



Pottery Internship report

Submitted By:

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126130008





Acknowledgement

I am thankful to my teacher Meena vohra for her guidance and support throughout this internship. Her eye for detailing and constant enthusiasm has inspired me to work harder and harder. I am also thankful to all the beautiful souls to whom I come across in the studio. It is because of them all that I cherished each and every moment spent in the Studio. I am also thankful to my parents, family members and freinds for constant support.





Potter's Clay

One piece at a time, the Potter uncovered the pieces of clay.
They were scattered on the ground from where He gently lifted them.
As He began to speak the designs that He would make,
The broken clay transformed into its new shape.

There it was, His newly made guitar;
Perfectly created, without a flaw!
Filled with pride, He played the melodies for which He had created it
And the skies were filled with the colors of His smile.
Yet, one day, the wind blew the guitar astray
And the pieces of clay were left without a shape.

"This time," He thought,
"I will create something sturdy like a rod."
His voice was heard over the heavens
As the mighty thunder would speak.
The pieces of clay became His feet.

Now the Potter's hands have scars.
His blood keeps together the clay
As He listens to the melodies of the songs played
By His unbreakable pots of clay.

Author: Al-Marie Mere



Completion certificate

STUDIO 78

meena vohra

Ceramic Artist

D-78, Sector – 21, Jalvayu Vihar, Noida 201301

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms Sugandha Jain, has completed the internship at Studio 78 from 20th May, 2013 to 20th June ,2013. We found her sincere, hardworking and result oriented.

Wishing her all the best for her future.

meena vohra.

Meena Vohra

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Studio team



Meena Vohra Ma'am with her work



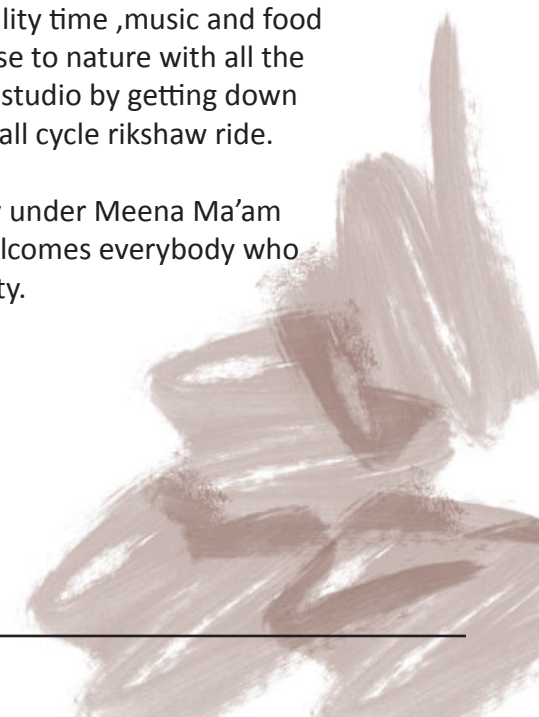
Studio 78

Studio 78 located in Sector 21, Noida is owned by an AIFACS awardee artist Ms. Meena Vohra. Her studio is well equipped with 2 potters wheel 1 kiln, custom glazes, tools and with lots of enthusiasm. The owner of the studio had her first date with clay at the age of 50, and now she has carved a niche for herself.

She has done seven solo shows and a number of group shows in India. According to her pottery is divine, it is very close to life. It teaches one determination, patience, and detachment and helps one developing an eye for beauty. The satisfaction one derives while holding the 3D pot one's create and the sheer joy of feeling it is immense.

One can go through her website.....<http://meena.smugmug.com/> to have a look at her creative work. Working in the studio is a total experience ---not only learning pottery, we work as a family and believe in quality time ,music and food are a part of fun time here. Working environment is close to nature with all the green pots surrounding the studio. One can reach to her studio by getting down at 'sector 18' delhi metro station and then by taking small cycle rikshaw ride.

It was a wonderful experience to learn basics of pottery under Meena Ma'am guidance and to know what pottery is all about. She welcomes everybody who is willing to learn and one must not miss this opportunity.





A pot made on the wheel




Design brief :

To explore and learn vast world of clay. Understanding of its strength and weaknesses.

Why Pottery ????

Clay is so directly linked with life it is so natural. Like life it is full of surprises. I was always fascinated to know how people transfer lump of clay into useful products. To me it always gives a sense of excitement with every single piece which we make, because every time result is different and the unpredictable feature makes it much more fun.

The beauty of its rebirth again & again, gives you a childlike feeling, it tells you that it is 'OK' to be wrong and you can mend the mistakes. Pleasure of doing it all, from scratch to end, makes you the sole owner of your creations.





