

INKJET PRINTER INDOOR LIGHT FASTNESS TEST SUMMARY REPORT



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**Inkjet Printer Indoor Light Fastness Test
Summary Report**

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1 Introduction

In June 2007, Allion Japan Inc. compared gas fastness between genuine and third party refill inks for inkjet printers by a three-kind mixed gas test.

In succession to the three-kind mixed gas test, we conducted an indoor light fastness test to compare light fastness between refill inks sold by printer and ink manufacturers.

Considering the preservation of photo prints important, each printer manufacturer introduces the image preservation performance of their products in brochures. However, the evaluation methods are based on the manufacturers' standards and not standardized. For easy comparison by users, the industrial organization "Japan Electronics and Information Technology Industries Association (JEITA)" is now standardizing "Digital color photo print preservation tests (CP-3901)" that includes an indoor light fastness test with Xenon (Xe) lamp. This test is mainly based on the assumption that a photo displayed in an ordinary house is exposed to sunlight through a window or reflected on a wall or floor. When a photo in a photo frame with glass is displayed, not the influence of gas in the atmosphere but discoloration by sunlight becomes important to evaluate.

As of October 2007, "Digital color photo print preservation tests (CP-3901)" is at the stage of draft. So far, no third-party organizations have reported any test result complying with this standard. By the indoor light fastness test with Xenon (Xe) lamp now under review by JEITA, we verified the light fastness of actually marketed inks sold by printer and ink manufacturers and also the relationship between lives prescribed in the standards of JEITA and actual image deterioration.

This report introduces the result of our indoor light fastness test complying with JEITA CP-3901 (comparison of light fastness between inks manufactured by printer makers and inks manufactured by third-party makers).

Please use our inkjet materials evaluation service.

*Reference: "Digital color photo print preservation tests (CP-3901)" of Japan Electronics and Information Technology Industries Association (JEITA)
















2 Summary

By an accelerated indoor light fastness test complying with JEITA CP-3901, we found great differences of image deterioration between third-party inks as shown in the photo samples below. The result well matched life estimation with the life prediction chart of JEITA CP-3901. Thus, we could verify that the lives by the standard reflect the degrees of image deterioration by the accelerated test.

2.1 Result of Light Fastness Test on Image Samples Printed by Canon Printer






Test result 1: Comparison of light fastness between image samples printed by Canon printer with refill inks

* **“Over 5 years”** in the Life column means that the print did not reach the end of life even after 5 years equivalent (110 hours).

Comparison of Light Resistance				Life *
Canon genuine ink				Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
A's refill ink				1.3 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
B's refill ink				1.1 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
C's refill ink				1.1 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
D's refill ink				1.9 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	

Test result 2: Comparison of light fastness between image samples printed by Canon printer with recycled inks
















* "Over 5 years" in the Life column means that the print did not reach the end of life even after 5 years equivalent (110 hours).

Comparison of Light Resistance			Life *
Canon genuine ink			Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	
E's recycled ink			1.6 years
	Immediately after printing	2 years equivalent (44 hours)	
J's recycled ink			4.1 years
	Immediately after printing	2 years equivalent (44 hours)	

2.2 Result of Light Fastness Test on Image Samples Printed by EPSON Printer

Test result 1: Comparison of light fastness between image samples printed by EPSON printer with refill inks

* “Over 5 years” in the Life column means that the print did not reach the end of life even after 5 years equivalent (110 hours).

Comparison of Light Resistance				Life *
EPSON genuine ink				Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
A's refill ink				Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
B's refill ink				2.1 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
C's refill ink				3.0 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
D's refill ink				Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	

Test result 2: Comparison of light fastness between image samples printed by EPSON printer with recycled inks

* “Over 5 years” in the Life column means that the print did not reach the end of life even after 5 years equivalent (110 hours).

Comparison of Light Resistance			Life *	
EPSON genuine ink				Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
E's recycled ink				Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	
J's recycled ink				Over 5 years
	Immediately after printing	2 years equivalent (44 hours)	5 years equivalent (110 hours)	

3 Test Method

3.1 Test Environment

- 1) Actual image: SCID image N1A.tif converted into RGB data
- 2) Life prediction chart: Chart of JEITA CP-3901
- 3) Printer and paper: The same inkjet printer and paper of each printer manufacturer
- 4) Print setup: Default setup of the printer driver of each printer manufacturer complying with JEITA CP-3901
- 5) Test equipment: Super Xenon Weather Meter SX75 made by Suga Test Instruments Co., Ltd.

3.2 Test Conditions

Xenon lamp illuminance: 50Klux

Test equipment temperature and humidity: 23°C, 50%RH

Black panel temperature: 40°C or less (average: 29.0°C)

O₃ concentration in the test tank: 4ppb or less (average: 0.7 ppb)

Illuminance measuring position: In test the test tank

Test duration: 22 hours (1 years equivalent), 44 hours (2 years equivalent), 66 hours (3 years equivalent), and 110 hours (5 years equivalent)

Filtering conditions:

- Xenon arc lamp: 7.5 kW
- Standard window glass filter: Soda lime glass (#320, t = 3 mm)
- Ultraviolet screening filter: L-37 (t = 3 mm) made by HOYA CANDEO OPTRONICS CORPORATION
- Inner filter: Quartz
- Outer filter: Borosilicated glass (t = 2.4 mm)
- Distance between test piece and standard window glass filter: t = 10 mm



Important: Notes on This Report

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<Exemption>

This report merely introduces the result of a light resistance test performed with products arbitrarily purchased from the market and does not the result or quality of all products used for the test. Note that the test result differs depending on the test conditions and sample. You are responsible for your own judgment based on the result of this test and we will take no responsibility for any secondary damage caused by the use of this report.

For questions or opinions about this report or requests or inquiries about tests, please contact Allion Japan Inc. below and mention so. We are ready to accept opinions and questions about the test contents but may need time to answer them.

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