



## MagicPress' user's guide for quick and optimal press setting

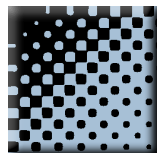
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Magic\_Proof\_&\_Print\_Control



PLATE



MagicPress



MagicPrepress



SPOT\_Color\_Manager



## I) Software installation and configuration:

Please read carefully Colorsource "**Software installation and brief description guide**".

### Measurement of press calibration charts:

**MagicPress** works from measurement files of **press calibration charts** intended for the optimal adjustment of the inks' densities (and / or inks' pigment concentrations).

If the measurement file is only colorimetric (Lab and / or XYZ), **MagicPress** cannot calculate the density corrections to be made, and this is why we recommend you always use spectral measurements.

Colorsource **Software installation and brief description guide** shows how to make these spectral measurement files with free applications, at link:

[https://www.iso12647solution.com/Applications\\_downloads/Software\\_installation\\_and\\_brief\\_description\\_Guide.pdf](https://www.iso12647solution.com/Applications_downloads/Software_installation_and_brief_description_Guide.pdf)

### Standard and optional features of MagicPress:

A one-week trial version can be downloaded, along with examples of press calibration measurement files. This demo version displays full results for Cyan and Black inks, but partial results only for magenta and yellow inks. Upon request, we can provide you with a time-limited key allowing you testing the full version software in real working conditions.

**MagicPress** basic version offers all the necessary functions for optimal setting of CMYK inks densities in offset, rotogravure and flexography. It therefore allows optimal setting of all CMYK print configurations.

Beyond CMYK print configurations, **MagicPress N-colors option** allows using **MagicPress** for calibrating all printing presses using one to ten inks, with or without a CMYK base. For example, for optimizing classic CMYK prints with one to six spot colors, or for optimizing polychromic prints, such as hexachromy or heptachromy.

**MagicPress** price list is available on page <https://www.iso12647solution.com/Buy.htm>

## II) Functions of MagicPress application:

**MagicPress** allows the Press Operator, from a single scan measurement of a single printed press calibration strip, to know instantly the density correction to be carried out on each ink, in order to match optimally each solid ink's aim color, which can be specified as a C.I.E. Lab D50 2° aim value, by any chosen public or private aim printing standard.

This allows offset, gravure or flexo press matching quickly and easily any **ISO12647-2-3-4-6** or **G7/IDEAlliance** or **WAN-IFRA** public CMYK print standard, or your own CMYK or N-Colors printing standard, with or without spot colors.

If no printing density allows matching an ink's aim color within the specified visual distance tolerance, for example due to a poor formulation of an ink or the soiling of an inkwell, the Press Operator is notified immediately, as soon as the very first printed sheet is measured at press calibration's stage.

**MagicPress** also allows the Press Operator checking the color proofs received according to **ISO12647-7** or **G7/IDEAlliance** CMYK proof control standards, and print runs according to **ISO12647-2-3-4-6** standards.

More generally, **MagicPress** allows the Press Operator checking all proofs and print works according to modern **ISO12647-x** standards, or according to your own quality inspection standards.

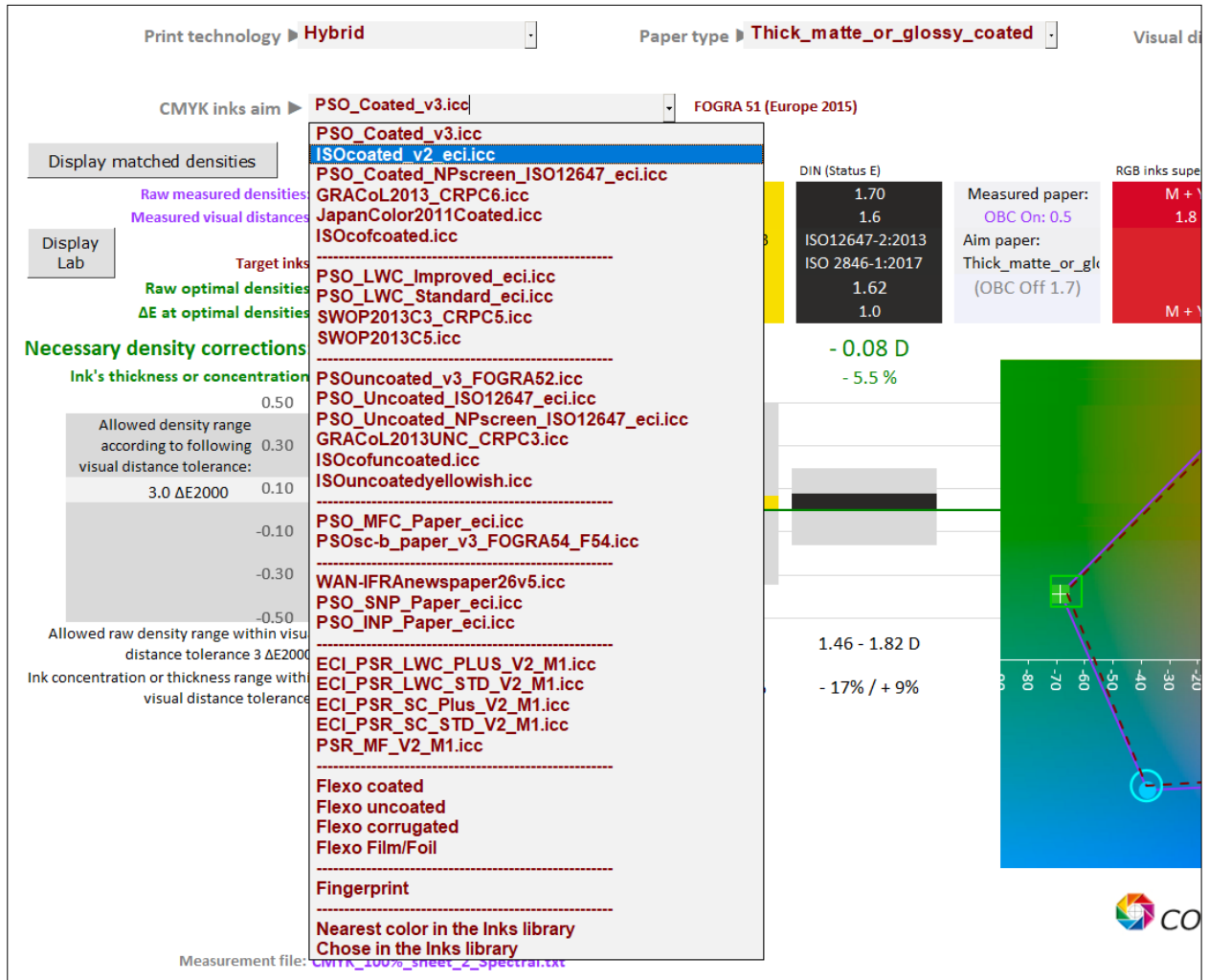
You will find all the useful technical information on this subject in our up-to-date article summarizing all modern ISO12647-2-3-4-6-7 and G7/IDEAlliance (American SWOP and GRACoL standards) and WAN-IFRA standards:

[https://www.color-source.net/en/Docs\\_Formation/2021\\_POINT\\_ABOUT\\_ISO\\_12647\\_STANDARDS.pdf](https://www.color-source.net/en/Docs_Formation/2021_POINT_ABOUT_ISO_12647_STANDARDS.pdf)

## Computing the optimal solid inks' densities for any printing standard:

### List of ISO12647-2-3-4-6 standard's modern CMYK color's targets:

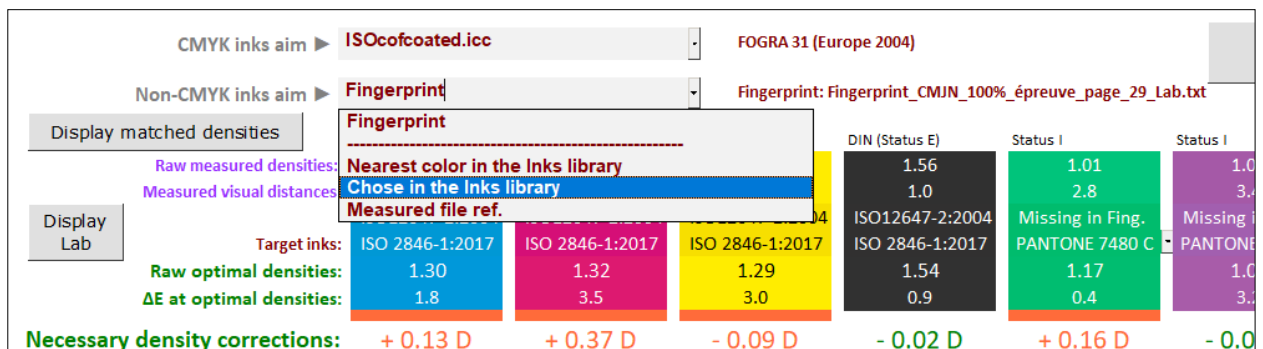
MagicPress offers in a drop-down menu all modern public CMYK color targets actually used to date in production, which are specified by ISO 12647-2-3-4-6, G7/IDEAlliance and WAN-IFRA standards:



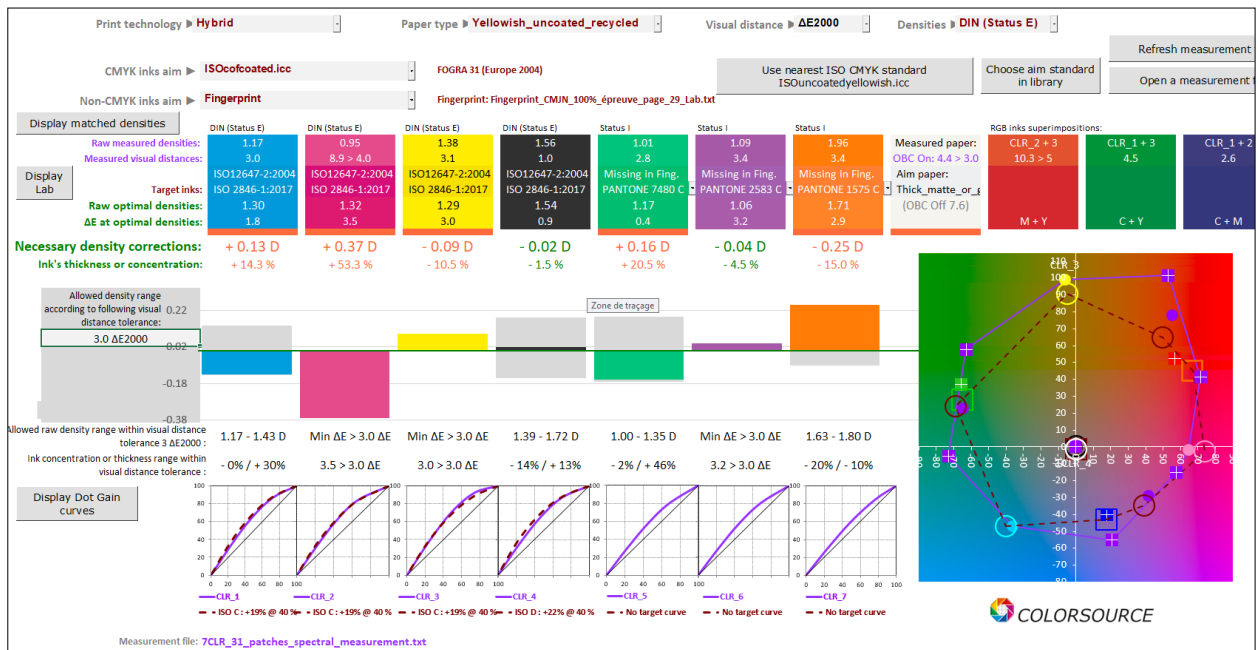
The screenshot shows the MagicPress software interface. At the top, 'Print technology' is set to 'Hybrid' and 'Paper type' is 'Thick\_matte\_or\_glossy\_coated'. The 'CMYK inks aim' dropdown is set to 'PSO\_Coated\_v3.icc' with 'FOGRA 51 (Europe 2015)' as the target. A list of inks is displayed, including 'ISOcoated\_v2\_eci.icc' (selected), 'PSO\_Coated\_NPscreen\_ISO12647\_eci.icc', 'GRACoL2013\_CRPC6.icc', 'JapanColor2011Coated.icc', 'ISOcofcoated.icc', 'PSO\_LWC\_Improved\_eci.icc', 'PSO\_LWC\_Standard\_eci.icc', 'SWOP2013C3\_CRPC5.icc', 'SWOP2013C5.icc', 'PSOuncoated\_v3\_FOGRA52.icc', 'PSO\_Uncoated\_ISO12647\_eci.icc', 'PSO\_Uncoated\_NPscreen\_ISO12647\_eci.icc', 'GRACoL2013UNC\_CRPC3.icc', 'ISOcofuncoated.icc', 'ISOuncoatedyellowish.icc', 'PSO\_MFC\_Paper\_eci.icc', 'PSOsc-b\_paper\_v3\_FOGRA54\_F54.icc', 'WAN-IFRAnewspaper26v5.icc', 'PSO\_SNP\_Paper\_eci.icc', 'PSO\_INP\_Paper\_eci.icc', 'ECI\_PSR\_LWC\_PLUS\_V2\_M1.icc', 'ECI\_PSR\_LWC\_STD\_V2\_M1.icc', 'ECI\_PSR\_SC\_Plus\_V2\_M1.icc', 'ECI\_PSR\_SC\_STD\_V2\_M1.icc', 'PSR\_MF\_V2\_M1.icc', 'Flexo coated', 'Flexo uncoated', 'Flexo corrugated', 'Flexo Film/Foil', 'Fingerprint', and 'Nearest color in the Inks library Chose in the Inks library'. A 'Display Lab' button is visible. On the right, there are tables for 'DIN (Status E)' and 'RGB inks supe'. A color calibration chart is shown on the right side.

The "Display Lab" button allows you displaying the measured and aim colors as D50 2° C.I.E. Lab or Lch values, if necessary.

If the measured press calibration target uses a CMYK process base (or at least one C or M or Y or K ink), plus other inks used as spot colors, or as complementary primary inks for extending the print's color gamut, an additional drop-down menu is displayed, allowing specifying color aims for the print process' non-CMYK inks:



The screenshot shows the MagicPress software interface with 'CMYK inks aim' set to 'ISOcofcoated.icc' and 'FOGRA 31 (Europe 2004)'. The 'Non-CMYK inks aim' dropdown is set to 'Fingerprint' with 'Fingerprint: Fingerprint\_CMJN\_100%\_épreuve\_page\_29\_Lab.txt' as the target. A list of inks is displayed, including 'Nearest color in the Inks library', 'Chose in the Inks library', and 'Measured file ref.'. A 'Display Lab' button is visible. On the right, there are tables for 'DIN (Status E)', 'Status I', and 'Status I'. A color calibration chart is shown on the right side.



The drop-down menu **CMYK inks aim** for specifying the CMYK color target is displayed only if the measured press calibration target has at least one solid Cyan or Magenta or Yellow or Black ink patch.

## Other color aims offered by MagicPress:

MagicPress also offers special customizable targets in its drop-down menu:



## "Fingerprint" color target:

This allows you specifying your own color targets, through any reference colorimetric or spectral measurement file opened in MagicPress' **Fingerprint** tab. In practice, using an appropriate reference measurement file (**Fingerprint**), allows you, for example:

- To easily specify your own target colors from any reference I.C.C. profile characterizing any printing press,
- To easily specify your own target colors from any measurement file of a press characterization chart or a simple press calibration target,
- To easily specify your own aim colors by the measurement file of a color proof's control bar.

E.g., if the Press Operator receives a wrong proof (Color proof with control bar measured out of tolerances), but this proof has been visually approved by the Customer, the Press Operator may use the proof's control bar's measurement file as a **Fingerprint**, in order to adjust his press to best simulate the proof's colors accepted by the Customer.