Lump of clayThe basic material for pottery



Potter's wheel



Tools used in pottery



ClayThe basic material

The basic raw material for making any ceramic product is clay .Pottery is made by forming a clay body into objects of a required shape and heating them to high temperatures in a kiln to induce reactions that lead to permanent changes, including increasing their strength and hardening and setting their shapes. The clay that we used was mainly stoneware clay. A typical clay body usually consists of china clay, ball clay (added to increase workability and plasticity), potash feldspar, silica and talc. These are available in the market, ready to use. The choice of clay depends on temperature of firing, desired quality and finish of the product.¹

Recipe for a stoneware clay body:

1. china clay – 35gm
2. Ball clay – 20 gm
3. Potassium feldspar – 15gm
4. Silica – 15gm
5. Clay – 15gm

3 properties of clay for successful pottery.

a) Plasticity

Clay when wet with proper amount of water, it forms a cohesive mass and retain its shape when molded.

b) Porosity

Clay has high porosity and low permeability so that it can retain water, which can be improved by sand/ grog.

c) Suitable vitrification range

When heated to high temperatures, it should partially melts, resulting in the tight, hard rock-like substance known as ceramic.

1. <http://www.dsource.in/course/ceramics/clay.html> accessed July 4, 2013





Taking the lump of clay



Slicing the clay with cheesewire and banging it on table



Kneading the clay forming the waves



Ball now ready to use




Wedging of clay

Before starting to make anything wedging the clay is the primary and most important step of pottery. It is done before any other activity to help compact the clay and get air pockets out, ensuring that it is uniform in stiffness. If the clay body isn't wedged properly, the chances are one won't get things right.

Process involved in wedging are:

1. Take a lump of clay.
2. Slice it into parts.
3. Bang the parts on top of one another to expel air bubbles.
4. Mix it and form a lump again.
5. Knead it creating waves .
6. Make a final lump out of it.

Tool used in this process is cheesewire.





Flower Holder



Tiny Flowers



lamp shade


Hand build products



Hand-building Techniques

Hand-building stands for 'building something with the hand'. It is the earliest, most individualized and direct forming method. It is slower and more gradual than wheel-throwing but it offers the potter a high degree of control over the size and shape of wares. Material and tools required are clay, water, sponge, prick pen, cheesewire, slip, cutter, brush, rolling pin, filer.

Most commonly used hand-building techniques are:

- Slab
 - Coiling
 - Hollow ball
 - Pinching
 - Stick method
- 



Making of butterfly from flat slab



butterflies after bisque firing



Washing them after bisque firing



butterflies after acrylic paints



Final product



Slab Technique

Slabs are long, flat, stretched pieces of clay. Wedged clay can be rolled out into thin slabs by a rolling pin on an even platform. These are usually made on either a plastic sheet or fabric so that it doesn't stick to the table top and can be lifted easily. Different products can be made by combining these in different ways. Things like wind-chimes, pots, fridge magnets can be made by this method.

The process involved in making of wind- chime are:

1. Wedging
2. Rolling out into thin sheet
3. Cutting desired shapes
4. Bending the cut piece into desired angle
5. Filling holes with soft clay (if needed)
6. Marking the lines with pins when it is in leather hard stage.
7. Sponging regularly to prevent cracks.
8. Making holes for antennas and wires.
9. Allowing it to dry for few days till it becomes bone dry.
10. Bisque firing all the butterflies.
11. Sanding it with sandpaper of 80 grade to make it smooth
12. Washing it under running tap water.
13. Fixing the antennas with araldite solution.
14. Fixing a broken butterfly with araldite solution.
15. Painting them with acrylic colors.
16. Putting butterflies and beads through fishnet wire.
17. Hanging them from a ring.

Tool used in this process are cheesewire, pin, rolling pin, knife and sponge.





making of slab for base



Pricking of slab and applying slip for attachment



making of coils



Pot after bisque firing



Coil Technique

Coiling is done by rolling clay in between the palms or on a flat surface to make thin coils. Pots can be made by forming these coils and putting them on top of each other, joining them with slip (a runny mix of clay and water). Gaps between coils need to be filled up with wet clay. To join two adjacent coil rings marking of vertical lines between them is done, this also strengthens the bond. Any detailing or textures can be added to the pot to make it further interesting.

The process involved in making of coiled pot are:

1. Wedging
2. Preparing a base (through slab work)
3. Making coils
4. Pricking coil and applying slip
5. Attaching or pasting coils (one on top of the other)
6. Filling gaps with wet clay
7. Marking lines in between each coil(interior) to join them.
8. Adding any interesting element at the end of last coil.
9. Defining the coils (exterior)
10. Pricking and attaching attachments to the coil through slip.
11. Allowing it to dry for few days till it becomes bone dry.
12. Bisque firing.
13. Sanding it with sandpaper of 80 grade to make it smooth
14. Washing it under running tap water.

