of 2008 (CPSIA),

which means that they do not contain more than 0.1% of any of the six phthalates restricted or banned by the regulations.

Prior to 2008, there were multiple safety studies conducted by various reputable groups, including the Toxicological Team at Duke University Medical Center and the Art and Creative Materials Institute (ACMI). These studies found that when polymer clays are used as intended and baked properly, they are not hazardous.

To be fair, I have to mention the 2002 (prior to the re-formulations) study by Vermont Public Interest Research Group, Inc., (VPIRG), in which polymer clay users were warned about possible exposure to significant amounts of phthalates. The results of this study were immediately challenged by ACMI, who published a press-release restating that their experts found polymer clay to be safe when used as directed.

Hydrochloride Gas

Hydrochloride gas in small quantities can be produced if a polymer clay item is burned. Please refer to my tutorial How to bake polymer clay items to learn how to correctly bake polymer clay.

Hydrochloride gas may be released when polymer clay is exposed to high temperatures (above 350F), causing the clay to darken. This gas may cause eye and nose irritation but it would not have any long-term effects. It has a very strong and distinct smell and is easily detected by humans in very small quantities. If you notice that your polymer clay is burning, turn off the oven and ventilate the room. To minimize your discomfort, leave the room until it has been completely aired out.

High Temperatures

Use your common sense and handle hot objects with proper care.

Sharp Objects

Stainless steel cutters and X-acto knives used for polymer clay are extremely sharp. One of the common injuries among novice clayers happens when people press on the wrong side of a stainless steel cutter by mistake while cutting through the clay. To avoid this problem, use stainless steel cutters with handles (commercial or hand-made). Another good idea is to clearly mark the safe, dull side of the cutters with some nail polish.

Small Particles, Dust

Polymer clay dust may be produced while sanding baked polymer clay. To prevent negative effects on

your lungs and eyes, wear a dust mask and safety goggles during this procedure or use a wet-sanding technique.

Dyes

Make a habit of always working on a sheet of glass or ceramic tile, because dyes and plasticizers from raw clay may stain your furniture. Wash your hands after working with polymer clay (or wear nitrile gloves).

Polymer Clay and Food

It is not recommended to make polymer clay items that will be coming in contact with food. This is mostly because no sufficient information is available about this application. In other words, no studies were conducted to address possible safety concerns, so nobody can guarantee that no short- or long-term effects would be observed when someone eats out of polymer clay plate, for example.

Pretty much for the same reason, after any kitchen items and utensils had been used for working with polymer clay, they are not recommended to be used once again in food preparation.

How to Condition Polymer Clay

Polymer clay has to be conditioned (thoroughly mixed) prior to use. It is required because the composition of polymer clay changes slightly during its storage due to evaporation and leaching of its plasticizers. You will want to have the same amount of plasticizers in every piece of clay you are using. Otherwise, the clay will behave differently during sculpting and baking. Also, the clay becomes more pliable as a result of conditioning.

Depending on the brand, polymer clay will be more or less stiff at the beginning, and it gets softer as you condition it.

If your clay is very stiff

To make conditioning easier, start with warming up your clay. The gentlest way of doing it is to carry the clay in your pocket for a while. If you do not need the entire brick of clay for your project, slice a piece of clay about 1/8 " to 1/4 " thick and put it into a zip-lock bag, then put the bag into your pocket for at least a few minutes. Some people prefer sitting on their clay to warm it up, which is also an option. Alternatively, you may try to warm the clay on a sunny windowsill, but keep a close eye on it

and leave the clay there for no more than a few minutes (you do not want it to start curing yet, right?).

You are ready to start conditioning your clay once it feels pliable. Expect to be able to squeeze the clay with some effort. It shall feel similar to a therapeutic rubber ball, but not like play dough.

To condition polymer clay by hand, simply mix it and squish it with your fingers. You may want to roll it into a log between your palms, fold it in half, and then roll again. The smaller the piece of clay you are conditioning, the faster it will soften up.

