

Identify and submit the tile restoration plan for Sheikh Safiuddin Tomb Collection

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Abstract : The monastery of Sheikh Safi al-Din is one of the great and most luxurious Safavid collections that have been the guardians of the ancestors, sultans and princes of the Safavid. In addition, its unique mansions are unique, its ornaments are of special significance to the most beautiful Islamic historical works of Iran. Therefore, the main purpose of this research is to identify and present a tile restoration plan for Sheikh Safiuddin's tomb collection. Which has been carried out in three stages: library, laboratory and field. The results of the research show that the analysis showed that the type of glaze and body of tiles used in Sheikh Safiuddin Ardebili's Tomb in terms of materials and tiles The existing one is almost identical with the tiles of its period. And no big difference was seen. The common tile of Sheikh Safi tiles is technically high in silica compounds in their bodies. The tiles are not of an integrated structure and the glazing structure has cracks. The results of the qualitative analysis of mosaic tiles in Sheikh Safi monument set by electronic microscopy system show the presence of lead in samples. According to this identification, it is deduced that the glazes of these tiles are of lead type. In the end, a proposal has been made for the construction of the building of Sheikh Safiuddin

Keywords: Tomb of Sheikh Safiuddin Ardebili, tiling, technology, pathology, restoration plan

INTRODUCTION

The monastery of Sheikh Safi al-Din is one of the great and most luxurious Safavid collections that have been the guardians of the ancestors, sultans and princes of the Safavid. In addition, its unique mansions are unique, its ornaments are highly valued from the most beautiful Islamic historical works of Iran, in other words, this collection is an example of a Safavid gallery in the city of Ardabil. Ardebil's tomb, like most of the Safavid era, has been the adjoining courtyard and alongside the garden and the garden. At the beginning of its construction, it was a city in the small world with markets and baths and public squares, religious facilities and its own homes and offices. Although there have been many changes in the ensemble in the period following to the present day, this collection is considered to be the most outstanding architectural and artistic work of Ardabil. The longest, most authoritative source in relation to the identification of existing and destroyed buildings In addition to Safwat al-Saffa, the valuable book of Sirih al-Molk is written by Abdul Momen Ali who is famous for Abdi Beyg Nam, Abdi Beyg is the agent of the Shah's court, commissioned by Shah Tahmasb I in 975, to name the names of the tomb of Sheikh Safi al-Din and Amarat. All the buildings And buildings and monuments and fields around the tomb of Sheikh Safi al-Din, as well as all Amal Aq and land, and houses and baths and decks and aqueducts are detailed. "Most of the architects of the Safavid era, including Arthur Pope, are of the opinion that the monuments of the monastery have been successfully integrated with the interest and attention of the first Safavid Shah Tahmasb (984-930)." And at a stage with a lot of reforms in the periods of Shah Abbas Kabir and Shah Abbas II and Shah Safi took place and the Safavid kings played a major role in the development of the complexes. Also, with these generous features, the monuments of the monastery were decorated with various types of artwork such as wall paintings, gilding, calligraphy lines and beautiful artifacts such as tile mosaic and seven colors, gypsum, mogharnas, engraving, crochet and Chinese knot. But this collection is always the most damaging due to the delicacies, sensitivities and their presence in the external appearance, and consequently the direct impact of many environmental factors. Iranian architects, with a proper understanding of this disadvantage, have used mosaic tiles as an appropriate element of decorating the exterior of the collection. However, it should be noted that the tile also has a limited tolerance to environmental factors and is also vulnerable in the long run. Hence, it is essential to provide the optimal conditions for the protection and maintenance of the principles. In addition, it is necessary to identify the factors affecting its destruction. In the present paper, attempts have been made to identify and identify damage caused by measures to control the destruction process and prevent its deterioration. In addition, this will keep this valuable and unique work to life.



Figure 1 & 2 - Sheikh Safiuddin Ardebili's Tomb Building (Writer)

Research Methodology

So far, there has not been a comprehensive study on the pathology of tile tiles, and in some cases reports and references have been made in some books and articles. Mostly, the introduction of buildings has been described in terms of history, printing of maps and a number of photographs, and less analysis has been done. And the research method in this research is library, archive of cultural heritage of Ardabil province, laboratory studies, field studies, tools Collecting sampling data and conducting experiments on the introduction and rehabilitation of these tiles, as well as the classification of tile species, cooking techniques and refinishing operations, and can be proposed in a comprehensive review and provide all technical and expert aspects for Access to a complete conclusion about the future restoration of the building.