Tools used in this process are roiling pin, pin, brush, knife and sponge.

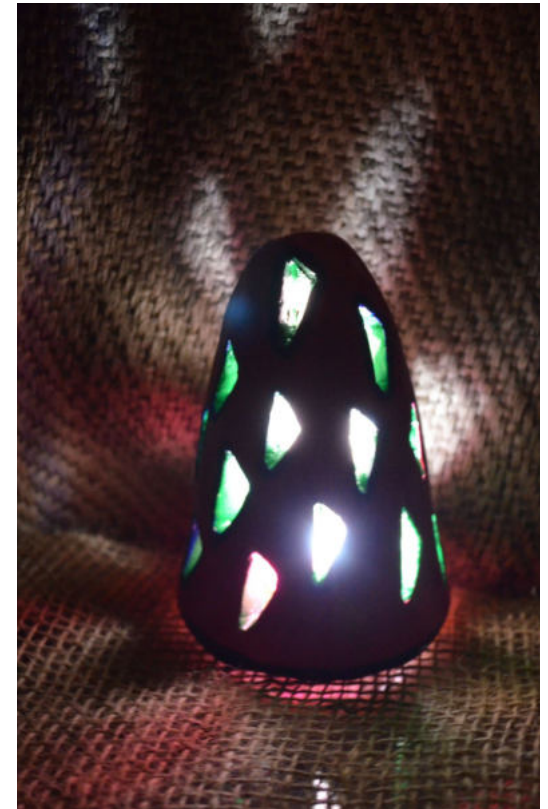




Flower Holder



Napkin holder



Candle sahde

Products made up from hollow ball technique



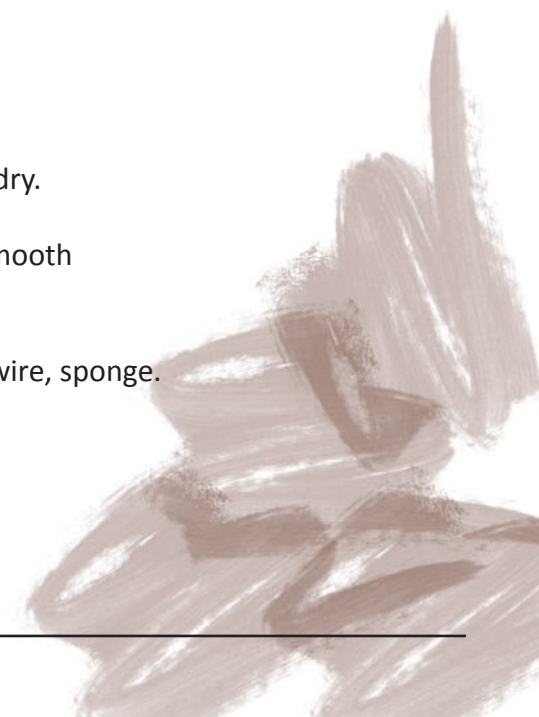
Hollow-Ball Technique

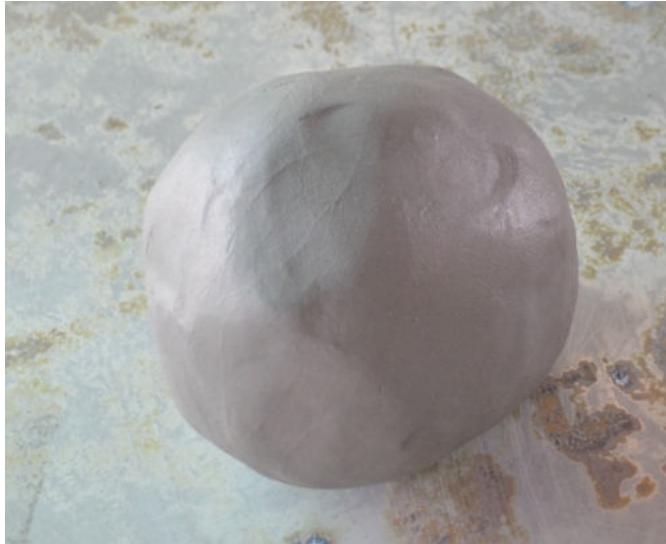
Hollow ball technique is used to make pots or utilitarian things that are hollow. In this method clay ball is sliced in two halves, than clay is scooped out from two hemispheres and joined them to form a whole. Walls of the two hollow halves are pricked and slip is applied on them to join well. After that coil is applied along this joint for strength. Then, sponging and smoothing out is done to make it look well finished. Detailing can be done after this.

