



Journal Homepage: -www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/4048
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/4048>



RESEARCH ARTICLE

SPECIAL TECHNIQUES OF LINING FOR THE DISTINCTIVE CERAMIC COATINGS.

Dr. Faten Abdel-Fattah Metwally Ali.

Faculty of Applied Arts, ceramic department, Helwan University, Egypt.

Manuscript Info

Manuscript History

Received: 16 February 2017
 Final Accepted: 20 March 2017
 Published: April 2017

Abstract

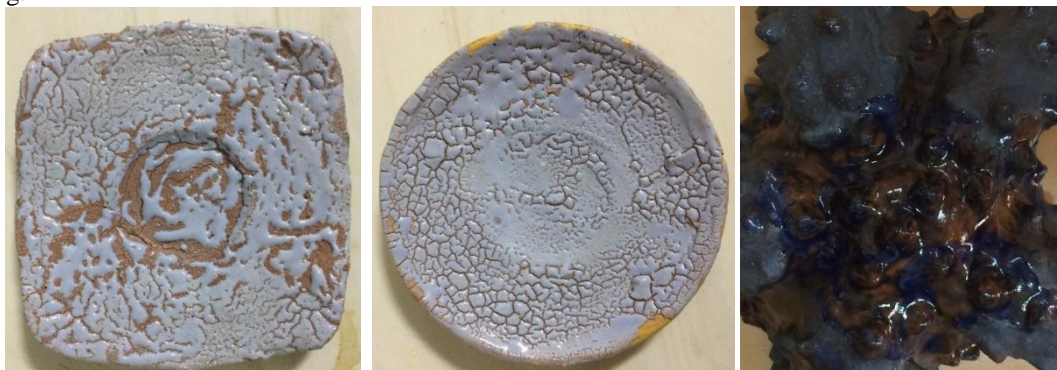
Research depends on the idea of access to distinctive glaze through the use of the lining as an intermediary between body of ceramic and glaze. Whether porcelain was dry body or burning first, or covered with glaze. Especially lining has been prepared for this purpose with a coefficient of contraction is very small, applied over the surface of the ceramic body with a different coefficient of contraction, and then applied glaze over the lining. Because glaze stretch and contraction is different for each of the ceramic lining and body, this leads to different results depending on the case of ceramic body (clay, biscuits or covered by glaze).

Set of experiments was conducted on Ceramic of clay, biscuits, and as well as ceramic glazed, as the ceramic lining was applied to surface in all cases, then applied glaze over the lining, and pass the product on a single stage of the fire.

Differing results have been observed, Depending different nature of the object ceramic case, where the results were between glaze cracked and another intermittently, along with homogenized glaze. The interpretation of the causes of all the results and discussed along with taking notes and recommendations was done.

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In addition to obtaining an important result is the possibility of using one heart burn to get a ceramic glazed using that lining.



Special techniques for lining for the distinctive ceramic coatings.

Corresponding Author:-Faten Abdel-Fattah Metwally Ali.

Address:- Faculty of Applied Arts, ceramic department, Helwan University, Egypt.

Introduction:-

Research depends on the idea of rationing access to a distinctive ceramic coatings through the use of an intermediary lining between the body of ceramic and glaze. Whether ceramic body was dry or biscuit, or covered with glaze. _ Where they can control the expansion and contraction coefficients between the three to get the distinctive effects of the coating. Addressing the lining of where deflators Has been, to be less than what can be. Then, use this lining between the ceramic surface and glaze to get different effects, it can be explained by the way obtained., codify these methods to re-access to these effects

First: the use of ceramic lining on clay surface:

Experiment No. 1:

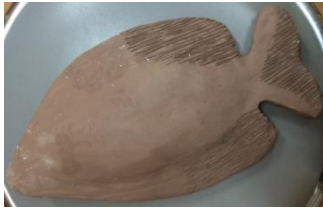
The experiment was conducted on a clay form in the drought stage (Figure 1).

The layer of private lining had added to the ceramic surface (Figure 2).

Layer of opaquecolored glaze was added. After, the lining dried, (Figure 3)

Then, the shap had burned in an electric oven at a temperature of 1020 degrees Celsius.

