



IDEAlliance ISO 12647-7 Digital Control Strip 2009

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This document describes the IDEAlliance ISO 12647-7 Digital Control Strip 2009, hereinafter called “the target”, which includes some minor cosmetic changes to the original IDEAlliance ISO 12647-7 Digital Control Strip 2007. All patch values are the same in both versions.

Primary Uses

- The target is intended primarily as a control device for pre-press proofs but may also be used to control production printers or presses.
- The target must pass through exactly the same imaging process as a live image, including RIP curves, color management, screening, etc.
- The target **MUST** be included on all proofs submitted for IDEAlliance Proofing System certification. Values measured from the target will be used as part of the IDEAlliance proofing system certification process.
- The target **SHOULD** be included on all production proofs and measured to confirm accuracy of every proof.

Target Size

The new “2009” target is slightly smaller in height than the original version 2007.

Supplied Image Files

Two image files of the target are supplied in Illustrator (Ai) and PDF formats;

IDEAlliance ISO 12647-7_Control Strip 2009.ai

IDEAlliance ISO 12647-7_Control Strip 2009.pdf

The target was created in Adobe Illustrator CS3 on a Macintosh.

Fractional Percentage Values

All patches are defined as integer percentages *except* the “3%” and “10%” CMY grayscale patches, which contain fractional percentages required for proper G7 gray balance. Systems that can only render integer percentage values (1 to 100 in 1% steps) or do not render the exact patch values in the target, may exhibit gray balance errors.

Generating New Image Versions

Users and vendors are at liberty to create new versions of the target, for example to fit a new measuring device or to add the target to an automated software product. The same

precise fractional percentage values **MUST** be used as shown on the target labels and in the CMYK columns of the provided reference files.

Reference Files

Three reference files containing CMYK percentage values and nominal CIELab and CIEXYZ characterization data values are supplied for the following data sets;

TR006 - GRACoLCoated1_ISO12647-7_ControlStrip2009_Ref.txt

TR003 - SWOPCoated3_ISO12647-7_ControlStrip2009_Ref.txt

TR005 - SWOPCoated5_ISO12647-7_ControlStrip2009_Ref.txt

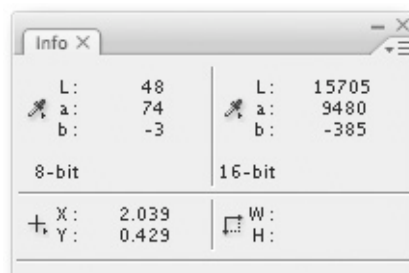
These reference files are also used when reading the target in X-Rite MeasureTool

Generating Custom Reference Files

Reference files for other print condition can be created by the user. One method is to measure the CIELab values in Adobe Photoshop™ and manually replace the CIELab values in an existing reference file in an application like Microsoft Excel, however note that Photoshop normally only displays integer Lab values, which are typically not accurate enough.

To obtain fractional CIELab values in Photoshop CS2 or later;

- Open a CMYK image of the ISO 12647-7 target
- Assign an ICC profile generated from the new print condition (**Edit, Assign Profile...**)
- Under **Edit- Color Settings- More Options- Conversion Options-** select **Intent: Absolute.**
- In the **Info** palette click the eyedropper icon and select **Lab Color, 16-bit (0 – 32768)**



Photoshop's Info Palette showing Lab values in 8 bits (left) and 16 bits (right)

- Convert the 16 bit values to decimal L*a*b* fractions as follows;

$$L^*_{(8bit)} = L_{(16bit)} / 327.68$$

$$a^*_{(8bit)} = a_{(16bit)} / 128$$

$$b^*_{(8bit)} = b_{(16bit)} / 128$$
- Example (for the readings shown in the Info Palette illustration above)

L^*	$=$	$15705 / 327.68$	$=$	47.928
a^*	$=$	$9480 / 128$	$=$	74.063
b^*	$=$	$-385 / 128$	$=$	-3.008

Be sure to change the relevant information lines in the reference file header, and save the edited reference file with a new name that clearly identifies it as belonging to the new reference print condition.

Practical Production Tolerances

Practical tolerances for daily production depend on many variables, including stability of the imaging device or process, area of application or market segment, image content, final product value, viewing conditions, measuring device, etc.

The following guidelines will help when defining your own tolerances.