The steps involved are:

1. Wedging
2. Making a ball
3. Slicing in two halves
4. Scooping
5. Smoothing or sponging
6. Crisscrossing or pricking walls to apply slip
7. Joining the 2 hollow halves
8. Applying coil along the join for strength
9. Making holes or adding details.
10. Allowing it to dry for few days till it becomes bone dry.
11. Bisque firing.
12. Sanding it with sandpaper of 80 grade to make it smooth
13. Washing it under running tap water.

Tools used in this process are pin, brush, knife, cheesewire, sponge.





Round ball of clay to start with



Start from making a hole in the centre



Pot made using
Pinching
technique



Pinching Technique

One takes a ball of clay and open hole in the middle. Then, you start pinching the sides to form the desired shape. One has to press two fingers together with the clay between them. The pot is then pushed on a flat surface to create a flat surface, thereby creating the base.

The process involved in making a pinched pot are:

1. Wedging
2. Making a ball
3. Wetting thumb and opening
4. Making base without opening too much.
5. Making wall thickness uniform
6. Shaping
7. Pushing the pot on a flat surface to create a flat surface.
8. Marking the lines.
9. Allowing it to dry for few days till it becomes bone dry.
10. Bisque firing.
11. Sanding it with sandpaper of 80 grade to make it smooth
12. Washing it under running tap water.

Tools used in this process are pin, brush, knife, cheesewire, sponge.

Tips²

- work in a spiral from bottom to top
- use the tip of your thumb on the interior, while supporting the exterior with your other hand
- deep cracks should be welded immediately using a tiny amount of slurry or slip
- rims can be left untrimmed or they can be trimmed with a potter's needle when the pot is leather-hard.



Sticking of clay to the stick



Getting the shape of the product



Marking of the lines before cutting



Product after bisque firing



After painting and attaching the tail



Final Product



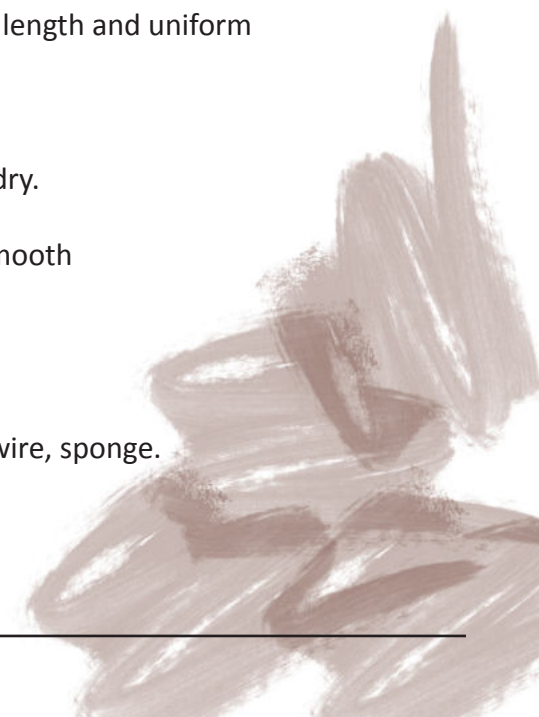
Stick Method

Take a ball of clay and place it onto the stick. Then, start pressing the sides of the ball to form the desired shape. One has to keep rotating the stick at regular interval so that clay does not stick onto it or else put polythene over the stick. Then remove the stick after reaching the desired length and uniform thickness of walls. The pot is then pushed on a flat surface to create a flat surface, thereby creating the base.

The process involved are as following:

1. Wedging
2. Making a ball
3. Cleaning the stick with wet cloth.
4. Placing a polythene sheet over the stick (as because of the triangular shape stick can't be moved).
5. Pressing the clay against the stick to get the desired length and uniform thickness of the walls.
6. Removing the stick and polythene.
7. Cutting and adding the required details.
8. Allowing it to dry for few days till it becomes bone dry.
9. Bisque firing.
10. Sanding it with sandpaper of 80 grade to make it smooth
11. Washing it under running tap water.
12. Fixing the tail with an adhesive.
13. Painting the pot with acrylic paints.

Tools used in this process are pin, brush, knife, cheesewire, sponge.





Ball of clay to start with



Centering the clay



Making of cone



opening of the container



Pulling the walls through knuckle pulling



Finishing up with sponge



Wheelwork

Wheelwork can be used to create wares with radial symmetry on the vertical axis. These can then be altered by pressing, bulging, carving, fluting and by other methods making the wares more visually interesting. Often, thrown pieces are further modified by making handles, lids, feet, spouts and other functional aspects are added using the techniques of hand work.