Get glass coating distinctive by crawling regularly (Figure 4).



Picture No. 1



Picture No. 2



Picture No. 3



Picture No. 4

Experiment No. 2:

The same steps of the experiment No. 1 was applied but on the surface of the tile in the dry phase (Figure 5) , (Figure 6) .

Get a glass coating similar to what was obtained in the experiment No. 1 in terms of appearance, and texture (Figure 7)



Picture No. 5



Picture No. 6



Picture No. 7

Discuss the experiment:-

Ceramic had been burn only once for each of the body and paint., attributed this to the lining of the additives that are equipped to serve as a separator between the body and glaze, and where they are equipped to accommodate burning once with glaze.

We now have three different contraction coefficients to control the final shape of the ceramic coating., namely:

- ❖ Contraction coefficient of clay., which approximately between 10-13%.
- ❖ Lining contraction coefficient, which is equipped to be the least we can almost
- ❖ Contraction coefficient of glaze, which is a commercial glaze ,and its shrinking compatible with earthen-fired pottery.

That both the body and glaze will shrink by much more than lining that between them, resulting in the compilation of the Organization coating forms depending on the density of the lining underneath it.

Interpretation the distinctive effect of coating:-

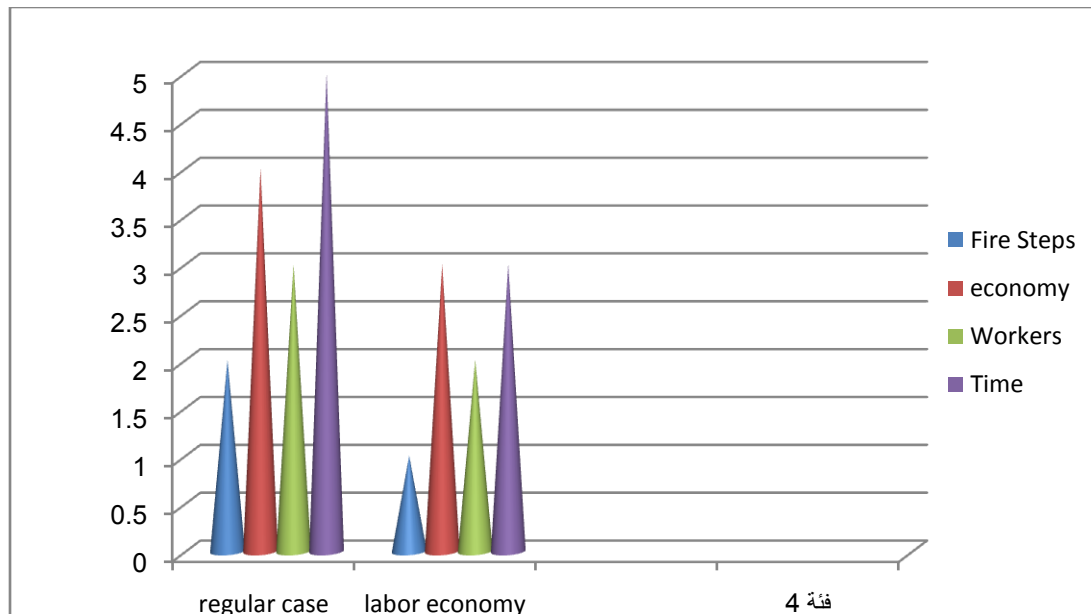
The glass coating cracks as a result of its shrinkage over the lining – the lower shrinkage – a fraction of the bottom of the lining while melting inside the kiln. Forming these organized clusters which are relatively more due to lining which located below. The distinctive shape of the coating is formed.

An important result:-

Experiments (1) , (2) led to a significant result obtained to glazed ceramic using a 1 Ground mud through the burning one, which is a saving of energy, thus providing a significant economic as well as Workers and time.

The following chart illustrates the simplified and approximate comparison between the application of this coating two stages of the fire and the application of one stage of many aspects.

