



CERAMIC

Techniques and processes

Texts: Beatriz Sala Santacana
Images: Johanna Puyol

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Preparation of the clay body



^ Red and gray clay

THE CLAY

In ceramics a lot of types of clays can be used. In my work I use white clay made of feldspar, gray kaolin, and red clay from the province of Pinar del Rio, to the northwest of the country.

This clay has a vitrification temperature of between 1040 C° and 1100 C°. It is gray-colored when wet and dry, but it acquires a light pink color when bisque fired (when burnt in the kiln).





^ Mixer



THE CLAY BODY

With an iron mace we cut up the dry clay lumps, crumbling them into little pieces that we put in a small bucket, filling three quarters of it. We fill the last quarter with red clay also in small fragments. Then, we pour the content of the bucket into a beater or mixer, adding water little by little. The beater breaks the pieces with its blades and both materials begin to mix with water. When a more or less thick paste is formed, we put it through a sifter in order to eliminate any impurity.

This filtered mixture is placed in a plaster drying container that helps to extract the excess of water, and it is at that moment that we add the chamotte, which we mix by hand. From then on the mixture is ready; we let it rest, depending on the environmental moisture, for four or five days.

Chamotte (or grog) is the fired and crushed clay introduced in the form of grain to the clay body to give it hardness and avoid cracks during the drying process and the firing in the kiln. We add chamotte to the clay according to the size of the work to be made. If the sculpture has small or medium format, we add 15 to 20 % of chamotte in fine grain (0.5 to 1 mm). If it is a large format sculpture (bigger than 1 m) we would add from 25 to 40 % of chamotte ground in average grain (1.5 to 2 mm).



THE COMPACT COLUMN

When the clay body acquires a consistency similar to shaping clay, we knead it by hand and afterwards we put it through an extruder. This machine gives homogeneity to the clay body, extracts the air from the mixture and makes it compact. Through its barrel, the clay is forced out as a firm column, what ceramists call in Spanish pella. From now on, our clay is ready for shaping.

This process of preparing the clay is done in large enough quantities to store for long periods, because it is important to let the clay body age, that's to say, let it rest well covered in a humid place at least for a month before using it. The aging gives more plasticity and softness to the clay body, and prevents cracks and excessive stickiness during the shaping.





Shaping



THE SLABS

In ceramics there are various shaping techniques that vary according to the type of piece we intend to create. In the case of my sculpture, the main method is the flattened slab of clay. Therefore, my main tool is the slab roller. This machine is made of two rollers: a fixed one on top and another adjustable below, between which the clay body is compressed through, flattening the clay into sheets of even thickness. The thickness of the slab obtained will depend on the space we leave between the rollers. That uniformity is important to prevent cracks and splits in the sculptures. The thickness that I generally use for sculptures is from 0.4 to 0.5 mm in pieces of small and medium format, and from 15 to 18 mm in pieces of large format.





HAND BUILDING OF THE PIECE

We prepare as many slabs as pieces we are going to make. Next, using wood modeling tools and slip (an aqueous suspension of clay body and water that acts like glue) I join each slab, shaping and building up the piece. I always do a preliminary sketch that, although it can suffer transformations during its execution, saves a lot of working time.



DRYING

Once the piece is built, it's left to dry in a humidity free environment. That's why in our case we place it on shelves next to the kilns, where the residual heat contributes to speed up the process and where breezes can't deform it. After a week, we are ready to bisque firing. Considering that we use costly electric power, we seldom waste space in the kiln with a single piece. In general ceramists try to stack their kilns with a batch of pieces for a more productive firing.



Kilns and firing

STACKING THE KILN

When pieces are bone-dry at room temperature, we are ready to load them into the kiln for their first firing, what in ceramics we call bisque firing.