The process constitutes of:

1. Wedging : Removing the trapped air within the clay body (de- airing) and ensuring even moisture throughout.
2. Throwing : Placing the ball of clay in the center of the wheel head
3. Centering: Pressing the ball of clay downward and inward into perfect rotational symmetry.
4. Opening : Making a hollow in the center of the solid ball of clay.
5. Flooring : Making the flat bottom inside the pot.
6. Pulling : Drawing up and shaping the walls to an even thickness by knuckle pulling method.
7. Shaping : Giving the pot the desired shape by applying varying pressure on the inside and outside of the pot.
8. Trimming: Removing excess clay to refine the shape or create a foot.(done in leather hard stage).

The first few pots need to be dissected to examine wall thickness and weight.





Few containers and bowls

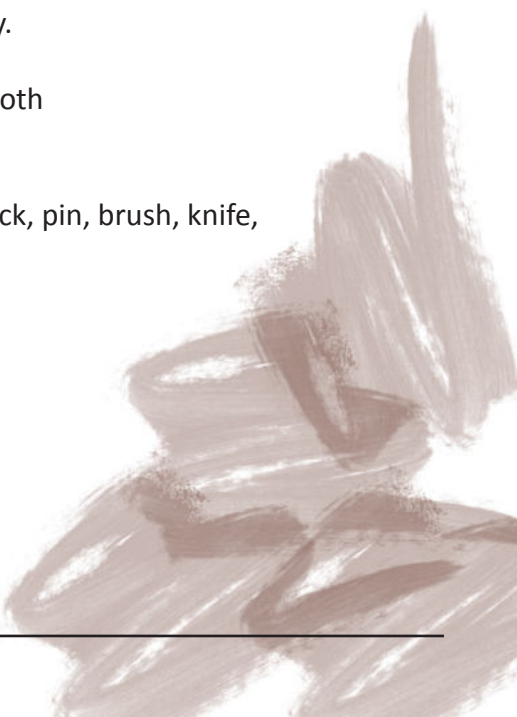


Making of cylinders/ bowls

Process involved are as following:

1. wedging
2. Throwing
3. Centering
4. Making a cone, pulling it up, bringing it down
5. Opening
6. Flooring
7. Pulling
8. Shaping
9. Making the neck
10. Cutting or detaching from wheel
11. Trimming or turning (when it is in leather hard stage)
12. Fluting or attaching elements
13. Allowing it to dry for few days till it becomes bone dry.
14. Bisque firing.
15. Sanding it with sandpaper of 80 grade to make it smooth
16. Washing it under running tap water.

Tools used in this process are potter's wheel, bamboo stick, pin, brush, knife, cheesewire, sponge.





Hump thrown tiny pots



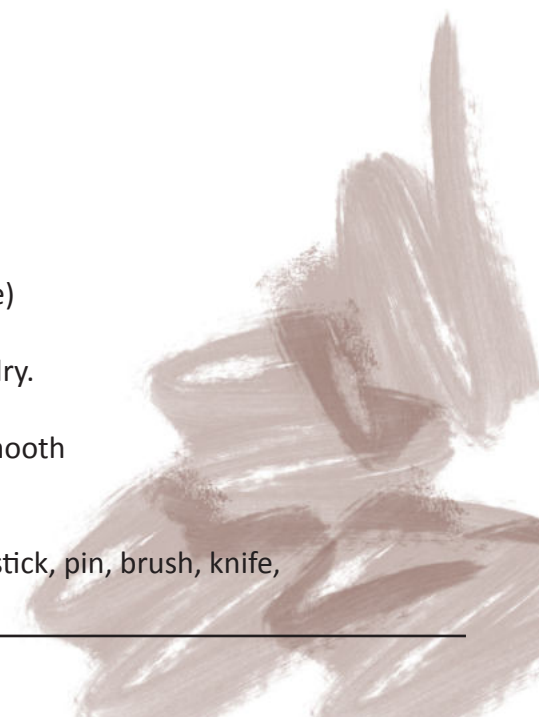
Hump throwing

Hump throwing is a process in which instead of making one pot at a time and removing it from the wheel, many small pots from a big lump of clay are made. The steps followed are the same as in throwing a bigger pot. These are removed one after the other from the lump by using a thread. This, undoubtedly, needs a lot of practice and more difficult than throwing a single pot. It is a faster way of 'production' and saves the time of putting clay on the wheel each time for making a pot.

