



Questioned Documents Section – 2011

J1 Reliability of Paper Brightness in Authenticating Documents

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After attending this presentation, attendees will understand why inconsistencies in paper brightness may occur. The attendee will learn how paper brightness differs from paper whiteness, how brightness is achieved in the manufacturing process, and if paper brightness differences of individual pages within a ream are random or patterned.

The presentation will impact the forensic science community through increasing awareness by detailing the quality control issues related to brightness in paper during the manufacturing process.

The evaluation of paper brightness in multi-page documents is a common practice of forensic document examiners. Brightness is a measurement of light reflectance of a specific wavelength of blue light (457 nanometers, 44 nm wide, at a 45 degree angle). Foreign readers will recognize a paper whiteness index, commonly used outside of the United States, based upon light reflectance across all wavelengths of light comprising the full visible spectrum.

Although more sophisticated instruments are used in the manufacturing process, a long wave (approx. 300-400nm), ultraviolet light source is commonly used by document examiners to compare the consistency, or inconsistency, of the brightness in the paper specimens at issue.

Most common multipurpose paper will have the paper brightness number displayed on the ream packaging. There is an expectation that paper manufacturers will market their product with a consistent quality of paper size, weight, and brightness. However, research has established that quality control varies among paper companies and the stated paper brightness of sheets within a ream can differ.

Multiple reams of standard multipurpose paper from various manufacturers were examined with long wave ultraviolet light. Although several of the reams had sheets with a brightness quality that could not be differentiated one from another, some reams were found to have clearly identifiable differences in the degree of brightness among the pages. Technical information was obtained from professionals in the pulp/paper industry as well as during a tour of a paper manufacturing site.

During case examinations of a multi-page document (e.g., contract or will) the inconsistency of paper brightness in one page from surrounding pages may or may not provide an adequate basis in determining whether the document is a fabrication or forgery. Therefore, the examiner is cautioned to utilize other characteristics/discrepancies in conjunction with differences in paper brightness, before asserting a document is the product of a fabrication.

Paper, Brightness, Document