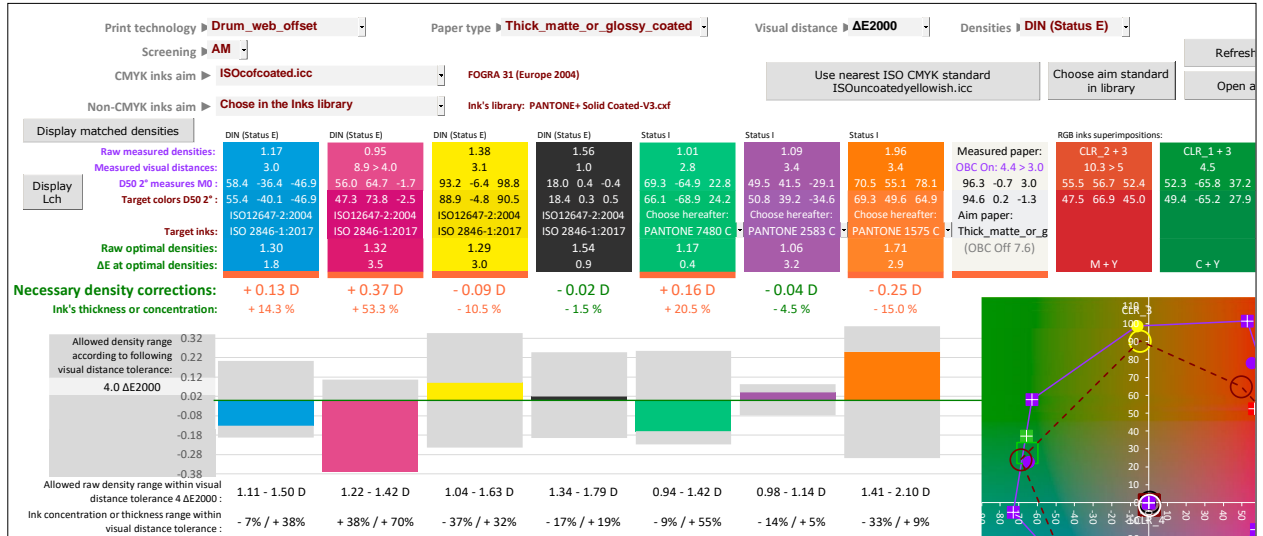
Finally, in the field of packaging prints, frequent use of special CMYK ink bases (e.g., food inks), and many special media not supported by ISO12647 (e.g., offset printing on white cardboard etc.), and many other technical constraints, mean that we often have to build, publish, record and communicate our own printing standards.

In this case, the measurement file of a characterization target printed on the press wedged according to its own calibration, is an excellent Fingerprint that describes the aim colors and TVI curves of a private standard. It can be used with **MagicPress** and **MagicPrepress** applications for setting any press to this standard perfectly.

## "Nearest color in the inks library", or "Choose from the inks library" color aims:

These choices are available independently for CMYK and non-CMYK inks.

Non-CMYK inks are often the spot colors of a CMYK base, or inks that supplement a CMYK base for extending the prints' color gamut (Polychromy). For example, hereafter, the target colors chosen for green, purple and orange inks are PANTONE 7480C, 2583C and 1575C respectively:



Ink's library: PANTONE+ Solid Coated-V3.cxf

DIN (Status E)	DIN (Status E)	Status I	Status I	Status I	Measured paper:
1.38	1.56	1.01	1.09	1.96	OBC On: 4.4 > 3.0
3.1	1.0	2.8	3.4	3.4	96.3 -0.7 3.0
93.2 -6.4 98.8	18.0 0.4 -0.4	69.3 -64.9 22.8	49.5 41.5 -29.1	70.5 55.1 78.1	94.6 0.2 -1.3
88.9 -4.8 90.5	18.4 0.3 0.5	66.1 -68.9 24.2	50.8 39.2 -34.6	69.3 49.6 64.9	Aim paper:
ISO12647-2:2004	ISO12647-2:2004	Choose hereafter: PANTONE 7480 C	Choose hereafter: PANTONE 2583 C	Choose hereafter: PANTONE 1575 C	Thick_matte_or_g
ISO 2846-1:2017	ISO 2846-1:2017				(OBC Off 7.6)
1.29	1.54	1.17	1.06	1.71	
3.0	0.9	0.4	3.2	2.9	
-0.09 D	-0.02 D	+0.16 D	-0.04 D	-0.25 D	
-10.5 %	-1.5 %	+20.5 %	-4.5 %	-15.0 %	

Please note that all spot colors offered to choose from, in the "Nearest color in the inks library" and "Choose from the inks library" modes, are specified in the **InksLib** tab.

