

ChromaLife100+ Technology Guide



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Print samples

All samples are simulated images. Since the sample images were scanned and converted to CMYK, the colors will differ from the actual samples.

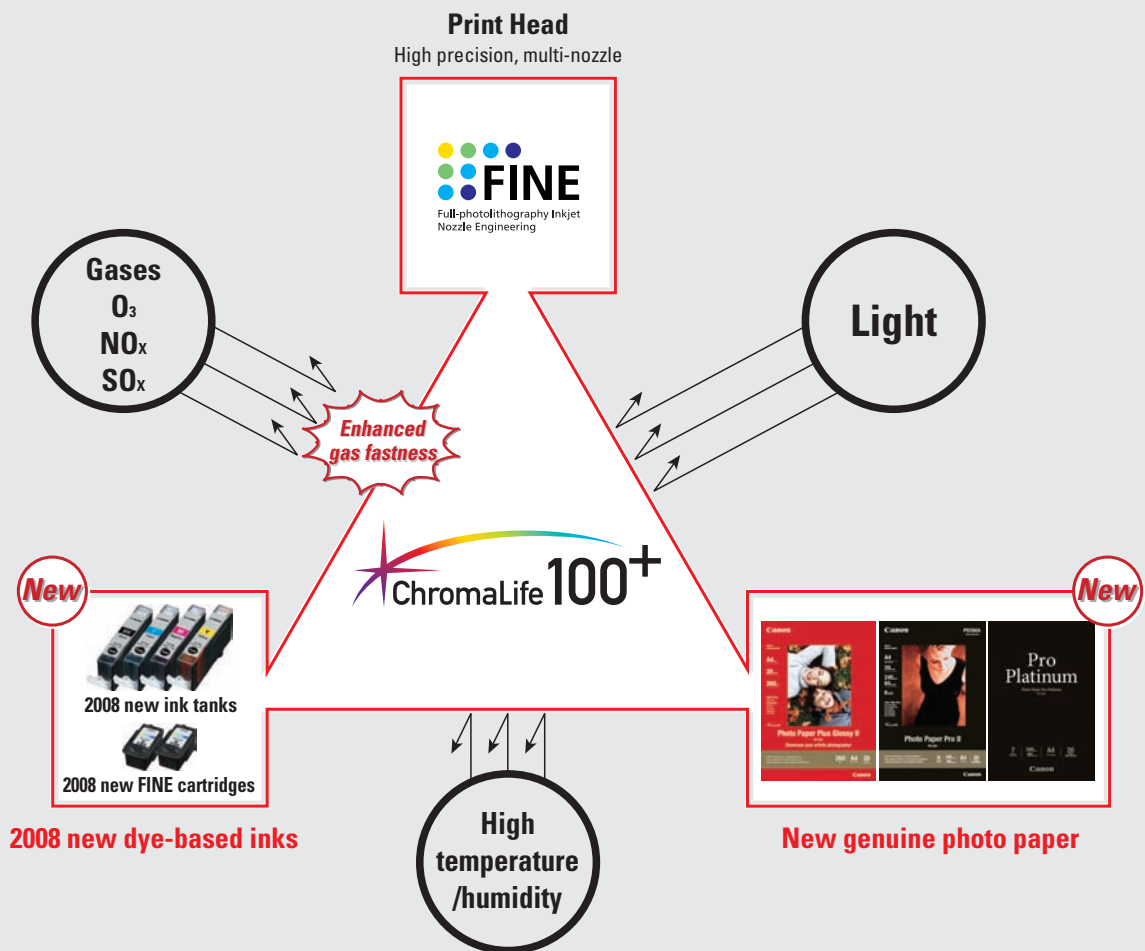


ChromaLife100+ - A New System to Preserve Long-Lasting Beauty of Photos

In order to maximize the superior printing ability of the "FINE" print head, Canon continues to develop ink and paper specifically for PIXMA to enhance their performance.

In 2005, ChromaLife100, a system that improves the beauty and permanence of printed images, with the combination of Canon's "genuine dye ink" and "genuine photo paper", was developed.

Then in 2008, a further advance has been achieved with the introduction of new genuine dye ink and genuine photo paper. The new system, ChromaLife100+, provides longer-lasting and more beautiful vivid photo prints.



