

The impact of climate changes on the previous conservation of archaeological objects and how to prevent as applied to glass and ceramic objects



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1- Introduction:

The countries of the world have witnessed a rise in temperatures in recent years, and I have noticed in recent years that many of the previously restored and preserved archaeological glass and ceramic objects in the store of the Museum of Islamic Art in Cairo are separated, and we may find a space between pieces of the object, so the material of the previous collection was identified using AT analysis. And I found that the problem of the conservation material is that the previous conservation material becomes flexible at a temperature of 35° degrees Celsius like Polyvinyl acetate solution, while the summer temperatures in Egypt reach more than 40°.

Despite this, I find so far that some in Egypt may use a material such as Paraloid 72, although it becomes flexible at a temperature of 40°, and this may lead in the future to the same result.

2- A description (Methods):

In this objects, we are forced to disassemble the previous assembly, clean the assembly material, then reassemble the pieces of the object again, but using a material that is compatible with temperatures in Egypt, such as Paraloid 44, which becomes flexible above 60° degrees.

However, disassembling and reassembling again may expose the object to some damage, so it is preventive measure to use a conservation material that is compatible with the temperatures of the country in which the object is located.

The study deals with a presentation of some previously restored archaeological glass and ceramic objects that have a problem in the places of previous restoration. The study deals with how to treat these cases applied to a glass object and another ceramic object. The study also deals with how to prevent such a problem, such as knowledge some conservation materials suitable for high temperatures, as well as how to preventive glass and ceramic objects in the museum store from that.