	Fire Steps	economy	Workers	Time
regular case	2	4	3	5
labor economy	1	3	2	3

**Notes:-**

Observed that the places that contained the largest lining thickness, resulting in a glassy coating gatherings with spacing less, and explains that the increase of thickness represents a greater resistance to movement in the direction of the paint slitter collected.

This gives the base to control the spacing of the gatherings of the glass coating is that the distances commensurate with Reverse lining thickness.

the flat places give close craks, compared to the places most curvature to the outside. , It is explain, as bends helps the glass coating movement in the direction of sliding down, the slope of the curve and with the help of gravity during melting, and boiling.

Any that he can control the spacing of craks through all of:

- Lining thickness (inversely)
- Curves (direct proportion)

Second: the use of the lining on glazed ceramic:

This technique is used in the equipped lining has the ability to sticking to the surface of the glazed ceramic, with the ability to apply another glaze on this lining , and then burn the form, giving a different distinctive surface techniques ceramic forms manufactured was used. (Figure 8.12)

Experiment No. 3:

A light-colour lining was applied over the yellow glaze surface for a small casserole dish.

lining Was applied of Almost thickness of 0.5 mm and left to dry (figure 9). --- - An opaque glaze of blue was added above the dry lining in preparation for the stage of the fire. (figure 10).

The dish has been burned at a temperature of 1,000 degrees Celsius.

Original yellow glaze shows through the cracks of blue glaze. (figure 11).

**Picture No. 8****Picture No. 9****Picture No. 10****Picture No. 11**

Experiment no4:

Apply the same light colours lining on the surface of a ceramic cup covered with yellow glaze.

Lining have been applied irregularly with the thickness of between 1 mm to 2 mm.

Same opaque glaze of the pervious experiment was applied. (Photo No. 12, 13, 14).

Form was burned at a temperature of 970 ° C.

Get a opaque cracked glaze in places most thicker.



Picture No. 12



Picture No. 13



Picture No. 14



Picture No. 15

Discuss the experiment No. 3.4:

The lining has ability to adhesion on glazed surface without separate after drying or during the fire phase. Glaze which had added on the lining became cracked after the fire, and showing the color of original glaze .

Notes:

lining has portability adhesion on the glaze surface and aren't separated during the drought and the fire.

lining has portability the glass coating.

The original glaze of the form was not affected, which indicates that its melting point higher than the degree to which carried out the experiment, which is 970 ° C.

Output impact cracking of glaze terms of depending on the thickness of the lining, where get more cracking, with more lining thickness.) Direct proportion(glaze affected by the temperature in terms of color and lustre.

Interpretation of cracking of the coating:

Because there deflator for new glaze had added on the surface of the lining, while the old glazed surface does not shrink, especially the temperature did not reach the its melting point, which led to the presence of cracks visible on the glass surface of the coating. Along with the presence of the lining with very weak deflation.

Thirdly: the use of the lining on biscuit ceramic:

Experiment No (5):

the lining had applied on the surface of biscuit ceramic, by a layer about 0.5 mm almost., had added transparent glaze.

Glaze melting point was low.

5% of blue dye had added in a lining .

glaze had added on portions of the lining without the other parts of the surface.

Figure burned at a temperature of 1000 Celsius.



Picture No.16Picture No.17

Picture No. 18



Picture No. 19

Experiment No (6):

Lining applied on the surface of the Biscuit pottery. A thickness of about 5.0 mm and almost added by transparent glaze is the same that was used in the experiment 5.

Added a 5% blue dye on Lining.

glaze was Added on portions of the lining without the other parts of the surface.

The shape was burned at 950 ° C.

Paint transparent glass was homogeneous in terms of contraction and expansion with each of the lining and pottery burned, leading to seemed a brilliant homogeneous surface.

In the experiment No.(5), transparent paint act with colored lining so that gave blue marbled glaze., especially in low-lying areas in the ceramic



Picture No. 20 Picture No. 21 Picture No. 22



Picture No. 23

Notes:

homogeneity of Lining on the surface of the burned pottery.

transparent glaze was homogeneous in terms of contraction and expansion with each of the lining and pottery , resulting in a non-appearance of cracks, and it seemed a brilliant homogeneous surface.

