

THE CHARACTERIZATION OF VERDIGRIS PIGMENT IN HISTORIC DOCUMENTS – STUDY OF DEGRADATION

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The cultural heritage materials characterization is essential for the comprehension of their degradation mechanisms. Verdigris ($\text{Cu}(\text{CH}_3\text{COO})_2 \cdot \text{H}_2\text{O}$) is a mineral pigment of basic copper acetate that was widely used over the times on various types of documents, mainly on cartographic documents (atlas, maps, etc.). This pigment is one of the most instable and reactive green colorants. Its degradation involves the browning of its original green hue, which can occur with a complete destruction of the paper carrier. This colour alteration results from the decomposition of the pigment, which is accelerated in the presence of high UV, relative humidity and temperature levels.

The aim of the present work is to characterize the deteriorated green pigments present in historic documents, in order to relate their state of degradation with the kind of binding media and type of paper support.

We have studied fifteen cartographic documents using several nondestructive and microanalysis testing techniques: Colorimetry (CIELab parameters), X-ray Fluorescence Spectrometry (EDXRF), Fourier Transformed Infrared Spectroscopy (FT-IR) for the pigment; Gas Chromatographic-Mass Spectrometry (GC-MS) and FT-IR for the binding media; FT-IR, pH measurement, and micro-chemical spot tests for the paper carrier. These techniques have shown to be complementary on the study of verdigris degradation. The results will be presented.