Alternatively, you may want to use your pasta machine to condition your clay. Do not forget to flatten the clay to at least 1/4 " thickness before you put it though the pasta machine for the first time, otherwise the machine rollers may become misaligned. Use the highest (the thickest) setting on your pasta machine. Roll a sheet of clay, fold it in half, and then roll again on the same setting. Repeat it as many times as needed to soften the clay. Make sure to feed the folded part first into the machine to avoid trapping any air in the clay. Trapped air bubbles tend to expand during baking and may cause bulging of the clay surface.

Some people like to use food processors to condition polymer clay. It works best with significant quantities of clay, especially if you are using lots of the same color polymer clay (as it may be difficult to clean). Also, be advised not to use the same food processor for clay and food. You may want to read more about safety precautions while working with polymer clay.

Sometimes, the clay is so stiff, that it seems impossible to condition it following the instructions above. This may happen if the clay is too old or was stored at higher temperatures and started to cure. To soften this clay, consider adding some Sculpey Clay Softener (do not worry - although it is called Sculpey, it will work for any polymer clay). This product may be found in craft stores next to polymer clay or online. You will only need a few drops of it per each small package of clay.

Clay Softener may be substituted with a few drops of Liquid Clay. This is the method I prefer, since Liquid Clay is a more universal product than Clay Softener and may be used for many other tasks. Liquid Clay is available in Sculpey, FIMO, and Kato brands.

Another additive to consider is some softer clay, such as original Sculpey, Sculpey III, or Sculpey Mold Maker. This is my least preferred method because by adding these clays, you may affect the original color of the clay you are trying to soften. You may also alter its baking temperature.

Whatever you use, add small portions at a time and mix thoroughly.

If your polymer clay is too soft

Fresh, out-of-package clay may sometimes present an opposite problem and be too soft and squishy for your project.

People with hot hands and in warmer climates seem to encounter this problem more often. For them,

refrigerating the clay and periodically washing their hands in cold water should help.

Another idea is to reduce the amount of plasticizers in clay. To do this, place a block of un-wrapped polymer clay on a piece of paper and let it sit for a few hours. You shall see an oily stain around the clay indicating the leaching plasticizers.

If these methods still do not work for you, consider switching to stiffer clays (such as Kato).

How to Work with Polymer Clay in Light Colors

Light colors are challenging to work with mainly because of two issues: dust and color contamination.

Strictly speaking, dust can accumulate on any polymer clay project, no matter what color it is. However, any trapped dust particles are more visible in projects using light colors.

The same is true for color contamination. Whenever your tools, working surface, or hands come in contact with polymer clay, there is a chance that some polymer clay will stick to the surface and then later, it may get transferred onto your next project. Again, this is more obvious when switching from working with dark clays to lighter-colored ones.

So, how can you minimize these problems in your work?

Here are a few tricks you may find useful. Pick and choose the ones critical for your work environment – implementing even a couple from each list may be enough to significantly improve your situation.

To minimize dust contamination:

- Keep your working space clean and dust-free;
- Put any open clay in storage bags and/or storage containers;
- While working with clay, wear non-shedding clothes or an art smock (this is especially critical during winter, when people wear warm clothes that tend to shed more);
- Run a lint-roller over your clothes before starting to work with light-colored clay;
- While working with light-colored polymer clay, turn off any fans or other devices that may stir any dust in your room;
- Do not work with open windows (to prevent stirring the dust);

- If working outside, choose a location away from any dust sources;
- If you have pets, restrict their access to your crafts room, if possible;
- Cover any unfinished projects with clean plastic bins of appropriate size.