background research

The shrine of Sheikh Safi al-Din Ardebili is one of the historical and ancient sites of the city of Ardabil in the northwestern part of Iran. It is one of the registered works of Iran in the UNESCO World Heritage List. In addition to the shrine of Sheikh Safi al-Din Ardebili, the tombs of Shah Isma'il I (the first king of Safavid) Ishmael (mother of Shah Tahmasb), as well as some elders and rulers of the Safavid era, as well as Iranian martyrs of Chaldoran War. The other parts of this collection are Chinese mosque, Janet Sara, Khaneghah, Chaleh house, Shahidgah and Zarghaghala. This cylindrical building after the death of Sheikh Safi-edin in 735 was ordered by his successor and his son, Sheikh Sadr al-Din Musa, during the ten years Has been. In the eyes of the 11th century AH people, the tomb of Ardabil was a place of miracles, as described by Ole Arius, "Sheikh Safiuddin built the building after the death of his father by the architecture brought with him from Medina to Ardabil. According to the political statement The map of the tomb is from Sheikh Sadr al-Din himself; he ordered the architect to close his eyes and then described the building and envisioned his vision for him and the architect began to describe the building. Sheikh Jenid later built a lot of courtyards and built it around. "

The tomb floor is tiled with simple lace tufts in a brownish yellow-colored rug. However, archaeological studies of the dome of the dome, which was erected in 1361 by the cultural heritage of the country, confirmed the existence of a large tile in the wall of the wall. The inner wall of the Dome of Allah Allah's inner wall is covered up to a height of 2.3 meters with wooden laminated sheets and is tied to the wall. "For these wooden plates, Vivar believes that the wooden floor of the new time, probably around the years 12770 Be ". The English architect mentioned the installation of wood slabs, it's very clear that it is about a new time and maybe at the same time as the repairs of year 1307. "The machine nails used in building this wooden substrate that this action can not precede On the thirteenth century AH. "Now it is possible to enter the monument of Sheikh Safi mosque through the guardhouse. This tomb is a regular octal bricks from the outside with a cylindrical body on a polygonal stone basement measuring approximately 6 meters in diameter and 22 meters in height and 17 in height / 5 meters. Upon this cylindrical tower, the dome of the semi-bulb dome 1, which is half the size of a horseshoe-shaped horseshoe Is gone. Meanwhile, the dome has its own scientific head, apparently of copper or rice. Such a building is unique in terms of form and tile among other monuments of this covenant. The dome cavity with a narrow strip of the simplest decorations of brick and tile has a special effect; between simple red bricks the sacred words of Allah with turquoise tiles Very delicate in the cylindrical body. Successful people and plaincloth artists with a vertical or horizontal corrugated or rectangular line undoubtedly placed it in the row of

masterpieces of Iranian art in the eighth century AH. The marble of glazed bricks in this In order to inscribe and cover. But the most remarkable cultural and artistic work of the tomb, the crocheting basket, the carving and the artwork of Sheikh Safi al-Din is. "Under the dome of the tomb, the tomb was located on the shrine of Sheikh Safi al-Din, previously wearing a red golden hood that was found by the professors of the fan and in the form of a very interesting from Harir, but since the year 1314, when the historical coveralls in Tehran It was not transferred to another fund. " The box, which is inside a glass compartment, is placed on a white marble tombstone. The upper four sides of the grave box were previously covered with golden sheets and were scratched with jewelry such as ruby and emerald and turquoise. History: European scholars such as the German Army and the English Weaver in the Sheikh Safi Mausoleum are almost identical in history. In the analysis of the history of the monument, Weaver appears to be influenced by Zarah's view. "This scholar considers the date of construction of the tomb of Sheikh Safi al-Din in 749 by Sadr al-Din Musa, the son of Sheikh Safi-edin." Walter Hinets, German emphasizing on the construction of the tomb by Sadr al-Din, "determines the history of the building of the Sheikh Safi's tomb in the years 776 - 802, because it seems that Sadr al-Din brought the masters and industrialists from Medina, and the Sheikh pilgrimage in the late-life of practical life It's been effortless. "

Types of tiles in the tomb of Sheikh Safi al-Din Ardebili

Mosaic tile

At the end of the Ilkhani era and the beginning of the Timurid era, the tile art with a history of about three centuries appeared to be the most beautiful form of the tile of "Mareq". The art of tiling mosaic or tile flower and bush, which is more famous for mosaics with Europeans, has gradually become an adornment of Iranian architecture, especially religious buildings, since the seventh century AH. The importance of mosaic tile to other types of beautiful tile is its degree of strength. To make a mosaic tile, first tile is cut into small pieces or large pieces, and according to the previously prepared map, they fill the pile and then fill with gypsum droplets and joints, so that all of it becomes integrated into a tile piece and when Which is tight, installs it on the building. Various colors were applied in the mosaic tile, in which white, dark blue, turquoise, green, orange were more visible. The tiles used in Sheikh Safi-al-Din Ardebili's Tomb are more than tile mosaic, including inscriptions, mud-plant designs, header lattices, etc., for example, in the southern side of the dome of Allah, Sample There are various works of tile mosaic such as geometric designs, slabs, mogharnas, pencils of the inscription with the third line and koufi jokes, etc. Another design is visible in their bit and it is a combination of tile with bricks that tile mosaic With elegance, the more complete it comes with the brickwork of beautiful geometric designs.