You can open and import into the **InksLib** tab as a tints' library:

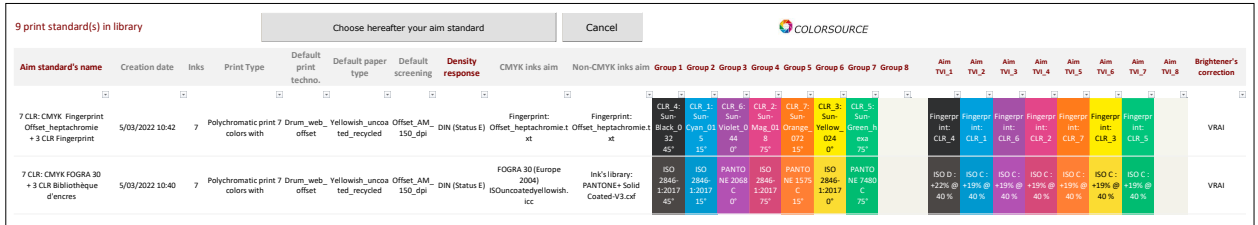
- Any library of tints or spot colors in CxFv3 format (spectral data),
- Any library of shades or spot colors in CGATS format (spectral and/or XYZ and/or Lab data),
- Any colorimetric or spectral measurement file of any color chart printed with one to ten primary colors (spectral and/or XYZ and/or Lab data).

For downloading and/or updating your PANTONE libraries in CxFv3 format, use our guide at link:

[https://www.iso12647solution.com/Applications\\_downloads/CxF3\\_to\\_CGATS\\_users\\_guide.pdf](https://www.iso12647solution.com/Applications_downloads/CxF3_to_CGATS_users_guide.pdf)

## Color aim specified by a color printing standard previously created and saved using MagicPrepress application:

In the **Optimal Densities** tab, the "Choose aim standard in library" button allows you specifying all CMYK and/or non-CMYK target colors (and the associated aim TVI curves) by choosing one of the printing standards present in the **StandardsLib** standards' library. Only standards with the same number of inks as the measured press calibration strip are proposed as a target:



Print technology ► Drum\_web\_offset | Paper type ► Yellowish\_uncoated\_recycled | Visual distance ► ΔE2000 | Densities ► DIN (Status E)

Screening ► Offset\_AM\_150\_dpi | Print sequence ► 15° 75° 0° 45° 75° 0° 15° | Aim standard: 7 CLR: CMYK Fingerprint Offset\_heptachromie + 3 CLR Fingerprint

CMYK inks aim ► Fingerprint: Offset\_heptachromie.txt | Non-CMYK inks aim ► Fingerprint: Offset\_heptachromie.txt

Display matched densities

DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Status I	Status I	Status I	Status I	Measured paper:	Other superimpositions of
1.17	0.95	1.38	1.56	1.01	1.09	1.96	1.01	OBC On: 0.6	CLR_2 + 3
0.9	0.9	1.2	1.3	0.3	2.5	1.2	0.3	55.5 56.7 52.4	CLR_1 + 3
Raw measured densities:	58.4 -36.4 -46.9	55.1 64.7 -1.7	93.2 -6.4 98.8	18.0 0.4 -0.4	69.3 -64.9 22.8	49.5 41.5 -29.1	70.5 55.1 78.1	96.3 -0.7 3.0	CLR_1 + 2
Measured visual distances:	59.0 -37.9 -46.0	55.1 65.8 -1.9	93.2 -6.8 99.0	18.0 -0.5 -0.8	69.5 -65.6 23.4	47.6 46.2 -32.0	70.6 55.9 75.4	96.4 -0.7 3.7	CLR_1 + 6
D50 2° measures M0:									
Target colors D50 2°:									
In aim standard:	CLR_1: Sun-Cyan	CLR_2: Sun-Mag_0	CLR_3: Sun-Yellow	CLR_4: Sun-Black	CLR_5: Sun-Green	CLR_6: Sun-Violet_04	CLR_7: Sun-Orange	Yellowish_uncoate (OBC Off 0.6)	
Raw optimal densities:	1.14	0.99	1.25	1.56	1.01	1.17	1.88		
ΔE at optimal densities:	0.6	0.4	0.2	1.3	0.3	1.2	1.1		
Necessary density corrections:	-0.03 D	+0.04 D	-0.12 D	+0.00 D	+0.00 D	+0.07 D	-0.08 D		
Ink's thickness or concentration:	-3.7 %	+5.0 %	-14.2 %	+0.0 %	+0.0 %	+8.5 %	-4.7 %		

Allowed density range according to following visual distance tolerance: 4.0 ΔE2000

Allowed raw density range within visual distance tolerance + ΔE2000: 0.95 - 1.35 D, 0.83 - 1.17 D, 0.92 - 1.79 D, 1.36 - 1.80 D, 0.81 - 1.24 D, 1.04 - 1.31 D, 1.43 - 2.54 D

Ink concentration of thickness range within visual distance tolerance: -24% / +20%, -17% / +31%, -48% / +52%, -16% / +20%, -25% / +30%, -7% / +27%, -32% / +36%

Display Dot Gain curves

Display Lab

DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Status I	Status I	Status I	Measured paper:
1.17	0.95	1.38	1.56	1.01	1.09	1.96	OBC On: 0.6
0.9	0.9	1.2	1.3	0.3	2.5	1.2	In aim standard:
In aim standard:	CLR_1: Sun-Cyan	CLR_2: Sun-Mag_0	CLR_3: Sun-Yellow	CLR_4: Sun-Black	CLR_5: Sun-Green	CLR_6: Sun-Violet_04	CLR_7: Sun-Orange
Raw optimal densities:	1.14	0.99	1.25	1.56	1.01	1.17	1.88
ΔE at optimal densities:	0.6	0.4	0.2	1.3	0.3	1.2	1.1
Necessary density corrections:	-0.03 D	+0.04 D	-0.12 D	+0.00 D	+0.00 D	+0.07 D	-0.08 D
Ink's thickness or concentration:	-3.7 %	+5.0 %	-14.2 %	+0.0 %	+0.0 %	+8.5 %	-4.7 %