To minimize color contamination:

- Keep in mind that the biggest source of color contamination is the pasta machine, so
    - regularly clean your pasta machine, especially when switching from dark clay to light-colored one;
    - to minimize cleaning time, plan your work so that you start with the lightest color of clay first, and then progress to darker ones (and not the other way around);
    - better yet, have two pasta machines – one for light colors only, and the other one for dark colors;
- Do not work on any porous surface; glass or smooth ceramic tiles are the best working surfaces;
- Clean your working surface and tools when switching from dark clays to lighter ones (baby wipes work great for this task);
- Wash your hands before starting to work with light-colored clays (even if you did not touch any clay before that);
- Sometimes, the darker clay may be removed from the surface of your light clay with a sharp blade;
- Minor color contamination may be simply worked into the light-colored clay by extra mixing (this is not always possible, of course);
- The red clays seem to be the most difficult to works with – even the tiniest amount is enough to contaminate your light-colored clays, so be extra careful with these;
- Store any open clay either individually wrapped, or grouped with clays in similar colors.

Baking Polymer Clay

In this tutorial you will find the following information:

- How to choose an oven
- How to check accuracy of your oven
- Baking temperature for various polymer clay brands
- Baking time for polymer clay
- What to bake your polymer clay items on
- Additional tips and tricks for successful polymer clay baking

To read about safety tips for baking polymer clay, please refer to my *Safety* page.

How to choose an oven for baking polymer clay

To bake your polymer clay creations, you will need an oven that can be accurately programmed to generate temperatures between 215°F (102°C) to 325°F (163°C). This range covers the baking temperatures for all existing brands of polymer clay.

You can use a regular oven, a toaster, a convection oven, or a special oven for polymer clay (available in most craft stores in the polymer clay section). **Do not** use a microwave oven to cure polymer clay.

It is acceptable to use a regular kitchen oven if you are not baking polymer clay too often or if you have a tall item to bake (a vase, for example). However, if you are planning to work with polymer clay a lot, consider buying a separate oven. The slight odor released during baking polymer clay may be adsorbed by the walls of your oven. As a result, you may notice the polymer clay smell the next time you use the oven for baking food. That is why it is better to have a dedicated polymer clay oven. Please refer to my *Safety* page for more information.

Please refer to the *Additional Tips and Tricks* section at the end of this page for more information about controlling the polymer clay odor during baking.

How to check accuracy of an oven for baking polymer clay

As I said before, ideally, the oven for polymer clay has to be accurate. This means that when you set it up to a certain temperature, the oven shall produce this particular temperature. In reality, however, most ovens are slightly off. For example, my oven under-heats, so in order to have 300°F in it, I have to set it up to 315°F. That is why, before using your oven to bake a polymer clay object for the first time, you have to check its actual temperature against the set temperature (and plan to adjust it accordingly, if necessary). Do not trust the built-in thermometer. Use a separate one, such as a special thermometer for polymer clay baking (available in craft stores in polymer clay sections and online). You may also use a candy thermometer or a stand-alone oven thermometer.

Also, keep in mind that different sections of the oven usually reach slightly different temperatures during baking. The middle section is usually the best place. Spots close to the heating elements get hotter, while those close to the front door are usually colder. Plan to use the middle part of the oven for

baking your polymer clay items, and place your stand-alone thermometer in this part of your oven as well.

To properly check the oven temperature, first wait until the oven indicates that it has reached the set temperature. If your oven does not have this feature, wait for about 20 to 30 minutes from the time it is on. At this point, you may read your stand-alone thermometer and compare it to the oven setting. Leave the thermometer in the oven and read it a few more times over the next 30 minutes to check for any temperature spikes. If the fluctuation range is too wide (more than a few degrees), you need to find another oven. If the oven holds temperature well, but the actual temperature differs from the set value, adjust the set temperature as needed.

To be thorough, repeat the procedure above at the new setting. Once you find the corrected setting, write it down and use it every time when you set up your oven. Re-check once a year or if you notice any changes in the oven's performance.

Baking temperature for various polymer clay brands

Different brands of polymer clay require different temperatures for baking. Also, some brands have changed their formulations over time, resulting in changes to their recommended baking temperature. Luckily, there is an easy way to find out the baking temperature: it is printed on every polymer clay package. Always keep your polymer clay packaging and check it before setting up your oven.