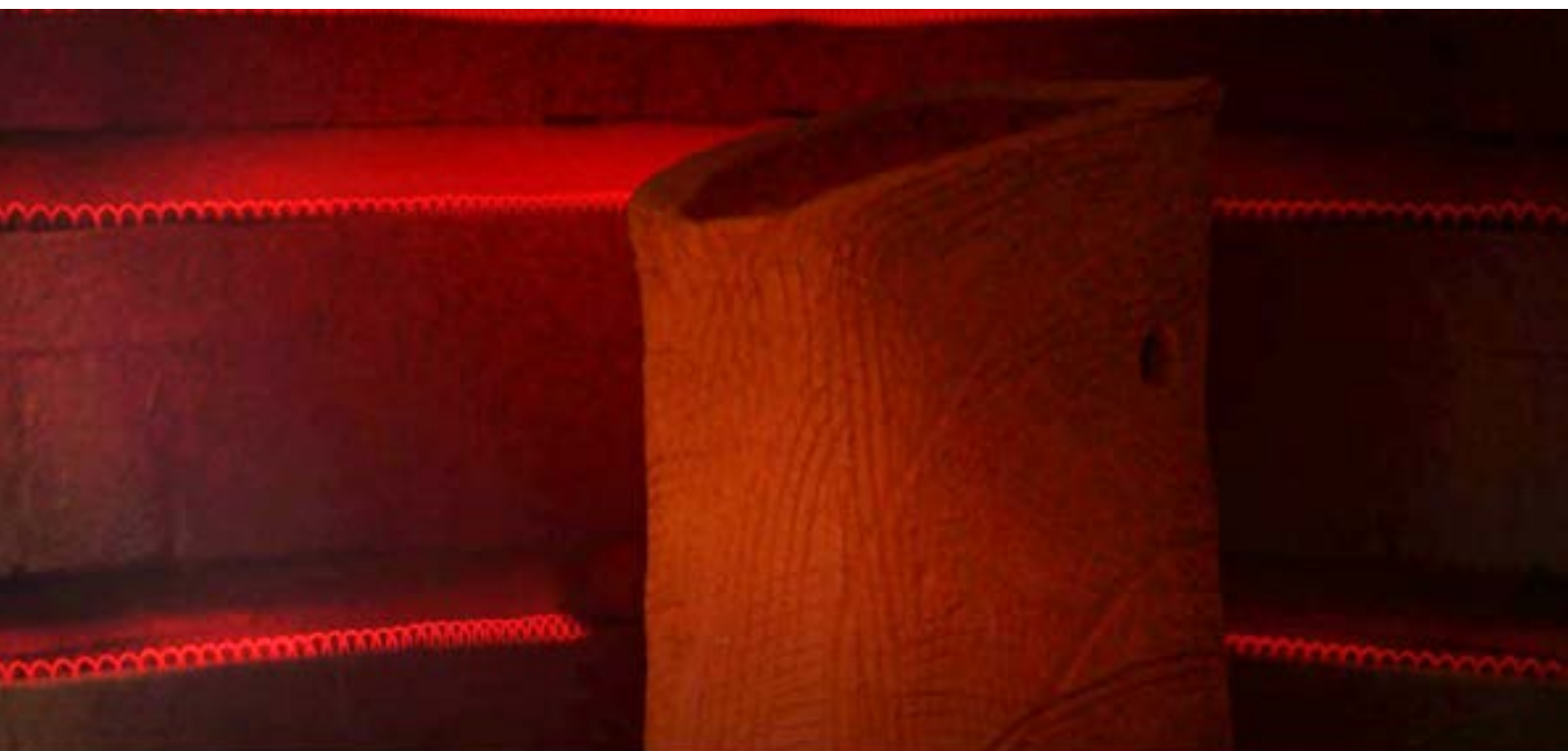
The method of stacking a kiln depends on the firing we are going to carry out. It is different to prepare a batch of raw pieces than one of glazed pieces. In the case of the raw pieces, that is, those that have not been yet fired, they should be completely dry and can be placed directly on the kiln shelves. In order to optimize the inner space, they can even pile up or touch each other.