When using a target standard chosen in **StandardsLib**, you can, after making the press density corrections, open the measurement file of a density corrected sheet: **The chosen target standard will remain active until you chose another standard in the library, or until you press the button "Unfreeze all Settings" for returning to the manual choice mode of CMYK and/or non-CMYK aim inks:**

Paper type ► Yellowish\_uncoated\_recycled | Visual distance ► ΔE2000 | Densities ► DIN (Status E)

Print sequence ► 15° 75° 0° 45° 75° 0° 15° | Aim standard: 7 CLR: CMYK Fingerprint Offset\_heptachromie + 3 CLR Fingerprint

Fingerprint: Offset\_heptachromie.txt | Unfreeze all settings | Choose aim stand in library

DIN (Status E) | DIN (Status E) | Status I | Status I | Status I | RGB inks superimposition

1.38	1.56	1.01	1.09	1.96	Measured paper:	CLR_2 + 3
1.2	1.3	0.3	2.5	1.2	OBC On: 0.6	0.9
In aim standard:	In aim standard:	In aim standard:	In aim standard:	In aim standard:	In aim standard:	
CLR_3: Sun-Yellow	CLR_4: Sun-Black	CLR_5: Sun-Green	CLR_6: Sun-Violet_04	CLR_7: Sun-Orange	Yellowish_uncoate (OBC Off 0.6)	CLR_2 + 3
1.25	1.56	1.01	1.17	1.88		
0.2	1.3	0.3	1.2	1.1		
-0.12 D	+0.00 D	+0.00 D	+0.07 D	-0.08 D		
-14.2 %	+0.0 %	+0.0 %	+8.5 %	-4.7 %		





As soon as the spectral measurement file is opened, using the "Open charts CGATS measurement file" button in the **Measure** tab, or using the "Open a measurement file" button in the **Optimal\_Densities** tab, **MagicPress** displays in **all the relevant instructions for optimal density setting:**

Non-CMYK inks aim ▶ <b>Fingerprint</b>		Fingerprint: Characterization_Average_10_Copies_Offset_heptachromie.txt						
Display matched densities		DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Status I	Status I	Status I
Raw measured densities:		1.17	0.95	1.38	1.56	1.01	1.09	1.96
Measured visual distances:		0.9	0.9	1.2	1.3	0.3	2.5	1.2
Display Lab	Target inks:	In Fingerprint: Sun-Cyan_015	In Fingerprint: Sun-Mag_018	In Fingerprint: Sun-Yellow_024	In Fingerprint: Sun-Black_032	In Fingerprint: Sun-Green_hexa	In Fingerprint: Sun-Violet_044	In Fingerprint: Sun-Orange_072
Raw optimal densities:		1.14	0.99	1.25	1.56	1.01	1.17	1.88
ΔE at optimal densities:		0.6	0.4	0.2	1.3	0.3	1.2	1.1
Necessary density corrections:		- 0.03 D	+ 0.04 D	- 0.12 D	+ 0.00 D	+ 0.00 D	+ 0.07 D	- 0.08 D
Ink's thickness or concentration:		- 3.7 %	+ 5.0 %	- 14.2 %	+ 0.0 %	+ 0.0 %	+ 8.5 %	- 4.7 %

On above view and for each ink:

1. The line **Raw Optimal Densities** displays the density (relative to paper) to be set on the press, in order to get as close as possible to the solid ink's color specified by the chosen target standard. The calculated optimal densities depend on the visual distance's assessment formula chosen using the "Visual distance" drop-down menu. Of course, we recommend using the **ΔE2000** formula.
2. The line **Necessary density corrections** displays the relative density correction to be done on the press. **In practice, these density correction values are the most convenient for the press Operator, when his press is equipped with an ink keys reader.** Because all he needs is to add the correction values displayed by **MagicPress** to the target densities displayed by the ink keys reader.

Indeed, the different ink keys readers on the market generally measure densities values that are different from **MagicPress**. Because, as it should be for any ISO12647 press setting, we use **i1Pro** and **MagicPress** with **DIN spectral response** (Status E), **without polarizing filter** and in **self-backing (SB)** measurement mode. These measurement conditions are the most relevant for all press calibrations to ISO12647 standards (See, if necessary, our in-depth article about ISO12647 standards).

For example, some ink keys readers work using **Status I, with polarizing filter** and on a **black background** (measured on a matte black rail), and therefore display much higher density values: In this case, for a 100% black ink aiming ISO12647-2 standard on thick coated paper, a density measured as **1.80** by the **i1Pro** can be measured as **2.10** by some ink keys readers. But this is not a problem: If **MagicPress** asks to decrease by **0.10** the black ink's density (Requested correction = **- 0.10 D** for reaching **1.70** optimal density), all you need is to add this **- 0.10 D** correction value to **2.10** and therefore specify to the ink keys reader a density target **2.10 + - 0.10 = 2.00**.

Note that the "Display matched densities" button also allows you programming **MagicPress** to display for each ink the same density value as your ink keys reader or workshop densitometer. We shall come back to this later.