Figure 3. Sheikh Safi al-Din Ardebili's Mosaic Tile (Writer)

Screw tiles

The screw contained in the Sheikh Safi Tomb port is molded on a mold with flowers and bushes.

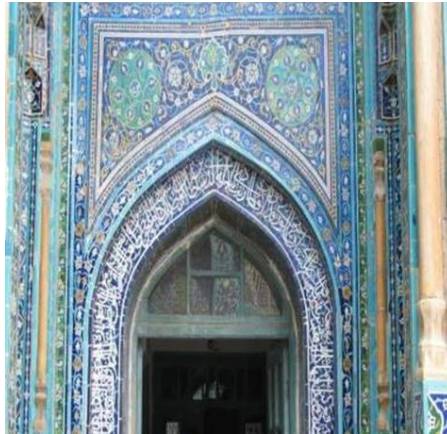


Figure 4. Sheikh Safi's Tombstone Tile (Writer)

Pure tile

The family is a mosaic tile. But the mosaic tile is easier and more affordable. The tile used is the same 15x15-tile tiles used in mosaic tiles that are cut to the desired size. (Of course, these slices should be true) Slim and thin designs are not applicable. And only geometric shapes are applicable to it. Of course, the building lines are also written. If bricks are used, glazed bricks or tiles are used and this is done at the right angle. In the name of Maqali is famous and it can be said that "some graffiti of materials such as brick and tile (separated and dashed) are made. Its application is in Sheikh Safiuddin Ardebili's Tombstone Collection, which is the stem of Shah Ismael's Gonbad, which you can see in the picture below.



Figure 5. Gonbad Shah Ismail's Tile (Writer)

4-Chinese knot tile

In the category of mosaic tile is a combination of tiles and bricks. And they create different Indian forms. Both prominently and equally applicable. In Chinese knot, designs such as Slimy, Khatami, etc., which are widely used in mosaic tiles, are not possible. The Chinese knot is used in the tombstone in the stem of the dome, which is shown in the picture below.



Figure 6. Chinese Dome Tower Tile (Writer)

Tile seven colors

From the end of the Timurid period and the beginning of the Safavid period, the use of another type of tile known as "Adhesive" or "Seven Colors" was used to decorate various buildings. The application of the "seven colors" tile, which has been used since the end of the Timurid period in different buildings, continued until the Qajar period. The seven-tone tile, which has a lot of reputation, is from the four-tier clay tile, measuring 15x15x5 inches. They paint the desired role on it and heat it to the slave furnace to cook the glaze. Then the furnace is installed and mounted on the wall. Seven colors are commonly used: black, white, azure, turquoise, red, yellow and banana, which are used in historical buildings and places of this type of tile. Used in a tile of seven colors in the tomb of Sheikh Safiuddin Ardebili are the lower parts of the Chinese house. (Among the tiles of the seven colors used in the tombstone, even 20 x 20 dimensions can be seen.)