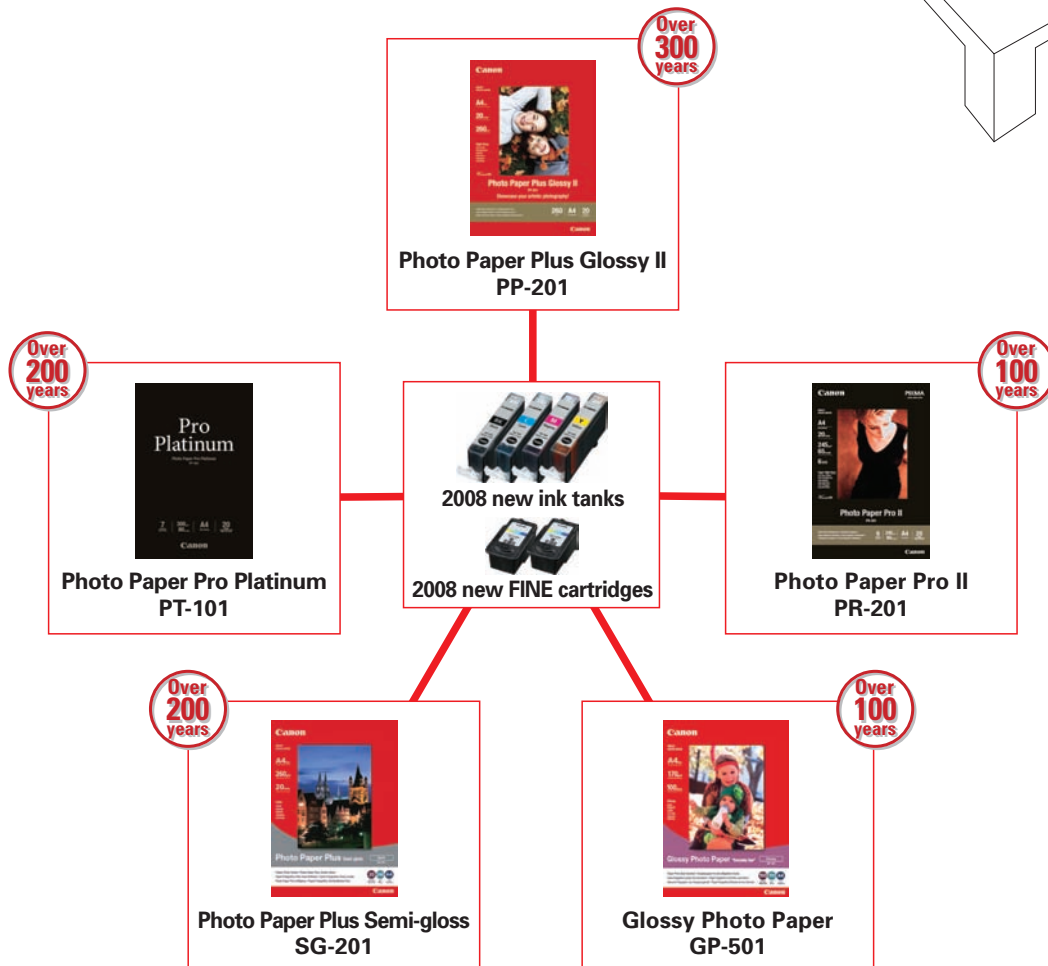
1 Over 300 years album life

It enhanced Canon's "album life" which preserves beautiful photos for a long time by just storing them in an album.

"Over 300-year album life" is achieved with the combination of 2008 new dye ink and "Photo Paper Plus Glossy II PP-201". Also, "Over 100-year album life" is achieved with the other genuine photo paper. (When stored in an archival album with plastic cover sheet and kept in the dark)



Combination of five types of Canon photo paper and 2008 new dye-based inks provide over 100-year album life



About album life:

Criteria for estimation

The permanence presented above is estimated by using an accelerated dark storage tests (ISO 18924). Samples are kept in a controlled environment of high temperature and 50% relative humidity. The test environment is designed to accelerate color fading. The rate of the decrease in the optical density and the rate of yellow discoloration of the paper are measured. Finally, the results are extrapolated to the length of time when a printed image is kept in an environment of 23°C 50% RH.

Criteria for estimation of print longevity shown above

Estimates for image permanence are made using the Wilhelm Imaging Research, Inc. endpoint criteria "WIR Visually-Weighted Endpoint Criteria Set v3.0" as follows; Samples are printed with an optical density of 1.0 and 0.6 (each black, cyan, magenta, yellow) by default printer driver setting of each media. The point where monochromatic/ reflective optical density shows loss of 20-35% (figure set respectively for each color, starting density of 1.0 and 0.6). The point where the difference in color balance of yellow, magenta and cyan (each component in composite black) reaches 12-18%.

Resists
light!

2 Light fastness approx. 30 years

The combination of Canon's 2008 new dye ink and "Photo Paper Plus Glossy II PP-201", "Photo Paper Pro II PR-201" and "Photo Paper Pro Platinum PT-101" resist fading for approx. 30-years when displayed in a glass frame in a typical indoor space (estimating 500lux/ 10hours per day) without direct sunlight.



Original print

30 years later



No noticeable color changes occurred

About light fastness:

Criteria for estimation

Estimated light fastness is made under the following test conditions.

