

Addendum to **JEITA CP-3901****Predicting Print Life via Intermediate Data from JEITA CP-3901**
(Test Method — Indoor Thermal Stability)**Background to Publication of this Addendum**

In **JEITA CP-3901**, which was published last year, the chapter "**9. Test Method — Indoor Thermal Stability**" introduces several testing methods that were not originally in **ISO**, such as test temperature range of 15°C, the 1/2 endpoint method, and the 1/3 endpoint method. These were introduced in consideration of Tg issues with dye-sublimation printers, and the problem that the latest inkjet printers have a very slow degree of degradation, and it takes a prohibited amount of time for them to reach end of print life.

These methods were introduced to the **ISO's** Image Permanence Standards Committee, which is now planning to incorporate them into **ISO** in the future. Since the publication of **CP-3901**, however, it has been pointed out from many quarters that even if the "**9.4 Test condition (II)**" **JEITA** compliant 1/2 endpoint or 1/3 endpoint method is selected for studying the implementation and adoption of standards, the test period is still prohibitively long (e.g. a year or more). The cycle for introducing new products is getting shorter, with many having cycles of less than a year. It would thus be detrimental to the interests of users of these products if conditions for evaluation in a shorter time span were not prepared, because they would not be able to obtain any information on these products' indoor thermal stability print life.

In light of the circumstances described above, this addendum enables the selection of the following methods for calculating print life using data from ongoing testing (intermediate data).

1. Scope

Complies with **section 9.1** of **JEITA CP-3901**

2. Definitions of Terms

Ongoing testing (from indoor thermal stability test methods)

A stage at which the endpoints stipulated in **Tables 1, 6, or 7** of **JEITA CP-3901** have not been reached for at least four temperature conditions. The term "ongoing testing" also applies if the endpoint has been reached for at least four temperature conditions, but the test temperature range is less than 20°C (for Test Condition (I)), or less than 15°C (for Test condition (II)).

Intermediate data

The data obtained from ongoing testing, as defined above. For the purposes of these tests, it refers to time data up until print life is reached for temperatures in ongoing testing.

3. Test Conditions

The test chamber, test humidity, test methods, specimen storage after testing, and density measurements shall comply with **JEITA CP-3901**, "**9. Test Method — Indoor Thermal Stability**."

3.1 Test Temperatures

Perform the evaluation until the specimen reaches the endpoint for at least three of the four or more test temperatures in **JEITA CP-3901**, "**9. Test Method — Indoor Thermal Stability**," each having a test temperature range of 10°C or more. The test temperature tolerance shall be $\pm 0.5^\circ\text{C}$.

Note: Continue testing of specimens that have not reached their endpoints until the endpoints are reached, and then calculate the predicted print life using the test conditions noted in "**9. Test Method — Indoor Thermal Stability**."

3.2 Calculation of the Predicted Print Life using Intermediate Data

Create an Arrhenius plot using time data for until the endpoints are reached for at least three temperatures meeting the above conditions, then calculate the predicted print life at room temperature (23°C).

4. Discussion

4.1 Precautions for Display of Print Life Predicted via Intermediate Data

If the print life was predicted using intermediate data, the display of the print life must include the following.

- 1) That the print life was predicted using intermediate data
- 2) That evaluation is ongoing

4.2 Precautions for Predicting Print Life via Intermediate Data

The following points must be kept in mind when using print life values predicted via intermediate data.

- 1) You must continue with testing until Test Condition (I) or (II) is met fully.
- 2) When the predicted print life is calculated in accordance with **JEITA CP-3901**, "**9. Test Method — Indoor Thermal Stability**," do not rank print life obtained via intermediate data above that obtained via at least the back data listed below. This is in order to ensure that the print life calculated via intermediate data is not greater than that calculated using the methods described in Test Condition (I) or (II). Below are some examples of print life data obtained via back data.
 - (a) Print-life data calculated via the methods described in Test Condition (I) or (II), by combining similar inks and media.
 - (b) Print-life data from endpoints that can be evaluated over a shorter period of time (e.g. 1/4 or 1/5 endpoints) of at least the level enabling reliable detection of change.
- 3) If there is a difference between the print life predicted via intermediate data and that calculated via a method described in Test Condition (I) or (II), it should be corrected immediately. Although the method of correction will vary depending on when evaluation ends, the product cycle, and other factors, there should be a textual statement of the correction on the company's Website and the like.