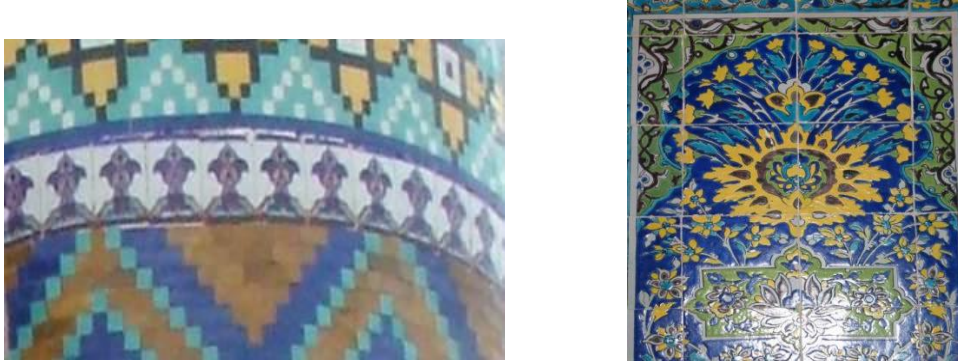
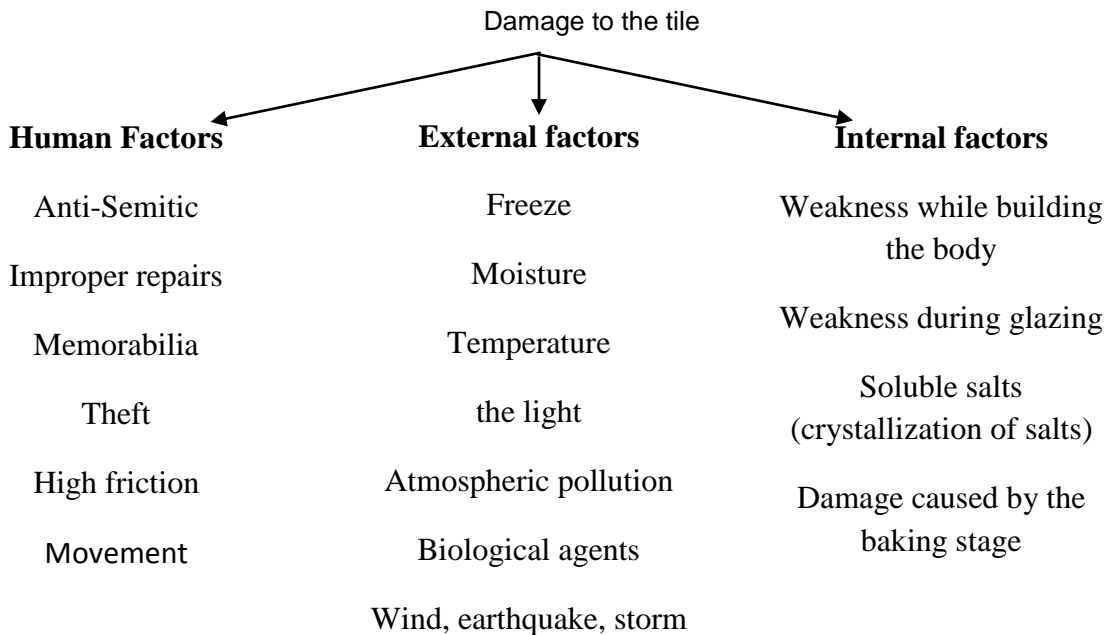


Figure 7 and 8 - The seven-color tile of Shah Ismael dome (Writer)

Investigation of damage to tiles of Sheikh Safi Ardebili

Naturally, the damage to the tile can be attributed to three factors, which can be divided into the following diagram.



Otherwise injuries to the tiles of the Mogharnas of the external view of the house will be broken down into injuries and injuries by categorizing the injuries and mentioning the reasons for them in the six separate sections, along with the color images. Of course, it should be noted that parts of the injuries and the causes of injuries are common. However, each of these injuries has been tried individually to discuss and discuss:

Some of the used tiles have lost their glaze over time and have left their glazes inadequately, due to the poor quality of the tiles, the influence of moisture on the underlying layers, and the lack of proper selection of tiles and glazes. .. have been . Of course, the difference in night-time temperature in the area should not be ignored. It should be noted that most of these damage are seen in green and azure tiles.



Figure 9 & 10 - Glazing (Writer)

In many cases, in addition to the glaze, the tiled part of the flower was lost. As for A, the main cause of this lesion is the selection of raw materials, as well as the atmospheric and geographical conditions of the site.



Figure 11 & 12 - Tile Blossom (Writer)

The tiles of some levels of Mogharnas are completely gone. One of the reasons for this is the lack of proper connection between the tile and the mortar, as well as the influence of moisture on the tile's back layers, and the inappropriate percentage of the mortar composition, as well as the removal of the retaining metal sheet and the further pressure on the Mogharnas and ... cited.



Figure 13 & 14 - The destruction of the Mogharnas Tile (Writer)

As mentioned before, one of the reasons for tile demolition and the elimination of the tile surfaces associated with the metal plate used in the main structure of Mogharnas. The iron board is heavily damaged due to the influence of moisture and rust, and in some cases it has completely disappeared. Thus, the pressure from the Mogharnas, which should have been neutralized by these surfaces, was not inhibited, and this pressure was applied to the sections Other like edges and ... has entered and caused destruction and, in some cases, hanging the edges.



Figures 15 and 16 - Laying Metal Plates (Writer)

Another case of damage to the tile set used in Mogharnas is the seamless integration of tiles and, consequently, the separation of the tile layer from the gypsum bed, thus providing a suitable ground for penetrating rain and moisture to the layer. Underneath the tile and reduce the life of the tiles and the loss of gypsum mortar and The lesion is caused by different influences such as the pressure of the various layers, the loss of the metal (laminate) and the slackness of the primitive mortar, as well as the penetration of moisture from the back wall and possibly the movement and movement of the wall, and in the event of incorrect and cross-sectional repairs. Is.