Light source: White fluorescent light 70,000lux; Temperature: 24°C; Humidity: 60% RH; A 2-mm thick glass is placed on the sample during accelerated testing.

Criteria for estimation of print longevity shown above

Estimates for image permanence are made using the Wilhelm Imaging Research, Inc. endpoint criteria "WIR Visually-Weighted Endpoint Criteria Set v3.0" as follows; Samples are printed with an optical density of 1.0 and 0.6 (each black, cyan, magenta, yellow) by default printer driver setting of each media. The point where monochromatic/ reflective optical density shows loss of 20-35% (figure set respectively for each color, starting density of 1.0 and 0.6). The point where the difference in color balance of yellow, magenta and cyan (each component in composite black) reaches 12-18%.

Resists gas!

3 Gas fastness approx. 20 years

The real-world atmosphere contains mixed gases that cause color fading. Ozone (O₃), nitrogen oxide (NO_x) and sulfur oxide (SO_x) must all be considered, therefore, as factors that effect image permanence. Gas fastness has been improved with the combination of new dye ink and "Photo Paper Plus Glossy II PP-201", "Photo Paper Pro II PR-201" and "Photo Paper Pro Platinum PT-101". It achieved "gas fastness approx. 20 years" which is longer than previous "gas fastness approx. 10 years".



Original print

20 years later



No noticeable color changes occurred

About gas fastness:

Criteria for estimation

Estimated gas fastness is made under the following test conditions: Temperature (24°C) and humidity (60% RH) are controlled in an environment of mixed gases of O₃, NO_x and SO_x. The ratio of the gases is typical to indoor air composition (O₃: NO_x: SO_x = 3:19:1) with 100 times concentration in order to accelerate color fading.

Criteria for estimation of print longevity shown above

Estimates for image permanence are made using the Wilhelm Imaging Research, Inc. endpoint criteria "WIR Visually-Weighted Endpoint Criteria Set v3.0" as follows; Samples are printed with an optical density of 1.0 and 0.6 (each black, cyan, magenta, yellow) by default printer driver setting of each media. The point where monochromatic/reflective optical density shows loss of 20-35% (figure set respectively for each color, starting density of 1.0 and 0.6). The point where the difference in color balance of yellow, magenta and cyan (each component in composite black) reaches 12-18%.

Resists heat and humidity!

4 Migration resistance

Sharp images for a longer time

With the combination of Canon's genuine 2008 new ink and "Photo Paper Plus Glossy II PP-201", "Photo Paper Pro II PR-201" and "Photo Paper Pro Platinum PT-101" provides long-lasting vivid photos without ink bleeding or migration even in high temperature/humidity environments.



Original print

7 days later



The image is crispy and vivid with hardly any color change.

About humidity resistance:

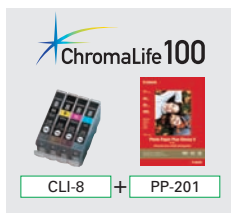
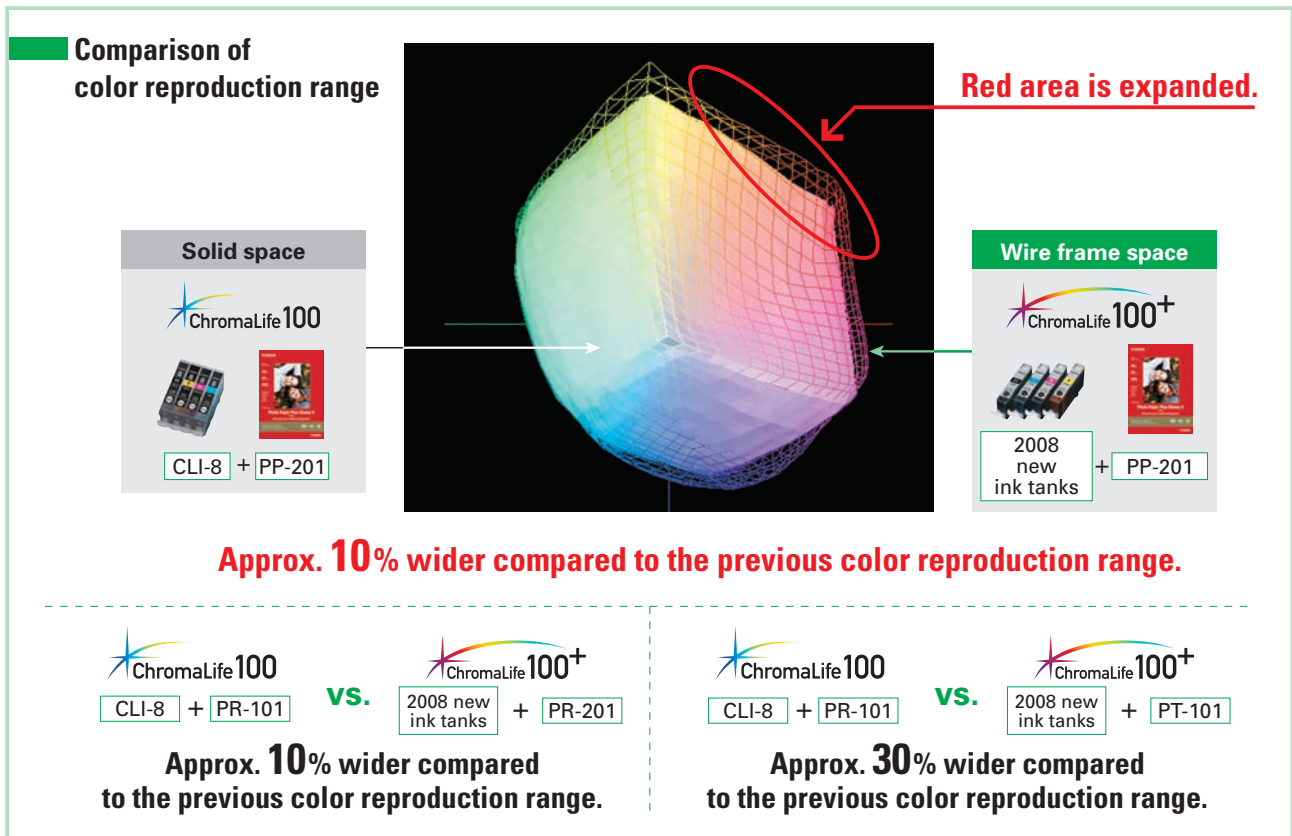
Criteria for estimation

