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Final Results of the Iron-Gall Ink Project at the Library of Congress

ABSTRACT

For the past ten years the book and paper conservators at the Library of Congress have treated iron-gall ink documents with solutions of magnesium bicarbonate, with or without ethanol modification. This investigation compares the efficacy of these treatments to more recently developed protocols using either a magnesium or calcium phytate antioxidant in addition to an alkaline buffer.

The goal of the study is to isolate a protocol that most effectively stabilizes the ink without causing visual changes. The study used a standard iron-rich ink formula applied to three types of paper, including a gelatin-sized rag that is representative of the majority of iron-gall ink manuscripts and artworks.

The various treatments were conducted using volumes, concentrations, and immersion times that are similar to those in regular use, avoiding extreme concentrations or atypical immersion times. Treated samples were subjected to accelerated aging and analyzed using visual assessment, pH, burst testing, Fe II content, brightness, and alkaline reserve for comparison. This initial research indicates the potential for future testing and refinement of the more promising protocols.

SUBSEQUENT PUBLICATION

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