Figure 17 & 18 - Tile layer separation from gypsum bed (Writer)

One of the important factors in the elimination of tiles and their instability is the lack of precision in the selection of improper mortar so that the selected mortar does not have sufficient stability and resistance to maintain tiles. The main reason for this can be attributed to the incorrect mixing of the mortar with excessive moisture penetration from the wall. Hence, in most parts of the tiles, there is a loss of tiles, as well as the loss of bedding.



Figure 19 - Inappropriate Mortar (Writer)

Considering the six paragraphs above and examining the damage, it seems necessary to review the status quo and make a decision on the maintenance of restoration and reconstruction. Considering that in the lower part of Mogharnas, the inscription, which is part of the Quranic ending prayer, was reconstructed in 2000, during the installation of tiles, it was necessary to separate parts of the Fu Qing section, which created a space between the levels of creation Has made this space the perfect place to penetrate the snow and rain to the back of the tiles. As shown in the images below, the moisture penetration of the newly designed tiles has destroyed the tiles and glazes.



Figure 20 - Tile drop and disappearance of bed sheet (writer)

The effects of environmental and human factors on tiled decoration of Sheikh Safi monument

Freeze

The phenomenon of freezing occurs mostly on fronts where rain has had direct and long-lasting contact with the tile. According to the statistics presented in a balanced way in the past years - a cold day and a show of frost, on such days humidity has been able to put significant damage to the tiles.

Dissolution

Humidity from rain can solve soluble parts of building materials and eliminate them from their structure. Although the process of this low solubility is related to the early years of the installation or use of building materials, it can not be ignored as a deterioration factor in moisture. Other factors have a more destructive effect on the subject, which can be interpreted in part by interpretation.

Dandruff

The moisture content of soluble salts increases after it reaches the surface of the porous material. Due to the level of evaporation, the concentration increases in near-surface layers and, as a result, provides a crystallization phenomenon. This phenomenon causes pressure on the surface layers and disrupts the structure of the surface of porous building materials and materials, which can be seen in the image, glaze or surface layers. This phenomenon can also be seen in areas where moisture has penetrated the tiles behind and has been able to dissolve the tile bonding mortar to the body.

Mortar washed

Many tiles, especially in positions near the gutters where moisture is most stored, is tiled from the body. In other positions that are most noticeable, wherever the water outlet systems of the floor of the moonlight have encountered a problem and the water has accumulated, the mortar behind the tiles has been affected.

Acid rain

One of the most important causes of damage to building materials, and in particular monuments, is the phenomenon of acid rain that is the product of industrialization of the world and the expansion of the use of fossil fuels in industrial city centers. Contaminants from incomplete combustion of fossil fuels appear in cars and industrial plants in the form of gas, chemical particles and smoke in the midst of densely populated cities. The destructive effects of the presence of acidic rains on the decoration of the Sheikh Safi tile set, especially the decorative gypsum and gypsum tiles, are very revealing.

The destructive effects of light and heat generated by it

In the city of Ardabil, the maximum angle of radiation in the beam is 75 degrees 2 minutes. At this time, the sun sets at 7 and 18 minutes in the southeast of Tolo, at 16 and 42 minutes in the southwest. Continuous oscillations in the tiles with fluctuations due to the temperature drop in the cold seasons, which sometimes reduce the surface temperature of the tiles to several degrees below zero, has led to a loosening and disconnect between the tile's glazing body. . This damage is more pronounced especially in areas where glazing is more vulnerable. The damage in the positions on the green glazed tiles is low in glaze thickness, leaving a lot of damage. The ultraviolet light of the sun does not leave any noticeable impact on its tile and glaze, but the change in the color of the glaze in the black enamel areas is influenced by this part of the light.

Damage effects caused by non-standard repairs

The study carried out in Sheikh Safi's Tomb collection shows that these periods have been repaired. Repairs have been made, although they have caused the survival of the building, but in some parts of its decoration, it has been damaged. The inappropriate use of non-homogeneous building materials against the

traditional materials of the building is one of these problems. In some areas, the exterior exterior tiles of the house have lost their connection to the body.

Laboratory studies of the body of tiles of Sheikh Safi-edin monument

These experiments were carried out with two physical examination methods by optic microscopy (optical) as well as an electron microscope scanning system. In the first step, a sampling of Sheikh Safi tile body was performed. The sample was cut in a section of a cutting and mantle, then prepared and polished for microscopic study.

Sample blue tile

Tile structure: Determination of the percentage of elements in Sheikh Safi tombstone tile body composition by SEM analysis system. The results of the peak obtained from this system show that the tile biscuit elements have the highest percentage of their presence, including, silicon oxide 79.17 percent had the highest amount, silver oxide with 6.87 percent, calcium oxide with 5.39 percent, iron oxide with 7.38 percent, and potassium oxide with 1.19 percent lowest.

