

Understanding the Wilhelm Test Reports

In 2016, Wilhelm Imaging Research (WIR) performed permanence testing on ChromaLuxe metal photo panels. For the first time, the full reports are publicly available. Below are details of the reports along with additional information to provide a comprehensive understanding of the results.



What was tested and what were the results of the testing?

Sublimated ChromaLuxe metal prints were tested under Wilhelm Imaging Research criteria using two different ink sets:

- Epson 4-Color UltraChrome DS Inks
- Sawgrass 8-Color Sublijet HD Pro Photo XF Sublimation Inks

What does the “display permanence” rating mean?

The rating is equal to the number of years before any noticeable fading and/or changes in color balance occur at a high level of light. Under WIR fade criteria, the naked eye may notice some fade at this time when compared to a newly printed print. Under normal lighting conditions, we expect ChromaLuxe metal prints to last more than 100 years.

What were the results of the testing?

Using the Epson ink set, ChromaLuxe achieved a Wilhelm Display Permanence Rating of

EPSON
EXCEED YOUR VISION

65
YEARS

Using the Sawgrass ink set, ChromaLuxe achieved a Wilhelm Display Permanence Rating of

SAWGRASS
THE ART OF WHAT'S NEXT

64
YEARS

What was the set criteria for testing?

Data was extrapolated to a display condition of 450 lux for 12 hours per day using the WIR “Visually-Weighted Endpoint Criteria Set v3.0”.

What is a lux?

A lux is a measure of light intensity and is used to measure the amount of light output in a given area. It measures the total amount of visible light present and the intensity of the illumination on a surface.



ChromaLuxe[®]
True to your vision[®]

Do these results apply to all lighting levels?

The results do not apply to all lighting levels. Illumination conditions in homes, offices, museums, and galleries vary, and color images will last longer when displayed under lower light levels; likewise, the life of prints will be shortened when displayed under illumination that is more intense than the Wilhelm testing done at 450 lux. Below are some typical lux levels found in everyday life:

- Museums and Galleries: 50 – 150 lux (depends on material)
- Hotel Room: 100 lux
- Home: 150 – 300 lux
- Retail Store: 300 – 500 lux
- Outdoor (overcast): 1,000 lux
- Outdoor (daylight): 10,000 lux



How do ChromaLuxe's permanence ratings compare to silver-halide papers?

When displayed, unframed prints made with the latest generation of ChromaLuxe aluminum photo panels have WIR Display Permanence Ratings that are **more than THREE TIMES better than silver-halide prints (by Kodak) that have been framed under glass**. Under identical testing parameters, Kodak Endura silver-halide prints framed under glass achieve a WIR Display Permanence Rating of **19 years**.

Does it help if ChromaLuxe is placed behind glass?

No. This is one of the big advantages of ChromaLuxe. It is tough and durable so it does not need to be behind glass. The WIR tests show that placing it behind glass had virtually no effect on the results.

But isn't Diasec much better?

No, it is not. Diasecs are often made with photo papers, and under the same conditions, these will fade much faster, even when placed under acrylic. A face mounted acrylic will give a small improvement of about 25-30% meaning that ChromaLuxe remains approximately 2.3x better.

What about acrylic?

Same story as diasecs. If it is a photo paper it will reach the fade point much faster than ChromaLuxe. There are also many types of acrylic and many types of glue/adhesive which can have a negative effect on the print permanence. Most acrylic is also very easy to scratch or damage. Additionally, both acrylics and diasecs are very heavy compared to ChromaLuxe.

What about UV Direct Prints on metal?

This is a totally different process and one that cannot achieve the high gloss and color saturation of ChromaLuxe. UV printing has a reduced color gamut and is designed for signage and not for high-end fine art prints.

I've seen ads that state Kodak silver halide prints last more than 100 years. How can this be true?

Kodak has developed its own internal print permanence test methodologies and has used this for many years. Under this internal testing criteria, Kodak claims a life of 100 years before noticeable fade. It is important to understand the differences between WIR's test methods and Kodak's test methods. Under Kodak's testing methods, it's easy to see how they reached the 100-year mark. Keep in mind, under WIR testing, ChromaLuxe lasts 3x longer. The difference in test methodologies can be seen below:

Kodak uses a test method of 120 lux for 12 hours per day

WIR uses a test method of 450 lux for 12 hours per day

Between the Kodak testing and WIR testing, which holds the most weight in the photo industry?

Henry Wilhelm's testing methods have become the de facto standard used in the imaging industry. The Kodak testing methodology only applies to Kodak products and thus is not widely recognized.

Besides the fade results, are there other parts of the reports that should be given attention?

Although fade is the most important aspect, the reports also show that ChromaLuxe is highly resistant to water, high humidity and ozone factors. These are additional features which make ChromaLuxe the perfect choice for high-end photographic needs.

Other Important Key Points:

- ChromaLuxe is durable, light and easy to clean. This makes it ideal for use in museums, galleries, hotels, public places and homes.
- ChromaLuxe does not need to be mounted under glass or acrylic, both of which diminish the viewing experience.
- The gloss finish of ChromaLuxe is more vibrant than any other gloss photographic media.
- There are some archival papers in the 100+ year range but these are all matte or semi-matte papers.
- There are a few gloss art papers, but they usually contain Baryta which does not meet fine art acid-free levels.