- Custom tolerances for a given application should be determined by the end user, product manufacturer, or by agreement between client and producer.
- Press tolerances should be more lenient than proofing tolerances.
- More precise (smaller) tolerance values cost more to achieve.
- The desire for perfection should be weighed against the value of the work.
- Ideal tolerances should be small enough to ensure good enough quality for the end purpose, but large enough to allow for small manufacturing variations.
- Beware of tolerances that require more accuracy (and cost) than necessary.

Suggested Starting Tolerances

A recent IDEAlliance study suggests the following tolerances would be acceptable for most typical production proofs, however note that your tolerances may be smaller or larger depending on factors described under “Practical Production Tolerances”.

- Solid cyan, magenta, yellow, black, red, green and blue should be $\Delta E_{ab} \leq 6.0$ from the reference file.
- The difference between the reference file white point and the proof white point should be no greater than;
 $\Delta L^* \pm 2.0$
 $\Delta a^* \pm 1.0$
 $\Delta b^* \pm 2.0$
- The difference between all CMY gray patches in the target and the reference file should be $\Delta E_{ab} \leq 1.5$, except the 75, 66, 66 CMY patch which should be $\Delta E_{ab} \leq 3.0$.
- The average ΔE_{ab} for all patches in the target should be ≤ 2.0 .
- The deviation between proofs should be $\Delta E_{ab} \leq 2.0$ for all target patches.

NOTE: Appendix A summarizes the IDEAlliance Proof Certification Program tolerances which a proofing system must pass to become SWOP- or GRACoL- certified. The IDEAlliance Proof Certification tolerances are widely agreed to be too small for normal daily proofing and are NOT recommended as production proofing tolerances

Copyright and Usage

The IDEAlliance ISO 12647-7 Digital Control Strip is offered free and may be used by end users and incorporated into any commercial product or service, subject to the following conditions:

- User acknowledges that the target design and combination of patch values are the copyright and intellectual property of IDEAlliance, Inc.
- The target may not be altered in any way, including the addition or subtraction of patches, or altering of patch percentage values, except for scaling and layout changes necessary for different measuring devices.
- The target may not be sold with, or incorporated into, or represented as having any commercial value in, any commercial product or service without the express written permission of IDEAlliance.
- All versions or derivatives of the target must include the IDEAlliance logo (or the name IDEAlliance), target name and version number, as shown here;



This wording must appear on every target used in a commercial product or service

- Versions of the target configured in different sizes or layouts must be submitted to IDEAlliance for approval prior to being offered publicly as part of any commercial product or service.

Limitations

- Because the target contains only a small sub-sample of the total printable color gamut, it may not detect some types of process variation.
- The target contains too few patches to prove an accurate match to a specification like GRACoL or SWOP, but it does contain enough patches to monitor the stability of a system that has previously been tested with a target such as the IT8.7/4.
- No warranty is expressed or implied by IDEAlliance regarding the accuracy or effectiveness of the target in any given usage.
- The end-user accepts all risk and liability in connection with their use of the target.

Appendix A:

IDEAlliance Proof Certification Tolerances (Summary)

NOTE: The IDEAlliance Proof Certification tolerances are more demanding than most users need in daily proof production. These tolerances are reproduced here for reference only and are not mandated or recommended as production proofing tolerances. To determine your own working tolerances see “Practical Production Tolerances”.

- The difference between the characterization data set (full IT8.7/4 target) and the sample must be an average Delta E ≤ 1.5 for all patches and a maximum Delta E ≤ 6.0 for at least 95% of all patches.
- Solid cyan, magenta, yellow, black must be Delta E ≤ 5.0 from the characterization data set.
- Solid red green and blue must be Delta E ≤ 6.0 from the characterization data set.
- The difference between the characterization data set white point and the sample white point (excluding fluorescence) must be no greater than;
Delta L* ± 2.0
Delta a* ± 1.0
Delta b* ± 2.0
- The difference between the 50,40,40 CMY gray balance patch and the characterization data set must be Delta E ≤ 1.5 .
- The difference between all CMY gray patches in the IDEAlliance ISO 12647-7 2009 Control Strip and the characterization data set must be Delta ab² ≤ 1.5 .
- The proof-to-proof difference for each patch in the IDEAlliance ISO 12647-7 2009 Control Strip must be Delta E ≤ 1.5 .

¹ Delta E = $(\Delta L^{*2} + \Delta a^{*2} + \Delta b^{*2})^{1/2}$

² Delta ab = $(\Delta a^{*2} + \Delta b^{*2})^{1/2}$