Analysis of glaze by SEM method: silicon oxide 69.82, silver oxide 9.56, potassium oxide 1.98, calcium oxide 9.04, iron oxide 9.60%. Identification of the composition and formation of porosity in the sample was one of the other materials of the study, which was carried out using the SAM system. This system identifies porosity dimensions from other experiments, such as volumetric measurements. The results of this study are shown in microscopic images taken from the sample with different magnifications. According to these studies, the size of the pores and pores in the sample was measured in several sections and with different dimensions, which on average indicates diameter: 7.83 /62.5 / 2.15 and 4.66 Micro-mm.

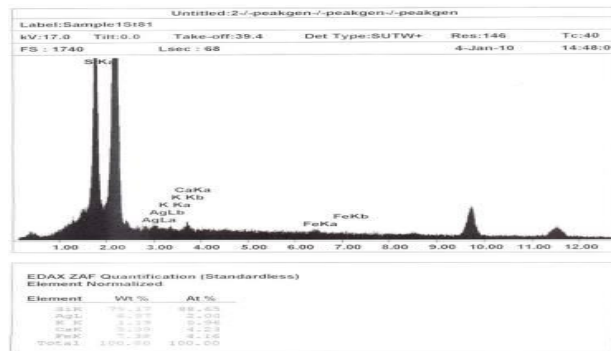


Figure 21 - Tile Body Building Compounds by SEM Analysis System

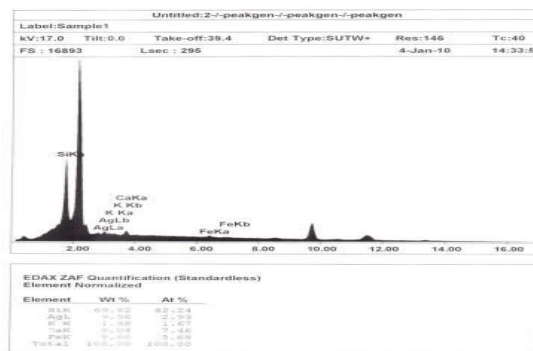


Figure 22- Smoothing percentage analysis (SEM)

Sample green tile

Tile structure: Identify the percentage of elements in the Sheikh Safi tombstone tile body composition by the SEM analysis system: The results of the peak obtained from this system indicate that the tile biscuit elements have the highest percentage of their presence, including silicon oxide With 57.61% the highest amount, calcium oxide with 4.05%, iron oxide with 6.63%, silver oxide with 3.50%, lead oxide with 25.18% titanium oxide with 2.43%, and potassium oxide with the lowest content of 0.59%.

Tile glazing analysis: calcium oxide 25.00, potassium oxide 0.00, calcium oxide 0.21, titanium oxide 0.88, iron oxide 2.88, copper oxide 4.50 and lead oxide 70.52%. Identification of the composition and formation of porosity in the sample was one of the other materials of the study, which was carried out using the SAM system. This system identifies porosity dimensions from other experiments, such as volumetric measurements. The results of this study are shown in microscopic images taken from the sample with different magnifications.

According to these studies, the porosity and pore size of the specimen was measured in several sections and with different dimensions, which on average showed a diameter of 9.6 9.4, 5.24 and 6.2 Micro-mm.

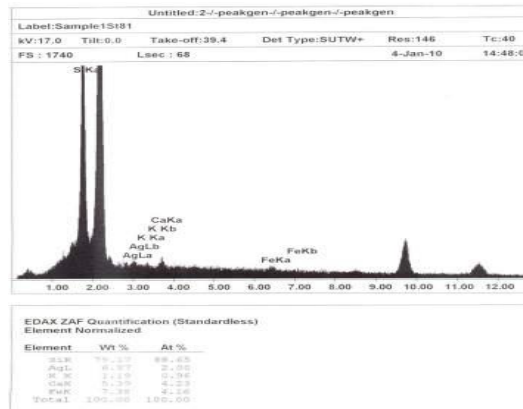


Figure 23- Elements in the green tile body composition by the SEM analysis system

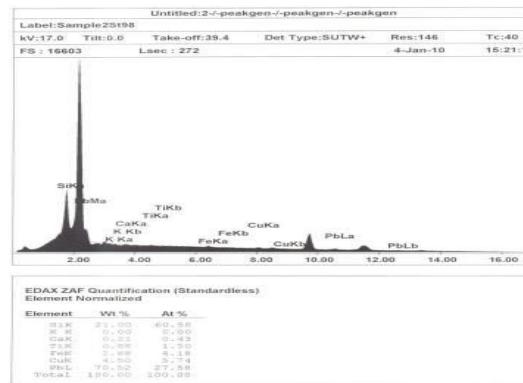


Figure 24- Green Glaze Analyzer (SEM)

Based on the obtained images, it was found that the blue sample is of a single fabric texture, without cracks or fine cracks, which suggests the strength and good structure of the tiles of the Sheikh Safi monument tile. Green tile specimens do not have an integrated structure and glaze structure is cracked.

