# Egyptian Faience

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## Introduction

The goal of this project was to discover the clay composition and production methods used by the ancient Egyptians to make faience and then use those findings to create faience with modern methods for art objects.

## Production Methods

Egyptian faience is very difficult to work with. This is due to its chemical composition being thixotropic, meaning it acts more liquid at first then becomes stiff and brittle. So the ideal way to work with this is to press the clay into a mold as a means of shaping it. Thousands of press molds have been discovered in archeological digs around Egypt. (Friedman, 1998)

*Figure 1. Eye of Horus Mold, Museum of Fine Arts, Boston*

Figure 2, Faience Shabti Mold. British Museum, United Kingdom

## Clay Composition

Extant objects have been examined by the scanning electron microscope (SEM) in the Wolfson Archaeological Science Laboratories at the University College London's Institute of Archaeology. This examination helps to characterize the different areas in the artefact i.e surface, glaze, interaction zone and core paste. Also the elemental analysis reveals information on the composition and the raw materials. (Piquette, 2009)

*Figure 3, Frog Amulet, Petrie Museum. United Kingdom*

**Faience frog amulet UC1176**

Analysis of surface at three areas to identify mineral composition:

| COMPOUNDS % | | | |
|---|---|---|---|
| **FORMULA** | **Head** | **Eye** | **Leg** |
| Na2O | 2.56 | 1.86 | 3.69 |
| MgO | 0.89 | | 1.14 |
| Al2O3 | 3.71 | 1.99 | 3.33 |
| SiO2 | 65.67 | 74.09 | 73.60 |
| SO3 | 3.68 | | 5.76 |
| K2O | 1.69 | 0.67 | 1.07 |
| CaO | 4.34 | 0.68 | 3.14 |
| FeO | 2.38 | 3.18 | 1.28 |
| CuO | 6.25 | 7.25 | 4.77 |
| PbO | 6.07 | 8.25 | |

*Figure 4, Piquette, 2009*

With this data a formula for a reproduction was able to be calculated and tested.

## Results

Work began by creating press molds for use with the faience. These were created using a stoneware clay and found objects.

*Figure 5, Press molds. Blackburn, 2018*

Once the pieces were molded they were allowed to dry. While drying, the alkaline salts present in the faience body (sodium carbonates, sulphates, and chlorides) migrate to the surface. At the surface, these salts effloresce as the water evaporates (Nicholson, 2000). This is what melts to form the glaze during firing.

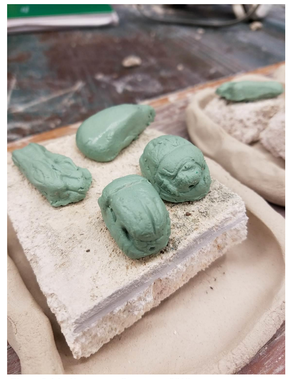

*Figure 6, Wet Greenware. Blackburn, 2018*

*Figure 7, Alkaline Salt Crystals. Blackburn, 2018*

After drying these pieces were fired in an electric kiln so that firing temperatures could be closely controlled to test how well the pieces fired at different temperature ranges. Finished pieces were either set in custom brass fittings or left as demonstration pieces.

## Conclusions

Faience is an excellent medium for use in creative works. It's brilliant color and long history make for an interesting focal piece for three dimensional works.

*Figure 8, New Fossil Hair Pin. Blackburn 2018*

*Figure 9, New Fossil Lapel Pin. Blackburn, 2018*

## Bibliography

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