FIRING AND TEMPERATURE

After loading the kiln we begin with a slow firing, with the air vents always open to favor the exit of water vapor. Temperature will increase gradually. We control this process with a digital programmer in which we set a cycle that prevents sudden temperature variations. Up to 400 C°, the increase should be very slow, more or less 100 C° by every hour and a half. From there, the progression can accelerate since the most critical moment of firing, in which the big cracks generally occur, will have passed.

We turn off the kiln at 1060 C°, which technicians consider a medium fire temperature. Then a very sudden descent of temperature occurs, stabilizing at approximately 500 C°, after which it continues to cool slowly. After 20 to 24 hours, when the kiln is almost at room temperature, we can open it to see the result of the work.



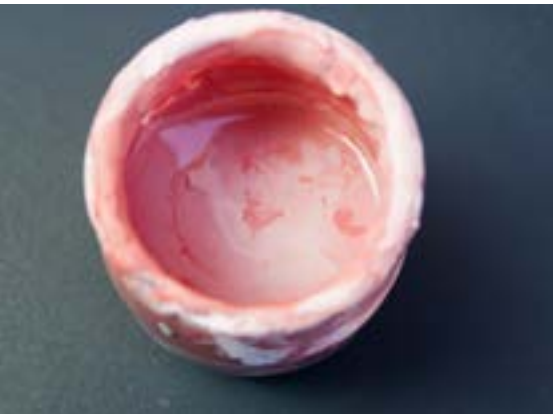
Glazing

INTRODUCTION

Glazing is, in my judgment, the most complicated process in ceramics. It requires greater study, analysis and observation. It is important for us to be very clean and organized in our work, and take notes of all the steps we follow to learn from our own experiences: If we want to obtain that result we liked again, we will know how to do it. From our experimentation will come our best formulas, and with them our true contributions to the art of ceramics. With our own results, we will have gotten a true personal seal that will make our work stand out from another artist's that uses the same materials and the same techniques.

Perhaps the biggest difficulty of glazing is that it takes a great deal of imagination since the true hues only appear after firing. The glaze is a thin coating of glass applied, in the form of powder diluted in water, over the surface of a piece. When it is fired, the raw materials in it react among them, melt down and coat the piece, making its color unchangeable even if it is placed outdoors, exposed to all kinds of weather.

The glaze will be the finishing touch of the artwork and it will be so determining that from this point onward we will know if the piece will continue its life or go to the trashcan for its destruction.



COMPONENTS AND TEMPERATURE OF GLAZES

Glazes can be transparent, opaque, bright, semi-matte and matte. They are made of three basic ingredients: The first one is silica, that will form the glass; the second one, a flux to control the melting point of the glaze, which can be leaden or alkaline for low temperature –if it contains lead or sodium – or potassium or feldspar for high temperature. Alumina is the third ingredient that provides stability and enables its bonding to the clay body.



Glazes are also classified according to their maturing temperature: The ones with low temperature mature between 900 C° and 980 C°; the medium ones, in the range of 1020 C° to 1060 C°, and the high ones between 1200 C° and 1300 C°. The glazes I use to vitrify my pieces work at 1020 C°, thus classifying in medium temperature.





STACKING AND FIRING IN THE KILN

Preparing a batch of glazed pieces requires better care than one of raw pieces. Before loading a glazed piece into the kiln we should verify the glaze is totally dry, since humidity can cause defects. Also, the base of all pieces should be cleaned of glaze remains. When placing them, we will do it on refractory supports to avoid stains or drippings of glaze that would damage the refractory shelves of the kiln. To protect those and to prevent the pieces from adhering, we apply a coat of kiln wash to the shelves (alumina with kaolin dissolved in water).



During the stacking process, we should also leave space between pieces and place them about 3 cm from the walls of the kiln; for they will get fused to any surface they make contact with during the firing.