Structural and laboratory studies of glaze tiles

Laboratory studies on the glazed tiles of Sheikh Safi-edin monastery complex were carried out in two ways:

- Visual observations by Optical microscopy

Elemental analysis and structural analysis of glaze by electron microscope system

In the specimen, the surface of the sample was examined using stereomicroscope. In this study, the surface porosity of the sample was observed and recorded in air bubbles, gliding, and imperfections.

The microscope system made it possible to sample the sample in terms of drawbacks such as bubbles, their size, color variations in glazes, especially in green and blue glazes, and the quantitative changes of the elements and glaze ingredients. The results of measuring the waterproofing of the glaze by the device showed that the average thickness of the glaze layer in tile tiles is 350 µm and the thickness of the green layer is 262 µm.

The results of the qualitative analysis of mosaic tiles in Sheikh Safi monument set by electronic microscopy system show the presence of lead in samples. Due to this identification, it is concluded that the glazes of these tiles are lead-based glazes. Lead glazes are obtained at low to moderate temperatures (1095 to 1190 degrees). The advantages of easy-to-follow lead glazings are easy to control, high-quality color and high quality. The lead glaze is soft, but adds silica and other oxides to beautiful enamels.

The low degree of melting of lead oxide is one of its important advantages. Also, colored oxides act well in lead enamels and produce a soft, glossy glaze. The limitations of lead glazes are their toxicity, and the softness of this type of glaze makes it easier to decompose and add to the dangers of poisoning. Lead glazes change color by decomposition. The presence of these items is visible in many of the old enamel works, which are glazed with lead.

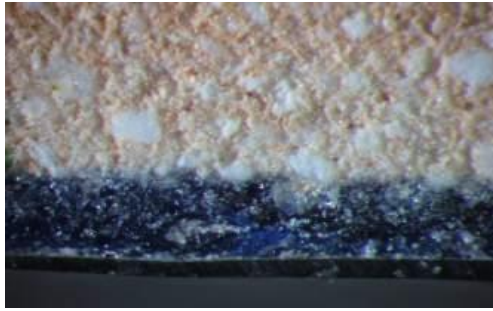


Figure 25- Silica dispersion in the water tile body



Figure 26- The presence of the crystalline structure of salts under the glaze

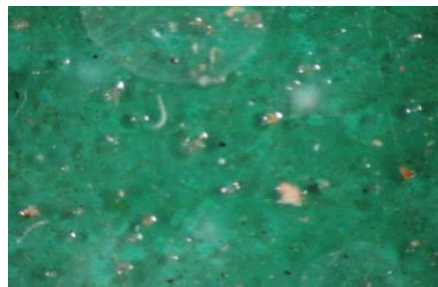


Figure 27- Glazing under the influence of dandruff



Figure 28- Silica dispersion in the body

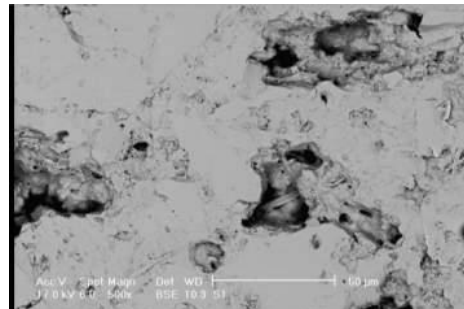
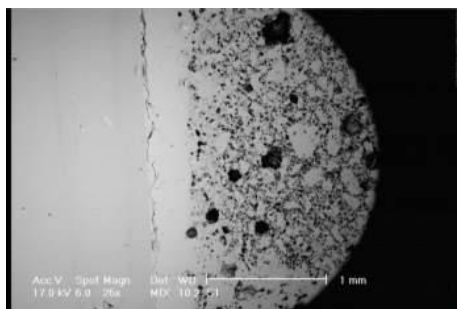


Figure 29 and 30 -Installation of the internal structure of the tile body and the thickness of the glazed tile green by the sem method