Process involved in making tiny pots on the wheel are:

1. Wedging (a large ball of clay)
2. Throwing
3. Making a cone, pulling it up, bringing it down
4. Centering (at least the upper half of the clay cone)
5. Opening
6. Flooring
7. Pulling
8. Shaping
9. Making the neck
10. Cutting or detaching from wheel
11. Trimming or turning (when it is in leather hard stage)
12. Fluting or attaching elements
13. Allowing it to dry for few days till it becomes bone dry.
14. Bisque firing.
15. Sanding it with sandpaper of 80 grade to make it smooth
16. Washing it under running tap water.

Tools used in this process are potter's wheel, bamboo stick, pin, brush, knife, cheesewire, sponge.





Fixing up of pot for trimming



Giving texture at leather hard stage



Trimming using a choc



triming of pot without using stoppers



Burnishing on a dry pot



Trimming and fluting

Trimming a pot is about removing excess clay to refine its shape when it is leather-hard. This is done by centering the pot on the wheel or by hand-holding it. Trimmings (dry shavings) are wetted and recycled to prepare fresh clay. Engraving, embossing, creating textures on the pot is called fluting. It also includes attaching handles or decorating it with hand-built clay pieces. This is done after trimming, while the pot is leather-hard (neither too wet, nor too dry), after which it is not possible to do much because they are too dry and liable to break.

The process involved are:

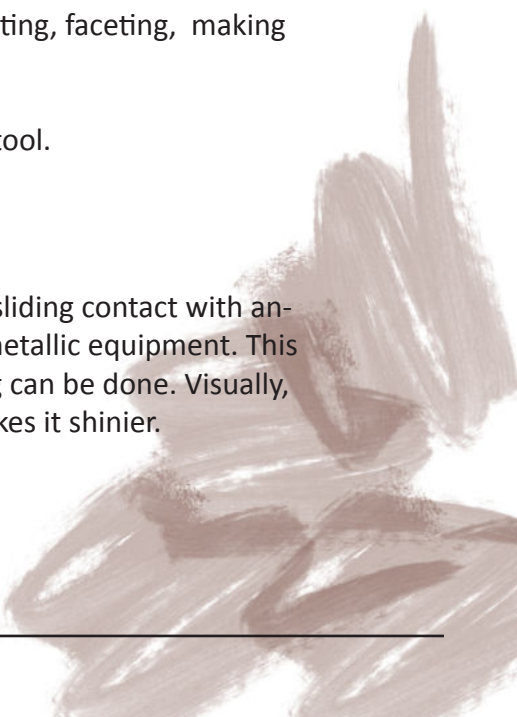
1. Wetting the pot.
2. Fixing the pot with clay stoppers (and a choc for small narrow neckpots)
3. Trimming the extra clay
4. Enhancing the pot by impressing, bulging, carving, fluting, faceting, making the ware more visually interesting.

Tools used in this process are potter's wheel and fluting tool.

Burnishing

Burnishing is the plastic deformation of a surface due to sliding contact with another object. It is achieved by rubbing the pot with any metallic equipment. This is done when the pot is absolutely dry and no other thing can be done. Visually, burnishing smears the texture of a rough surface and makes it shinier.

Tools used in this process is any metal object like spoon.





Loading of the kiln before firing



Kiln while firing.



Opening up of the kiln



Stuff made by me



Applying bat wash



After bat wash has been applied.



Bisque firing

After the pot is finished being worked upon it is left to dry naturally. There is shrinkage to which is generally 4% to 10%. When they are bone dry, their bisque firing is done in kilns that are heated by burning wood, coal, and gas or by electricity. Modern kilns powered by gas or electricity is cleaner, more easily controlled and often allow shorter firing cycles. Bisque firing is the first time the pots go through high temperature heating. It is done in order to vitrify the clay pots enough that they won't be harmed when glazes are applied, but not vitrified to such an extent that the glaze wouldn't adhere correctly. As the clay is slowly heated, this water evaporates out from the clay. If the clay is heated too quickly, the water will turn to steam right inside the clay body, expanding with explosive effect on the pot.

During the beginning of the bisque firing, the last of the atmospheric water is driven out of the clay. When the kiln reaches about 350 °C, the chemically bonded water begins to be driven off. By the time it reaches 500 °C, the clay becomes completely dehydrated. At this point, the clay is changed forever (now a ceramic). The bisque firing continues until the kiln reaches about 850-900 °C. At this temperature, the pots are sintered, made less fragile while still porous enough to accept the application of glazes. Once the desired temperature has been reached, the kiln is turned off and allowed to cool down.