The glaze firing should be slow, although it is often faster than the bisque firing. It will begin slowly, with the air vents opened so the vapors can exit. We maintain this low rate up to 300 C°, at the rate of 100 C° per hour. From then on, we increase the heat until reaching the fusion or maturing temperature of the glaze. This firing can last from 6 to 8 hours depending on the size of the batch in the kiln and of the complexity of the pieces.

However, when the glaze reaches maturity, we do not turn off the kiln but rather keep the final temperature during 30 to 45 min, so the glaze fuse perfectly to the ceramic body avoiding pinholing (bubbling). In the glaze firing the cooling time is longer than the bisque firing; this is why we allow the kiln to get completely cold, to the point of being able to take out the pieces with bare hands.





THE COLOR IN THE GLAZE

The coloration of the glaze takes place when oxides are mixed in (copper, cobalt, manganese, iron and nickel, among others) or when pigments are mixed in, which are industrially manufactured colorants.

The metallic oxides produce some very special colorations in the glaze, not comparable to the ones that can be obtained using pigments, which are often more flat and stable. When oxides are used, the result is a color with a lot of shades. Little particles of different metallic and black tones get fixed inside the glaze. The use of oxide as colorant yields a piece with a finishing of greater beauty, attraction and artistic level.

Even though the beauty of the oxides as colorants is indisputable, so is their complexity, therefore it is important to have tried them before applying them to the glaze, because some of their components can have an adverse reaction with it and raise or lower the maturing point, which will cause glazing defects like crazing, crawling or pinholing. It is also crucial to apply the oxides in the adequate quantities.





PIGMENTS

Pigments are easier to use, because unlike oxides, they give an idea of the future color the artwork will acquire. Oxides are grayish during their application, no matter the final color. Pigments are more stable since the manufacturer indicates the temperature they should be fired, they have a wide range of hues and they can often be mixed among themselves. Perhaps the main inconvenience is that they generate flat colors, but if we experiment on them, we will be able to obtain interesting nuances.

The glazing in ceramic requires so much study and time, it is difficult for a ceramist not to guard jealously the tests of glazes he works with, as well as his notes on the procedures.

In my case, they have a leading role in my workshop. On the back I write the method I used, because I go back to them constantly. As experimentation should never come to an end, I still have empty spaces waiting for new results.





^ *Paint-brushes*



GLAZING PROCESSES

There are four traditional ways to apply glaze: dipping, pouring, spraying and paint brushing. One is more advisable than the others according to the type work. For instance, in vases, two commonly used methods are dipping and pouring. For sculpture, the paintbrush is the most recommended in general.

In my work, I mostly use the paintbrush and the hake brush to glaze. Sometimes I use the spraying method with an air compressor, in order to achieve a finishing effect.

As to the coloration, generally I start by applying with a flat brush two or three layers of white-matte glaze, on which I paint successive layers of bright glazes of many colors, obtained from pigments and oxides – previously tested –, in order to get a lot of hues in a same piece.

When using a matte glaze as base, the final layers have a very controlled brightness that I need to achieve harmony between the gentleness of these glazes and the roughness of the rusty metals, the worn-out woods, the nuts and screws, in addition to other rustic elements I use in the sculptures.

Third fire: The lustre

Lustres are a thin layer of metal that are applied over the surface of a glazed piece. They are metal salts that can be precious (gold, platinum) or non-precious (copper, bronze, cobalt, cadmium, manganese). They are applied with paintbrush and they are refired at a lower temperature than glaze firing. They hardly ever exceed 800 C°.

During firing the salts and oxides get fused to the glaze causing iridescent colors. This process can be considered an overglaze or third fire, since the artworks have their first bisque firing at 1060 C°, the second glaze firing at 1020 C° and this third luster firing for decoration at 750 C°.