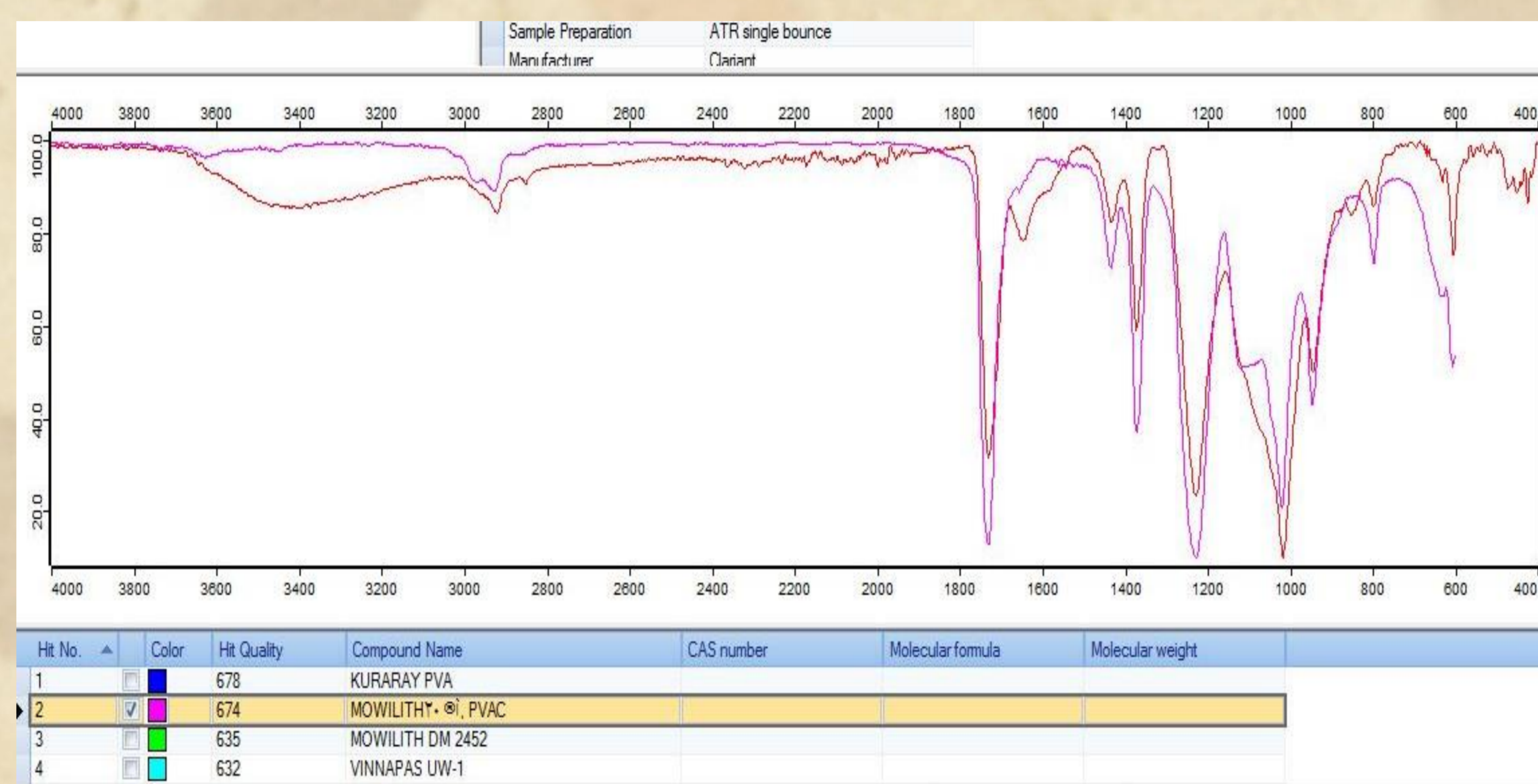


Figure 2: ATR analysis of a sample of a previous glass-ceramic conservation material (polyvinyl acetate)

3- Results and observations:

The material widely used in the late twentieth century in assembling glass and ceramics in Egypt is a polyvinyl acetate solution PVA, which does not currently tolerate high temperatures, nor does the wax material that was used to complete glass previously.

Table: Some types of paraloid and their plasticity temperatures

The type of Paraloid	Glass transition temperature
Paraloid 82	35°
Paraloid 72	40°
Paraloid 48	50°
Paraloid 66	50°
Paraloid 67	50°
Paraloid 44	60°

4- Applied case:

Glass Object:

Applied case one is archaeological glass dish from the early Islamic era in the Museum of Islamic Art in Cairo, with dimensions of height 3.45 cm, diameter 12.3 cm and thickness 2.8 mm. It consists of several parts and was assembled using Paraloid 44 50%.