Bisque firing pots is actually quite important process. This allows the potter to do much more decorative work with stains, under-glazes and glazes with a greatly reduced risk of the pot being damaged or exploding during glaze firing.³

Procedure involved:

1. load the kiln fully well. If it is fully loaded not well then heat does not get entrapped. Vases inside won't get fully fired.
2. Between 200 C- 300 , we close the peep holes in front . Monitor the pressure & color of the flame. Initially it was bluish than, it changes to oranges' / reddish.
3. The pressure of cylinder has to be increased at regular temperature. If the tem-



Sanding all the pots for better finish



Washing them to remove the powder

Finishing of fired pieces



Bisque firing

perature is already high than pressure need not to be increased.

4. The temperature at which it is to be closed is between 800 – 850 C. After the temperature has arrived than we close the pressure from cylinder and the peep holes of the kiln too.

5. Kiln will open when the temperature inside has reached to room temperature that generally takes 2 days. It also depends on the weather conditions.


6. After emptying the kiln, we put bat wash. Bat wash is alumina (40%) and china clay (60%) mixed in water.

Apply bat wash to the shelves of the kiln to avoid glaze run-offs and stuck pots. It also helps in retaining the heat.

Finishing of fired pieces

Then we take out each piece and smoothen it with sand paper. If while sandpapering not much powder comes out, it signifies that the firing was good.

After sandpapering one is suppose to wash it under running tap water.





Play of fire leading into non uniform and unpredictable color of pots.



Upla firing

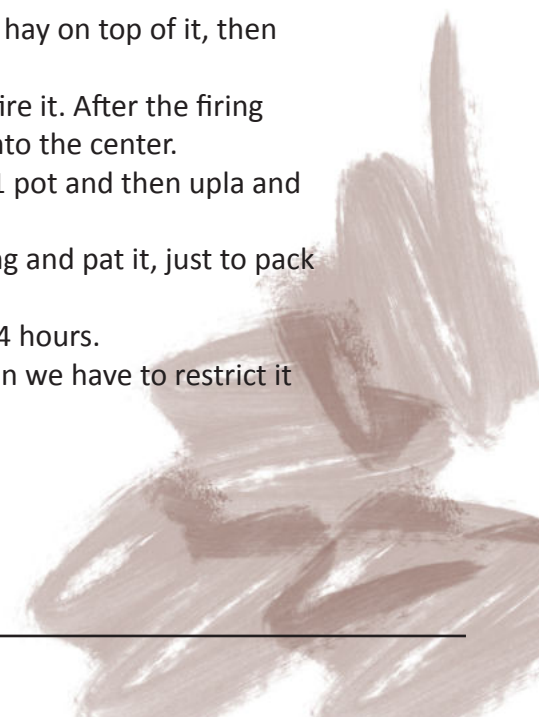


Cow dung cake (Upla) Firing

Required Materials

Cow dung cake
Hay or dry grass
Ordinary mud to close the firing
Bricks on the floor to cover
Few bricks and stones to put on the sides

Steps Involved

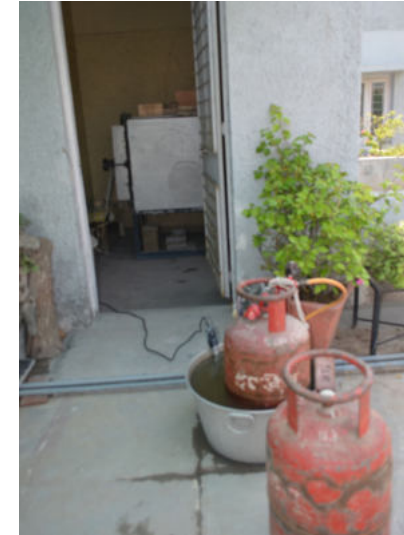
1. Spread hay on the ground in circular manner.
 2. On top of it, put uplas.
 3. Arrange pots in that circle leaving the central portion.
 4. Crush uplas and place it on sides of pieces.
 5. Cover the whole thing with pieces of crushed upla. Put hay on top of it, then put complete upla on it.
 6. Take 1 upla break it into half, take some kerosene and fire it. After the firing stops, it becomes coal and than this upla is to be put into the center.
 7. Than cover the central hole with upla, on top of it put 1 pot and then upla and hay.
 8. Then wet the soil and spread it all over the circular thing and pat it, just to pack it.
 9. It will be sealed now and then we have to leave it for 24 hours.
 - 10 If from some place, too much smoke is coming out, than we have to restrict it by putting wet soil on it.
- 



Glaze in the bucket



Ingredients of glaze in powder form.



cylinders need to be kept in hot water



Glazing :