In certain sculptures, I use the lustres to create some iridescence in small areas, although I mainly use this firing to decorate some of the beads on the necklaces I design.





TECHNIQUES AND SPECIFIC PROCESSES

Assembling

I go out, search and find



I cannot avoid feeling attraction for the enormous garbage cans that can be found regularly in any corner of Havana. I search for –and with certain frequency I find– objects that I add to the sculptures. Sometimes I transform them, others not– striving for a harmonic discourse with the combination of apparently incompatible materials as can be glazed ceramics mixed with rusty sheets of metal, ancient iron pipes, the wood from old lampposts or ancient houses, or the bolts and nuts taken from old mechanisms of who knows what objects.

All these rejected elements –rusted, worn down, ruined for their original functions–, far from being at odds with the bright finishing of ceramics, give rise to a particular language in the sculpture that provides it with a greater expressive force.





Murals

For most of the murals created by me, I use a panel of industrially manufactured white tiles.



The process I follow starts from a sketch that I draw previously on sheets to scale, depending on the final dimensions. I start by placing the tiles on the work table, or on the studio floor if the dimensions surpass the size of the table. With a ceramic chalk I draw the project's silhouette. Over the ceramic chalk I apply the glaze with a rubber bulb syringe that gives me more freedom in the strokes than the paintbrush. With the contour already glazed, I fill out the shapes with colored glazes. Later, I divide the mural in sections and I work on each part individually until finishing the whole drawing. Finally, I join all the tiles to apply as a whole the final shades, superimposing glaze layers of different hues.



In some, I add pieces of glass that I recycle from bottles or stained-glass windows, in order to get certain textures. I use this process at a smaller scale to create individual glazed tiles that are also part of my small format work.





Glazed tiles

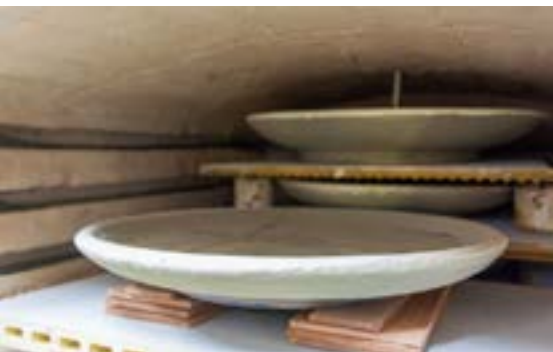
The small abstract works that I show in the Studio are recycled glazed tiles from old houses of Havana. These houses, built in the 40's and 50's of the last century, used little 11x11 cm glazed tiles in kitchens and bathrooms. At present, when many of them are in restoration process, those old glazed tiles are substituted by more modern designs. What I try to do with my work is return their decorative use. The glazing procedure is similar to the one I use in murals, except that in this case I do not make a previous sketch.





Plates

They are created with red clay and they have a creative process similar to the murals and the glazed tiles. I also include in them fragments and recycled glass dust to achieve unique textures.



Vases

In the vases I use the pouring method on the insides, and the hake brush and the paintbrush on the outside. I never use a previous sketch for this type of pieces, their decoration is random. When I do figuration on the vases, I generally use geometric decorative elements. In the last period, I have also made abstract stains that I create with several overlapping glazes. In some pieces, I have introduced metal details such as handles, screws and steel bars.





Necklaces

Seeing the necklace as a closed magic circle that envelops our energy, character and personality, I have given them a special place in my work.

With the spirit of achieving pieces of great personality that interconnect with the rest of my work, I have developed a line designing and creating beads for necklaces, always enhancing the quality and the exclusivity of the designs.

The shaping process, bisque firing and glazing is similar to those for the sculptures. In some beads I use lustres that require a third firing.

For the necklaces I use stainless steel threads and clasps from silver, golden silver, plated silver or gold. In some cases I use leather threads, also with silver clasps. The beads, in all cases, are glazed ceramics.

