AZULEJO BLUES – AN ANALYTICAL STUDY OF THE BLUE COLOURS IN PORTUGUESE *AZULEJOS*

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ABSTRACT

This communication reviews the main variants of the blue colour found on glazed tiles (mainly of Portuguese manufacture) used in Portugal from the 16th to the late 18th centuries and discusses the composition of the pigments from which they result.

KEYWORDS: azulejos; cobalt pigment; blue colour in majolica

1. INTRODUCTION

Portuguese *azulejos* of the 17th century used a number of colours that were recently reviewed and analyzed [1]. Amidst those colours, blue is the only one that was used continuously since the earliest productions and throughout the whole *azulejo* chronology and is thus a prime subject for compositional research on the pigments, encompassing the whole production of historic tiles.

Well into the 19th century, the blue colour in *azulejos* derived exclusively from the use of cobalt pigments. From at least 1520 and throughout the classical period of Portuguese *azulejo* production, the cobalt originated from a region on the border between Saxony and Bohemia – the Erzgebirge (Ore Mountains) where it was a sub-product of the extraction of silver, copper, lead, bismuth and other metals [2]. The cobalt-bearing slags used in pottery and glassmaking were largely unrefined [2] and their compositions include, besides cobalt, other elements in an association that often characterizes their geographical provenance. For most of the Erzgebirge, the major association of cobalt is with iron, nickel, arsenic and bismuth [3] but their relative contents vary with the location and the chronology. In some cases those contents also bear on the colour [2; 8; 9].

When the blue colour is considered in a representative set of tiles it is easily recognized that its hue varies. This may result from the particular compositions of the pigment or of the glaze, or from the firing conditions. The counterpart of the pigment

compositions on the blue hues has not, to our knowledge, been determined in Portuguese historic *azulejos*. That was the aim of our study.

2. SAMPLING (TEXTOS COMPLETOS NAS ACTAS DO CONGRESSO)

3. TECHNICAL

3.1. μED-XRF analysis

3.2- WD-XRF semi-quantiitative analysis

4. RESULTS

4.2. Portuguese tiles

5. CONCLUSIVE NOTES

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