A glaze, basically, is a type of glass that is especially made to stick onto pots and other ceramic surfaces. Vitrification is the process of melting that clay and glaze go through as they are fired to maturity. In a fully matured clay body, the spaces between refractory particles are completely filled up with glass, making the clay body impervious to water, wind, and time. Glazes provide strength, color, finish and impermeability. The effect that one achieves with a glaze depends largely on the texture of the pot, composition of the glaze, the temperature to which it is fired and the type of firing. A typical glaze recipe consists of silica (the glass former), flux (the melting agent), alumina (the refractory) and metal oxide (colorant). Sometimes modifiers are used to vary opacity, matt/ satin finishes etc. A thermocouple (heat sensor) is fitted through the wall of the kiln to read the varying temperature on a pyrometer.⁴

Glaze Application:

Glazes are applied onto bisques pots by dipping, spraying or brush. Before doing that, a coat of wax is applied at the base so that the glaze doesn't trickle down and stick the pot to the shelf of the kiln. Wax can also be applied for experimenting with wax-resist glazing effects.

Whenever cracks or air bubbles develop while glazing, rub it with dry fingers and never with wet sponge.

A cone which has the same vitrification temperature as the glaze is kept inside the kiln to know the correct temperature.

Glazes differ when it is to be used on stoneware clay than terracotta clay.

Mix the glazes too well, or the glaze wouldn't stick properly to the clay body. Glaze should be in the right consistency. Too thick will crack up or not stick, too thin will run off.



Pouring glaze in a pot



Scratching out the glaze from base

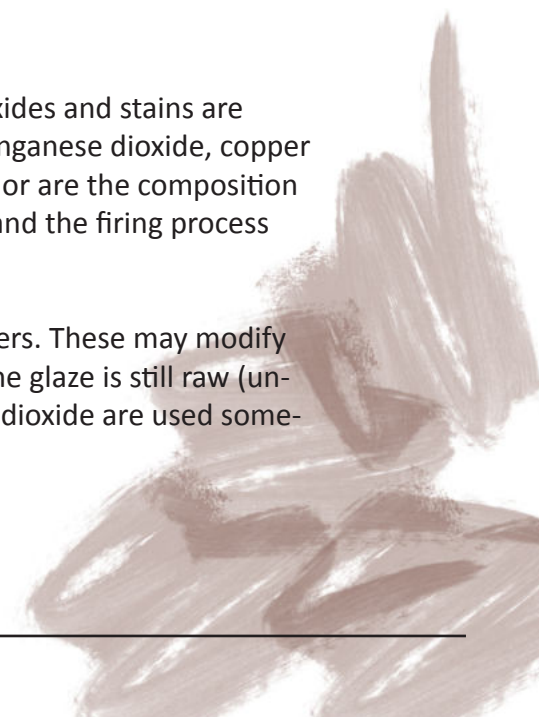


Glazing :

A glaze has four key components:

- Silica, the Glass Former:
Silica is both the base material for glass and for ceramic glazes. It melts at about 1710 °C. It can be introduced into glazes as silica oxide, flint or silica sand.
- Fluxes, the Melting Agents:
Fluxes lower the melting point of silica, making it usable to create ceramic glazes.
Eg. Feldspar.
- Alumina, the Refractory:
Alumina or aluminum oxide is used in nearly all glazes as stiffening agent, allowing glazes to stick to a pot's vertical surface without running off when it has melted. Eg. China clay.
- Colorants and Glaze Modifiers:
Silica when melted is transparent. Colorants like metal oxides and stains are added to glazes to produce a wide range of hues. Eg. Manganese dioxide, copper oxide, cobalt oxide. Three main factors affecting glaze color are the composition of the glaze, the temperature to which the glaze is fired and the firing process (oxidation or reduction).

In addition to colorants, glazes can also have other modifiers. These may modify the glaze opacity, iridescence or working qualities when the glaze is still raw (un-fired). Matting agents like barium carbonate and titanium dioxide are used sometimes.





After application of glaze



Decoration through slip with brush



Final product before firing



After application of glaze



After firing the glazed products





Glazing :

Recipe of Black Glaze for 100 gm

Potassium feldspar - 40 gm
Whiting – 20 gm
China clay – 20 gm
Silica – 20 gm

Then to this mixture add
Cobalt oxide – 2 %
Iron oxide – 3%
Chrome oxide – 2%


Blue slip

Ball clay – 50%
Iron oxide – 20%
Manganese dioxide – 20%
Cobalt oxide – 10%

Recipe of Blue glaze (Violet blue) for 100 gm

Potassium feldspar – 35%
Silica – 20%
China clay – 20%
Whiting – 10%
Dolomite – 15%

Then to this mixture add
Cobalt oxide – 1%
Tin oxide – 3%





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