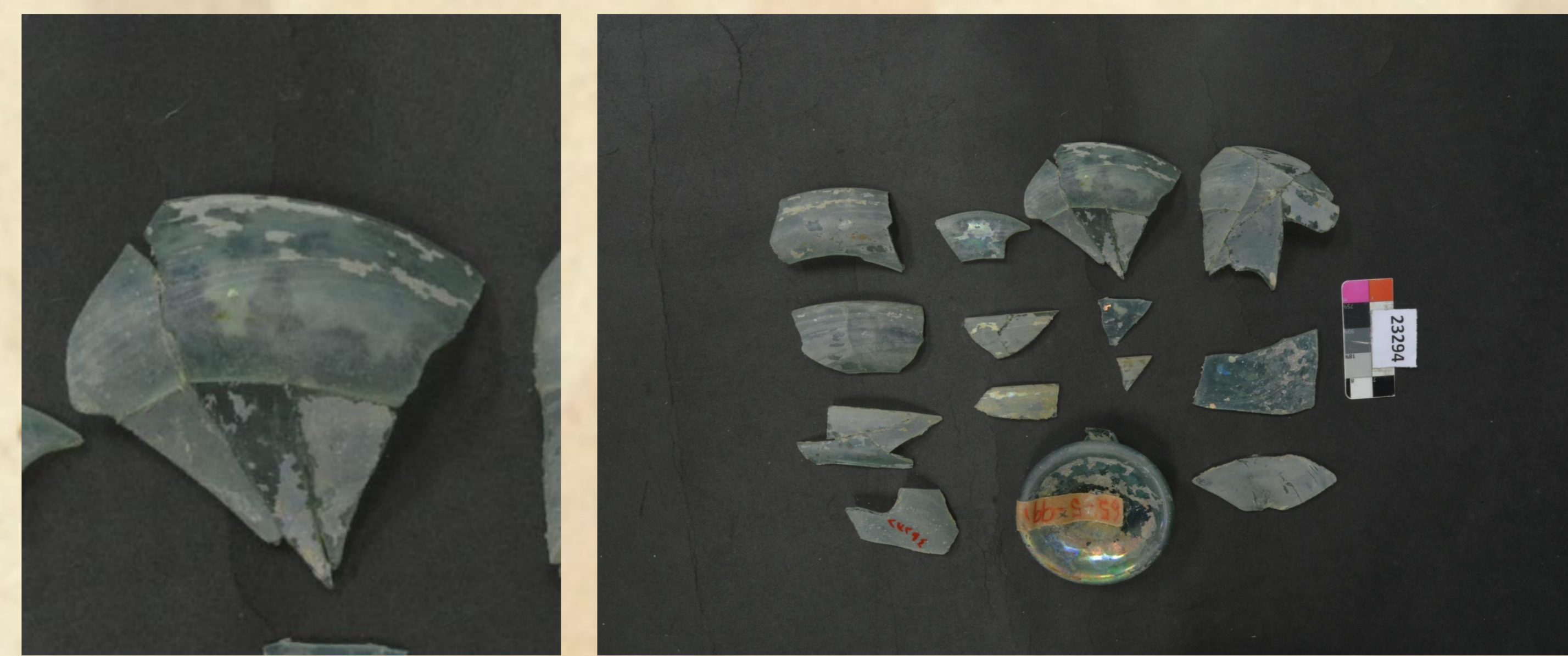


Figure 3: Before conservation.



Figure 4: Steps to make Dismantle the previous conservation



Figure 5: The conservation stages of the glass object.

Ceramic Object:

Applied case two is archaeological Ceramic dish from the early Islamic era (Amoy era) in the Museum of Islamic Art in Cairo, with dimensions of height 5.6 cm, diameter 24 cm and thickness 6 mm. It consists of several parts and was assembled using Paraloid 44 50%.

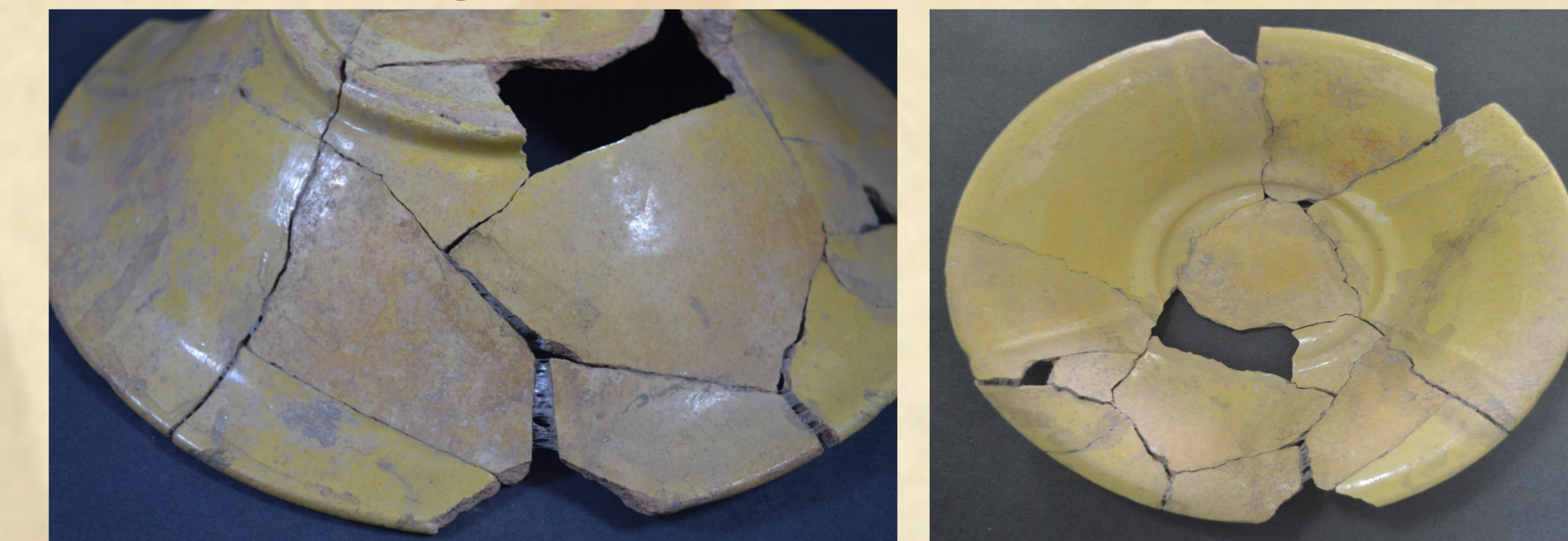


Figure 6: Before conservation.



Figure 7: The conservation stages of the ceramic object.

5- Conclusions and recommendations:

- It is very important to take into account the selection of materials that can withstand high temperatures in light of the current climate changes. It is recommended to use Paraloid 44 in assembling antique glass and ceramics in countries with high temperatures. Each material is chosen based on the climate of the country in which the archaeological object is located.



Figure 1: Delamination, migration and denting resulting from the impact of the previous conservation material