Print samples are kept under controlled conditions of high temperature (30°C) and high humidity (80% RH) for one week.

1 Enhancement for color reproduction in red areas

Vivid color leaves impression.

The wider the color gamut is, the more colors that can be reproduced. With the combination of 2008 new dye ink and "Photo Paper Plus Glossy II PP-201", "Photo Paper Pro II PR-201" and "Photo Paper Pro Platinum PT-101" greatly expanded color reproduction especially in red areas (yellow ~ red ~ magenta) compared to the combination of previous dye ink and photo paper. Richer and brighter color reproduction is provided.



2 Photo black is more neutral

The black is deeper and the vivid colors in the photograph stand out.

Importance of Black Ink

Black ink is a determining factor in the density and contrast of the image as a whole. Depending on the coloration properties of the black ink, an image can provide a dynamic three-dimensional feel, or end up giving a flat impression. The dye's color tone is also extremely important to image quality. Creating a perfect, colorless black with inks is extremely difficult. At the same time, however, black that does not take on any color sharpens the photo and brings out its beauty.

Making Black Ink More Neutral

Canon has been working on neutralizing the black ink and this time succeeded in bringing the tone of the black ink closer to neutral, thus improving its visual blackness by combining a variety of dyes.

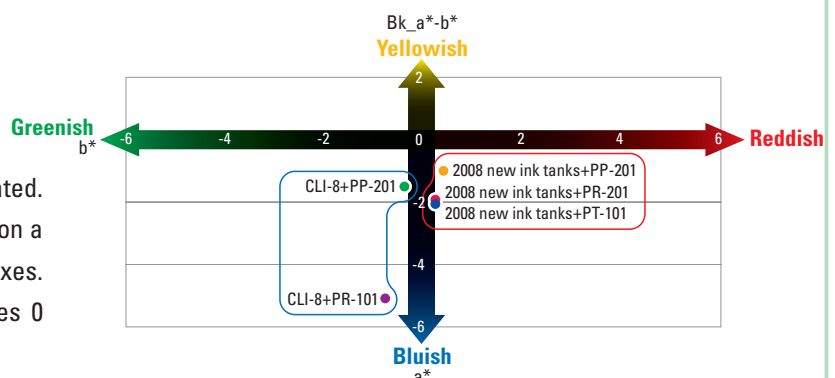


Conceptual Diagram



Black Ink Tone Comparison Between Conventional Ink and 2008 New Dye Ink

Test samples with solid black were created. The colors were measured and plotted on a coordinate system with a^* and b^* as axes. The point closer to the coordinate axes 0 produces more neutral black.



Note for preserving and displaying photos

The image permanence estimates presented in this technology guide may vary depending on display/storage conditions. The expressed numbers of years estimates are the result of simulated, accelerated tests conducted by Canon Inc. and do not represent a product guarantee.

Light, environmental gases, high temperature and humidity can accelerate color fading. When displaying your photographs, avoid high intensity lighting and use glass-filtered frames. Photos stored in the dark, using archival quality albums or storage materials, will tend to last longer than photos that are exposed to light. Avoid high temperatures and high humidity to promote the image permanence of your photos.