Here are a few examples of the recommended baking temperatures for different brands (the purpose of this table is to demonstrate the importance of verifying the baking temperature for every package of clay, and not to give you a complete and accurate reference):

- Baking temperature is 230°F for the new Fimo, and 265°F for an old version of this brand;
- 215°F to 270°F for Cernit,
- 275°F for Premo, all sorts of Sculpey (including Ultralight), Pardo, Granitex, and old Kato,
- 285°F for Bake & Blend,
- 300°F for new Kato.

If you decide to combine two or more different types of clay with different baking temperatures in one project, bake the mixture at the lowest temperature required for each of its components.

Baking time for polymer clay

Recommended minimum baking time usually is 30 minutes per 1/4" of thickness at the appropriate temperature (except for the Sculpey clays, for which the recommended minimum baking time is 15 minutes). The thicker your polymer clay piece, the longer you will need to bake it (for example, a set of round beads 1/2" in diameter will require at least 60 minutes of baking). Many polymer clay artists (including myself) prefer baking polymer clay for longer than the minimal recommended time. This helps to make the finished polymer clay items stronger. I usually bake my polymer clay items for about

twice as long as the minimal time based on the thickness of a particular item.

If you have a complex sculpted piece with parts of different thickness, calculate your baking time based on the thickest part.

A complex piece may be baked a few times in between the sculpting sessions, if necessary. To save time, the first baking sessions may be shorter than the recommended minimal time. It is important to make sure that the baking time for the final session is at least the recommended minimum baking time for the final (combined) thickness of your item. This assures its durability.

What to bake your polymer clay items on

For flat objects, use glass or ceramic tiles. To prevent thin flat sheets of polymer clay from warping during the baking process, sandwich them between two ceramic tiles and keep them in this position not only during baking, but also while the polymer clay is cooling down.

Shiny spots may develop on the surface of your polymer clay items that are coming in contact with ceramic tiles during baking. If you want to avoid this, cover your tile with a sheet of paper.

Dimensional pieces (such as round beads or small sculptures) may be baked on polyester stuffing or batting, on a pile of cornstarch or baking soda, or on various holders made out of cardboard, paper towels, crumpled aluminum foil, and other materials. Keep in mind that polymer clay softens up a little bit during baking, so any protruding parts have to be secured and propped up during baking.

Additional tips and tricks for successful polymer clay baking

Always preheat your oven before baking. The oven temperature fluctuates the most until it reaches the set value, with temperature spikes exceeding the set temperature sometimes by as much as 20°F. That is why after your oven is turned on, it is better to wait for about 20 to 30 minutes before placing your polymer clay items inside.

Use a piece of scrap polymer clay to verify your baking conditions. Bake a couple of sacrificial pieces of clay along with your polymer clay items (at least the first few times). Make these pieces from the same brand of clay that you are using in your project and use the same thickness (or diameter, if you are making beads). In the oven, place these pieces in close proximity to the polymer clay items that you want to bake. When you think the baking is completed, let the scrap clay pieces cool down, and then try to break them. If they are too brittle, you need to bake your items longer.

When placing your polymer clay items in the oven, take care to position them as far as possible from all the heating elements and the walls of the oven. There is a temperature gradient in any oven, with the most consistent and reliable temperature in the middle of the oven. The temperature is higher close to the heating elements and the walls, and it is lower close to the oven door.

Shield your polymer clay items from the upper heating element with a piece of aluminum foil. This is especially helpful for polymer clay in light colors, because some of the clay brands are prone to darkening during baking.

If possible, insulate your oven to reduce the temperature spikes during baking. There are many ways of doing it, but the easiest way is by placing bricks or ceramic tiles on top of the oven.

To enhance the translucency of polymer clay items made from translucent clay, immerse the finished item into an iced-water bath immediately after baking.