3. The line **ΔE at optimal densities** displays, for each ink, the ΔE visual distance from its aim, that will be reached when it is printed at optimal density. **If, for one or more inks, the residual visual distance is larger than your specified ΔE tolerance in the **Prefs.** tab, the density correction to be made is displayed in red:** This means that the target color cannot be reached within the tolerance, regardless of the ink's solid print density you use.

This problem can arise, for example, from a poor ink formulation (e.g., CMYK inks that do not comply with ISO or a poorly formulated PANTONE ink), from pollution of an inkwell (e.g., yellow inkwell polluted by magenta ink on an offset press), or from choosing a target standard that is not suited to the printing media. (e.g., choosing an ISO12647-2 target on thick coated paper may be unsuitable for white coated cardboard).

In the latter case, we will simply have to build a specific printing standard well adapted to the involved inks, media and printing technology; This is made easily possible by using **MagicPress** and **MagicPrepress** applications, which offer all necessary features to facilitate the creation, recording and communication of your own printing standards. A pedagogical tip, however: Before creating your own printing standards, please learn matching the existing public CMYK standards such as ISO12647-2 or G7/IDEAlliance in offset, or ISO12647-4 in gravure.

4. The line **Inks' thickness or concentration** displays the correction of inks' thickness or pigment concentration to be done on the press. In practice pigment concentration's correction is of special interest for rotogravure printing: Because we cannot adjust solid ink's thicknesses for adjusting colors. **MagicPress** therefore provides the corrections to be made on the inks' pigment concentrations. For example, on above view, increasing by **5.0%** the Magenta ink's concentration would allow to best approach its target color.

## Displaying the density corrections values in green, orange, or red:

Print technology	Drum_web_offset		Paper type	Yellowish_uncoated_recycled		Visual distance	ΔE2000	
Screening	AM		CMYK inks aim	Fingerprint		Fingerprint: Characterization_Average_10_Copies_Offset_heptac	Use nearest ISO CMYK st ISOUncoatedyellowish	
Non-CMYK inks aim	Fingerprint		Fingerprint: Characterization_Average_10_Copies_Offset_heptachromie.txt					
Display matched densities								
Raw measured densities:	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Status I	Status I	Status I	Status I
Measured visual distances:	1.17	0.95	1.38	1.56	1.01	1.09	1.96	
In Fingerprint:	0.9	0.9	1.2	1.3	0.3	2.5	1.2	
Target inks:	In Fingerprint: Sun-Cyan_015	In Fingerprint: Sun-Mag_018	In Fingerprint: Sun-Yellow_024	In Fingerprint: Sun-Black_032	In Fingerprint: Sun-Green_hexa	In Fingerprint: Sun-Violet_044	In Fingerprint: Sun-Orange_072	
Raw optimal densities:	1.14	0.99	1.25	1.56	1.01	1.17	1.88	
ΔE at optimal densities:	0.6	0.4	0.2	1.3	0.3	1.2	1.1	
Necessary density corrections:	-0.03 D	+0.04 D	-0.12 D	+0.00 D	+0.00 D	+0.07 D	-0.08 D	
Ink's thickness or concentration:	-3.7 %	+5.0 %	-14.2 %	+0.0 %	+0.0 %	+8.5 %	-4.7 %	

On above view, the **Measured visual distances** are all small, and you might think that making density corrections is useless. However, all the **Necessary density corrections** are displayed in green, except the one to be made on the yellow ink (-0.12 D), which is displayed in orange, although the **Measured visual distance** between the solid yellow ink and its aim is quite small: 1.2 ΔE2000 for a relative print density of 1.38 in DIN spectral response.

This correction values displayed in orange mean that correcting the yellow ink (-0.12 D) is really necessary: Indeed, the line **Inks' thickness or concentration** shows that it is necessary to reduce by 14.2% the yellow ink's thickness for reaching the optimal thickness ensuring the minimum visual distance from the aim standard. And of course, this significant solid ink's thickness correction will decrease the yellow ink's TVI curve.

So, you see MagicPress does not only check that we have reached a small color difference with the chosen target standard for each solid ink: This is necessary but not sufficient, because if we are too far from the optimal ink's thickness (in offset), the ink's dot gain curve will change, and therefore the correction curve calculated by MagicPrepress and implemented on the prepress workflow will no longer be adapted. Similarly, in rotogravure the pigment concentration strongly influences the ink's viscosity, and therefore it is also necessary getting as close as possible to the optimal inks' concentrations, in order to ensure best stability of rotogravure print runs.

In order to ensure the best stability of a print run and the validity of the prepress workflow correction curves, it is therefore necessary to adjust each solid ink so as to sufficiently approach its optimal thickness (in offset), or its optimal concentration (in rotogravure).

As a summary, MagicPress:








- Displays in green each ink's correction where the ink's visual distance from target is within the ΔE tolerance, and of which thickness or concentration is less than 10% away from the optimal. In this case an additional density correction is useless.
- As a reminder, displays in red each ink's correction where, even at optimal density (optimal thickness and/or concentration), the color difference with the aim standard will remain out of ΔE tolerance. See some common causes of this problem on the previous page.
- Displays in orange each ink's correction where the ink's visual distance from target is out of the ΔE tolerance, or where, even if its visual distance from the aim standard is very small, the ink's thickness or concentration is more than 10% away from the optimal. In this case a density correction is necessary.

This arbitrary 10% threshold is the default value proposed by MagicPress. In practice, the set of print tolerances for each type of visual distance formula can be freely specified in the **Prefs.** Tab.

