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## KODAK USES DIFFERENT TESTING METHODS FOR PREDICTING IMAGE LIFE

**SYNOPSIS:** Kodak use of non-standard methods for predicting image life of digitally-printed photographs enables them to claim a life that is 15 times greater than the life that has been predicted using Wilhelm Imaging Research methods.

Your editor was recently invited to present a paper at [NIP20](#): The 20th International Conference on Digital Printing Technologies (sponsored by the [Society for Imaging Science and Technology](#)) that was held in Salt Lake City, Utah October 31 - November 5. I will discuss my presentation at that conference in a future newsletter. Today, I would like to lead in with Henry Wilhelm's presentation at that conference: "A Review of Accelerated Test Methods for Predicting the Image Life of Digitally-Printed Photographs - Part II".

From the ABSTRACT: "This paper gives an overview of the various factors affecting the permanence of digitally-printed photographs. Accelerated test methods are described, with emphasis on current ANSI and ISO Standards, future ISO Standards, the 'defacto' standards now widely used in the imaging industry, and future test procedures now under development to better predict the long-term permanence behavior of photographs are discussed. Image permanence data for representative products evaluated with different test methods are given."

I will not go into the technical details of Wilhelm's testing methods presented at the conference. I'm not here to defend Wilhelm's testing methods over anyone else. But I do agree that Henry's methods have become "the 'de facto' standards now widely used in the imaging industry", as he claims in his paper's abstract.

For this reason, I was quite surprised when I read where Kodak had come up with different testing methods than those used by Wilhelm Imaging Research, Inc. The public first learned of these differences in a [GREAT OUTPUT MAGAZINE](#) article entitled, "[Will my inkjet prints last as long as traditional photos?](#)" (PDF file), dated February 2004.

For light-stability tests, Wilhelm had standardized on an exposure of 450 lux for 12 hours a day, which is fairly characteristic of a brightly illuminated room. Quoting Wilhelm (from the magazine article): "Almost every major imaging manufacturer in the world now either uses that particular display condition when reporting data, or a very closely related 500 lux for 10 hours per day. The one exception is Kodak, which is using an illumination level of 120 lux extrapolated to 12 hours per day. If our research group and the product testers at Epson, Canon or Hewlett Packard used the same illumination levels that Kodak uses to report their display permanence data, you could multiply all our numbers by a factor of roughly 3.75. For instance, the HP product that we've rated to last for 73 years would last 270 years under Kodak's test conditions. What this means is that when Kodak advertises that their Generations or Endura photo-printing papers can be displayed for 100 years before noticeable fading, the consumer naturally concludes that photographs processed on these papers are more light stable than Epson's pigment prints or HP prints, when in fact the opposite is true. Kodak's data is in no way comparable to what everyone else is reporting."

But this "roughly 3.75" factor became "15X" factor in an updated October 2, 2004 paper from Wilhelm Imaging Research, titled, "[WIR Permanence Ratings of Current Products in the 4x6-inch Printer Category](#)" (PDF file). In this paper, WIR reports their permanency rating for the Kodak Ultima Picture Paper, High

Gloss (printed on the HP Photosmart 145 and 245 Compact Photo Printers, using the HP No. 57 Tricolor cartridge). WIR's rating for this product combination is 11 years. This is the same product combination that Kodak had given a "Light Fading Print Life Estimate of 162 years" in their updated May 8, 2004 report, "The Technology Behind the New Kodak Ultima Picture Paper - Beautiful Inkjet Prints that Last for Over 100 Years"!

How could Kodak's 162 year display-life prediction become almost 15X longer than the 11 year prediction obtained by the more conservative tests conducted by WIR for this ink/media combination? Besides the "roughly 3.75" illumination level difference we have already discussed, it appears that Kodak is using UV-filtered lights (with many of their ink/media combinations), whereas WIR is only using glass-filtered lights (regular framing glass over the test prints); Kodak is using a different starting density for fading measurements and they are using a different endpoint criteria set; and lastly, Kodak is maintaining their tests in a lower (50%) Relative Humidity environment than WIR's 60% RH.

Nineteen major imaging manufacturers have chosen to test their media or inks with the test lighting filtered only by standard picture framing glass, whereas Kodak has chosen to filter their test lighting with the more protective UV filtration.

Agfa has also decided to join Kodak in choosing the less intense, 120 lux:12 hours/day as their "Standard" Illumination Level, whereas 18 other major imaging companies have chosen the roughly 3.75 times more intense 450 lux or 500 lux: 12 hours/day or 10/hour per day, respectively.

It could be argued that Kodak's testing methods, i.e. choosing a 120 lux standard over 450 lux is closer to a typical home environment. (There are also many arguments for a standard higher than 450 lux standard.) The point is that Kodak (and now Agfa) appear to be changing the rules to make their their products look better than the competition. It's like Kodak has decided to set up a new monetary system and is claiming that people can buy more with "Kodak Dollars", than with "standard" dollars.

What concerns many in our industry is if large companies like Kodak and Agfa can start setting their own testing standards, what's to stop others from doing the same. If everyone starts playing by a different set of rules, then there is no way to make any accurate comparisons. Using Kodak's same testing standards, a company could package a very inexpensive dye-base ink and claim that it had a better permanency than a well-tested pigment-based ink, i.e. Epson's UltraChrome.

And what about the millions of Kodak Ultima users who are expecting their prints to last for well over 100 years --even without having to place them behind glass, in a frame? Could we see a whole generation of images fade away over the next 30 years? And what responsibility does Kodak and others, who choose these more liberal testing standards, have to the public who are entrusting them with their images?

Our advice: Let the buyer beware. An informed choice will be the best "insurance policy" in image permanence. Know the testing methods used in the study. Statistics can be managed to produce a wide range of conclusions, and one must consider the sponsor of a study when determining how legitimate the findings.

In our opinion, WIR has been an impartial investigator in this field of research, often arriving at conclusions less than favorable to manufacturers of specific product combinations. Manufacturers have used this information to make consumer friendly changes rather than cloak disadvantages in an effort to hide potential problems. We feel that since WIR's methods have become "the 'defacto' standards now widely used in the imaging industry", companies should spend their research money "improving" their products, rather than researching new testing methods to "prove" their products.

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