

Testing the Permanence of Photobook Pages

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Abstract

The market for digitally-printed photobooks has rapidly expanded in recent years, and they have become an increasingly important method of viewing and preserving photographic images together with captions and other textual material. A photobook may be printed as a single copy, or in multiple copies for distribution to relatives and friends. Many advanced amateur and professional photographers make use of photobook printing and binding technology for producing illustrated books for sale, and this has spawned an entirely new industry of high-quality, print-on-demand books. In the short-runs typical of photobooks, the per-unit costs of this type of book would be prohibitive using traditional offset printing.

The great majority of the photographs that appear in photobooks do not exist in any other hardcopy form and, for this reason, the images in a photobook can be thought of as having the same validity and importance as traditional silver-halide, inkjet, or other black-and-white and color photographic prints. As is the case with traditional photographs, the long-term permanence of photobook pages is very important to both the photographers – the authors – of photobooks, and to the people who purchase the books or receive them as gifts.

This paper discusses testing methods for evaluating the permanence of photobook pages printed by a variety of commonly used technologies, including liquid toner electrophotography, dry toner electrophotography, digitally-printed silver-halide papers, inkjet, and thermal dye transfer (dye-sub) printing.

The primary permanence concerns for photobook pages are dark storage stability – including resistance to yellowish stain formation over time – and light stability. Arrhenius tests conducted at a series of elevated temperatures in precision temperature and humidity-controlled ovens are used to evaluate dark storage (thermal) stability. High intensity, temperature- and humidity-controlled accelerated light fading equipment is employed to evaluate the high stability of photobook pages and printed covers.

In common with other books, photobooks are normally stored closed on a bookshelf and the brief exposure to light that an interior page might receive when opened for viewing is negligible

– unless of course a book is left opened for display on a table or shelf for extended periods of time. Of much greater concern is the light stability of pictorial photobook covers, which are usually printed with the same toners or inks used to print interior pages. Whether a book is placed on a table or stored on a shelf, the cover and spine will in time likely receive considerable accumulated light exposure, which may result in objectionable fading.

Resistance to page damage resulting from storage in high humidity conditions, as well as short-term water resistance, is also important.

For all of these photobook page permanence tests, preparation of calibrated test targets, image change measurement systems, endpoint criteria, environmental assumptions, predictive calculations, and other aspects of the testing methodology are similar to the test methods developed by Wilhelm Imaging Research for evaluating the permanence of silver-halide, inkjet, and other types of photographic materials.

Because of the very wide range of binding methods, materials, and adhesives that are used in photobook production, the authors believe that meaningful, comparative test methods for the long-term permanence and physical durability of complete, bound photobooks may be difficult or impossible to develop – there are simply too many variables involved in this rapidly evolving industry.

Biography

Henry Wilhelm is co-founder and director of research at Wilhelm Imaging Research, Inc. He has authored or co-authored more than 25 technical papers in the United States, Japan, and Europe on permanence testing, the stability of traditional and digital color photographs, and the long-term preservation of photographic collections. The company publishes brand name-specific permanence data for desktop and large-format inkjet printers and other digital printing devices on its website <www.wilhelm-research.com>. Wilhelm serves as co-project leader for development of Indoor Light Stability Test Methods Standards within ISO WG-5/TG-3. In 2010, Henry Wilhelm, Carol Brower Wilhelm, and Harold Fuson established The Center for the Image, a nonprofit organization with the mission of conducting research and developing web-based publications and other educational materials concerning related to long-term preservation and access for both traditional analog photographs and digitally captured still and video images.