To submit a proposal for the repair of the exterior tiles of Qandil House

In the above discussions, the damages and the reasons for it were mentioned in the tiles of the exterior side of the Qandil House. What is important and the historians of the researchers and travelers have acknowledged in their writings that the tiles of this part have always been exposed to damage due to a particular situation, and the intrusive moisture from the back of the work and the left side of the air flow and the temperature. The location and other factors mentioned above are among the reasons that can be cited. So, by referring to the history of the restoration, it is also apparent that the last step has been done by considering the issues in the collection and the remaining photographs of the previous years, and in particular the notes by Friedrich Zaret Martin Weaver and Esmaeil Dibaj and others. It should be noted that in the late 1970s, during the contract, a large part of the existing tiles was rebuilt, which was the result of the disagreement with the Technical Office of the Cultural Heritage Institute on the location of the studied tiles, but this part remained intact and almost it can be claimed that this section is the only surviving sample. And reconstitution of the 20s. (It should be noted that during the same years, based on the complete repositioning method and the overall reconstruction of the surfaces where parts of its tiles were destroyed, the very large surfaces of the tiles that were necessary and easy to repair were eliminated, resulting in New layers have been replaced by them, but there are errors in some of the designs, especially in the inscriptions.) In recent years, unlike years and decades ago, much of the effort was on conservation and restoration rather than reconstruction. So, in the last few years, it's just. Only tiles have been restored.

What the organization policy is about decorative tile works, especially architectural decoration, has been the advancement of a protective system and, as far as possible, avoiding the rebuilding of the century's recommendation. Therefore, considering all the cases regarding the tile works of Sheikh Safi's tomb collection, including the place in question, it is strongly recommended to continue the process of reflection. With the study, at least 55-60% of existing tiles can be used and the remaining parts are filled in with new tiles or gijks, and finally, by creating a pattern on them and using the color of watercolor, and In the end, in order to avoid moisture penetration, a critical factor in the tiling freezing process is to be coated with hydrophobic resins.

Another point to be made about the above location is the attention to the used mortar behind the work. Considering the physical conditions of the site and considering the high probability of moisture penetration from the back of the work, during the permanent inspection of the insulator behind the work and ensuring its strength (in 2004, the insulation was completed, but it is necessary every six months. The location is accurate and should be rectified as soon as possible in case of any damage). It is necessary to review the used mortar. In this regard, we propose:

Using traditional gypsum mortar, add as much as 7 to 5% volumetric gypsum to the composition, white cured whitened to achieve a relatively stable and stable mix mortar which, while being insulated against moisture penetration. In the case of moisture absorption, there is no evidence of an increase in volumes that are usually present in gypsum mortar in such cases, which will cause the tiles to be tiled and get out of the surface.

In the case of metal sheet metal, to prevent the possibility of rusting metal (metal), resulting in increased volume and slippage at the tile surfaces, also due to the necessity of using the board and the lack of suitable replacement for it. Before installing the work piece (metal) in the areas used, it should be done to insulate them. For this purpose, it is recommended that the sheets be treated with a fine, accurate, accurate, and so on, and then their surface is removed from any additions. Finally, they should be added to the surface with the precision of all stainless steel. After drying and ensuring their insulation, install them in the desired area.

In the case of tiled tiles, it is sometimes seen that parts of the tiles, especially the edges of them, have been lost. If the new tile is not possible, these tiles, if left intact, will be a good place to penetrate the moisture to the back. Therefore, it is suggested in the first step that the use of such tiles can be avoided as much as possible, but if necessary, re-use these tiles should be done at the end of the work, in comparison with the insulation of the edges. For this, the use of para-white B72 or similar polymer compounds is recommended.

CONCLUSION

Construction methods and tile manufacturing centers in the old Safavid capital have been commonplace and have existed. Tile restoration methods have been designed and maintained in order to protect and stabilize them. The artistic elements used in the total tiles of the Sheikh Safi are Gonbad-e-Allah Taqlidi of the tomb burial tomb, where the use of the Word of Allah, unlike Sheikh Safi, is deliberately arranged with turquoise glazed bricks that are completely identical in terms of the plan, the style of architectural decoration. The tradition of making tiles in Sheikh Safi-edin Ardebili's collection is a continuation of previous art traditions in Iranian art tile art. Due to the cold conditions in Ardebil, the phenomenon of glazing is one of the important factors in the glazing of the surface of the tile. The presence of high silica in the bodies also showed that these tiles are like other tiles of the era. Very destructive process Ardabil tiles are more or less subordinate to the Ardabil area due to the specific environmental conditions of the cold zone. The analysis showed that the

type of glazing and body of tiles used in Sheikh Safiuddin Ardebili's Tomb is almost identical with the tiles of its period in terms of materials and tiles. And no big difference was seen. The common theme of Sheikh Safi's tombstones is technically high in silica compounds in their bodies. The tiles are not of an integrated structure and the glazing structure has cracks. The results of the qualitative analysis of mosaic tiles in Sheikh Safi monument set by electronic microscopy system show the presence of lead in samples. According to this identification, it is deduced that the glazes of these tiles are lead enamels. The presence of the silver element in the glaze: probably this test error is due to the error of the SEM device of the Tarbiat Modarres University. Hence, further testing is needed to reject or prove this.

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