If you are concerned about the smell while baking polymer clay items, consider these suggestions:

- place your oven in a well-ventilated area or in an isolated room (which can be vacated and closed during polymer clay baking);
- loosely wrap your polymer clay item with foil or place it between two disposable aluminum pans clipped together;
- after baking, leave your polymer clay item in the oven to cool down, if possible.

In a nut shell:

- know your oven,
- always set it up carefully,
- read the temperature instructions on the polymer clay package to figure out the optimal baking temperature,
- measure the thickness of your items to calculate the minimal baking time,
- use proper materials to position your polymer clay item on during the baking process.

Happy baking!

How to Finish Polymer Clay Items

Polymer clay items may be left as is after baking, painted with various paints, and/or covered with acrylic glazes or epoxy resin. They may also be sanded and buffed before and/or after applying the glaze.

Adding Texture

Highly detailed sculptural pieces as well as those with rich or intentionally rough textures do not need to be sanded. If you would like to make the texture and sculptural details more visible, they may be antiqued by adding patina. To create patina on polymer clay, use acrylic or oil-based paints in colors either darker or lighter than the main color of your piece. To add patina, cover your piece with the paint, and then remove most of it with paper towel or a slightly wet sponge.

Sanding and Buffing

Many designs in polymer clay look better (more professional and refined) after sanding and buffing.

To achieve high-gloss surface, use multiple grids of sand paper, starting with the lowest grit. You will need sand paper with grits from 320 to 800 (some polymer clay artists recommend even a higher number, and some say that as low as 600 is good enough).

Wet sanding is recommended to prolong the life of sand paper and to avoid dust. You may use running water or a water bath (a drop of liquid soap or dish detergent may be added to the water bath to reduce surface tension).

Buff the sanded surface of your polymer clay item on a piece of rough cotton (old jeans are ideal for this task).

Dry the sanded and buffed polymer clay item thoroughly before applying any glaze.

Applying Glaze

Applying glaze to your finished polymer clay items is optional. It does not really protect your polymer clay item. What it does, it either adds more shine to your sanded polymer clay piece (if you are using gloss finish), or it reduces the shine (if satin finish is used). Neither of these finishes works as a substitute for sanding. If you are applying glaze, you do need to sand your polymer clay creation first.

Sculpey glaze is available in satin or gloss finish (at about $3.50 for 2 oz.). Alternatively, water-based clear gloss for hardwood floors may be used (such as Varathane or Future). The most economical option (if you anticipate a lot of use) is 1 gallon (128 fl.oz.) of floor finish for about $50.00.

To cover your creation with the glaze, you may use a brush and paint the glaze on, or you may dip your polymer clay item into the glaze.

- To avoid trapping the air in your brush, prepare the brush by dipping it in water first, then squeeze the excess of water out and use it to apply the glaze. Place the brush in water immediately when you are done and wash and dry it thoroughly after each session.
- When using the dip-in method, the trickiest part is removing an excess of the glaze from your polymer clay items. Turn them often during the first few minutes of drying.
- The highest gloss is achieved if the glaze is applied to a cool polymer clay surface. Applying the glaze to the polymer clay item hot from the oven will result in a satin finish.

- Multiple layers of the glaze may be applied. Allow your polymer clay item to dry completely between applying the layers of the glaze. You may oven-seal the glaze at 200°F for about 10 minutes after each application, but it is not necessary. Make sure the glaze is completely dry before placing the polymer clay item back in the oven!

The glazed surface may be sanded and buffed, if desired.

Many of the difficulties described above may be avoided by using a spray-on type of glaze. My new favorite for this task is PYM II spray (available online).

Applying Resin

While glaze cannot be used in place of sanding, a two-part epoxy resin can. One layer of this resin is equal to about fifty layers of a regular glaze, so it works perfectly to level out and hide any surface imperfections your polymer clay piece may have. The only down side of using the resin for me is that it can only be applied to flat surfaces. So, you will not be able to cover spherical beads with this resin, but it does wonders when applied over a flat polymer clay pendant, for example.

To learn how to work with two-part epoxy resins, please refer to my step-by-step tutorial on this subject.