Transparent glaze at experiment No. (5), was act with colour lining so that gave Blue marble effect, especially in the low areas in the ceramic surface.

Blue marble effect appeared in the experiment (6) too.

glaze in the experiment.(6), less brighter than the experiment (5), as well as some very small bubbles appear, due to the low temperature burning in the experiment (6) for the appropriate class.

Other Applications:

The lining was applied to some different ceramic works as follows:

First: Figure (24)

It is a handmade ceramic form by the potter's wheel,

Its height is about 25 cm and the maximum width is about 17 cm.

The lining was applied to the porcelain surface and is in the dry phase.

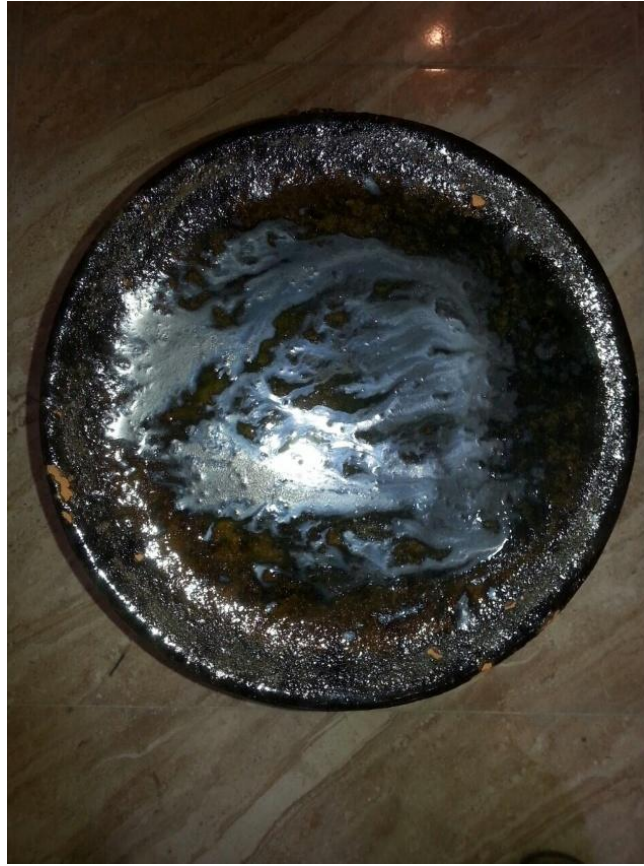
The glaze were then applied over the lining surface.
One heartburn was burned at 1000 ° C.
Glaze is prefabricated. It was white.
Add some blue color to the glaze



Picture No. 24

Second. Figure 25

A handmade ceramic dish form by the potter's wheel which is about 35 cm in diameter.
The lining is placed on the surface of the dish and is in the biscuit phase.
Two types of glaze were added to the lining surface.
The dish was burned for the second time.



Picture No. 25

Third: Figure 26

Which is a manually ceramic form , made by the wheel of the potter,
Its height is about 23 cm and the maximum width is about 13 cm.
The lining is applied to the surface of the porcelain and is in the biscuit phase.
The glaze were then applied over the lining surface.
One heartburn was burned at 1000 ° C.
Glaze was prefabricated and It was white.
Add some blue color to the glaze.



Picture No. 26

Results:

get lining with a distinct specifications such as:

- * Very little shrinkage.
- * Ability to adhesion on glazed surface and other ceramic surfaces.
- * Different ceramic colors and effects by use this lining .
- * Get various results by controlling the thickness of the lining application.

The ability to control access to a distinctive effects of the ceramic coating through the application the glaze over the surface of Thickness of the barrier of the lining between the glaze and the surface of the ceramic.

The possibility of obtaining a ceramic product glazed with one burn using this lining.

Recommendations:-

- ❖ The use of the special lining in the works of art and industrial for get the distinctive effects.
- ❖ The use of this lining into works of art and industry in the dry phase of ground clay. (experiment 1.2), to provide (economy) phase of the fire to get the effect of regular shredder of glaze, and other effect .
- ❖ More experiments on the composition of the lining to get a variety of results.
- ❖ Use varied glazes over this lining and record the results.

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