Restaurer les tolérances d'impression par défaut	Tolérances d'impression actives	Imprimé au sens ISO12647-2-3-4 (ΔE76)	Imprimé au sens ISO12647-6 (ΔE76)	Imprimé selon ΔE2000	Imprimé selon ΔE94	Imprimé selon ΔE CMC
	ΔE max toutes pages :	10.0	10.0	5.0	5.0	6.0
	ΔE maximal encres 100% :	5.0	5.0	4.0	3.0	4.0
	ΔE papier :	3.0	L > 88 -3 < a < 3 -5 < b < 5	3.0	3.0	3.0
	ΔE moyen toutes pages :	4.0	4.0	3.0	3.0	3.0
	ΔE 95e centile :	6.0		N/A	N/A	N/A
	Erreur maxi. engraissements :			+/- 5%		
	Erreur maximale d'épaisseur ou de concentration d'encre :			+/- 10%		








## Detailed print quality diagnosis in the Expertise tab:

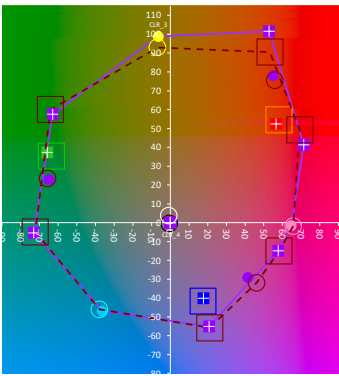
The Expertise tab explicitly gives all necessary advices for calibration the press densities:

	Optimal densities and visual distances	Correction
	<b>Measured densities and visual distances</b>	
 Aim color is matched.	DIN (Status E) 1.17 1.14 Measured: CLR_1: Sun-Cyan_015 0.9 0.6 Aim: Sun-Cyan_015	- 0.03 D - 3.7 %
 Aim color is matched.	DIN (Status E) 0.95 0.99 Measured: CLR_2: Sun-Mag_018 0.9 0.4 Aim: Sun-Mag_018	+ 0.04 D + 5.0 %
 Aim color matched, but the ink thickness or concentration error is unacceptable.	DIN (Status E) 1.38 1.25 Measured: CLR_3: Sun-Yellow_024 1.2 0.2 Aim: Sun-Yellow_024	- 0.12 D - 14.2 %
 Aim color is matched.	DIN (Status E) 1.56 1.56 Measured: CLR_4: Sun-Black_032 1.3 1.3 Aim: Sun-Black_032	+ 0.00 D + 0.0 %
 Aim color is matched.	Measured: CLR_5: Sun-Green_hexa 1.01 1.01 Aim: Sun-Green_hexa 0.3 0.3	+ 0.00 D + 0.0 %
 Aim color is matched.	DIN (Status E) 1.09 1.17 Measured: CLR_6: Sun-Violet_044 2.5 1.2 Aim: Sun-Violet_044	+ 0.07 D + 8.5 %
 Aim color is matched.	DIN (Status E) 1.96 1.88 Measured: CLR_7: Sun-Orange_072 1.2 1.1 Aim: Sun-Orange_072	- 0.08 D - 4.7 %

**Diagnosis:** Polychromatic print 7 colors with CMYK

CMYK inks aim: Fingerprint: Characterization\_Average\_10\_Copies\_Off  
 Non-CMYK inks aim: Fingerprint: Characterization\_Average\_10\_Copies\_Off  
 Measurement file: 7CLR\_31\_patches\_spectral\_measurement.txt

	Optimal densities and visual distances	Density, thickness or pigment concentration recommended corrections
 Aim color is matched.	DIN (Status E) 1.17 1.14 Measured: CLR_1: Sun-Cyan_015 0.9 0.6 Aim: Sun-Cyan_015	- 0.03 D - 3.7 %
 Aim color is matched.	DIN (Status E) 0.95 0.99 Measured: CLR_2: Sun-Mag_018 0.9 0.4 Aim: Sun-Mag_018	+ 0.04 D + 5.0 %
 Aim color matched, but the ink thickness or concentration error is unacceptable.	DIN (Status E) 1.38 1.25 Measured: CLR_3: Sun-Yellow_024 1.2 0.2 Aim: Sun-Yellow_024	- 0.12 D - 14.2 %
 Aim color is matched.	DIN (Status E) 1.56 1.56 Measured: CLR_4: Sun-Black_032 1.3 1.3 Aim: Sun-Black_032	+ 0.00 D + 0.0 %
 Aim color is matched.	Measured: CLR_5: Sun-Green_hexa 1.01 1.01 Aim: Sun-Green_hexa 0.3 0.3	+ 0.00 D + 0.0 %
 Aim color is matched.	DIN (Status E) 1.09 1.17 Measured: CLR_6: Sun-Violet_044 2.5 1.2 Aim: Sun-Violet_044	+ 0.07 D + 8.5 %
 Aim color is matched.	DIN (Status E) 1.96 1.88 Measured: CLR_7: Sun-Orange_072 1.2 1.1 Aim: Sun-Orange_072	- 0.08 D - 4.7 %



**Measured print run quality:**

	Maximal ΔE pure x% inks	Maximal ΔE inks overlays	Paper ΔE:	Average ΔE inks and overlays:	Maximal dot gain error:	Maximal ink thickness or concentration error:
	4.0	4.0	0.6	1.5	- 9.4%	- 14.2%

**Active print tolerances ΔE2000 (Prefs.)**

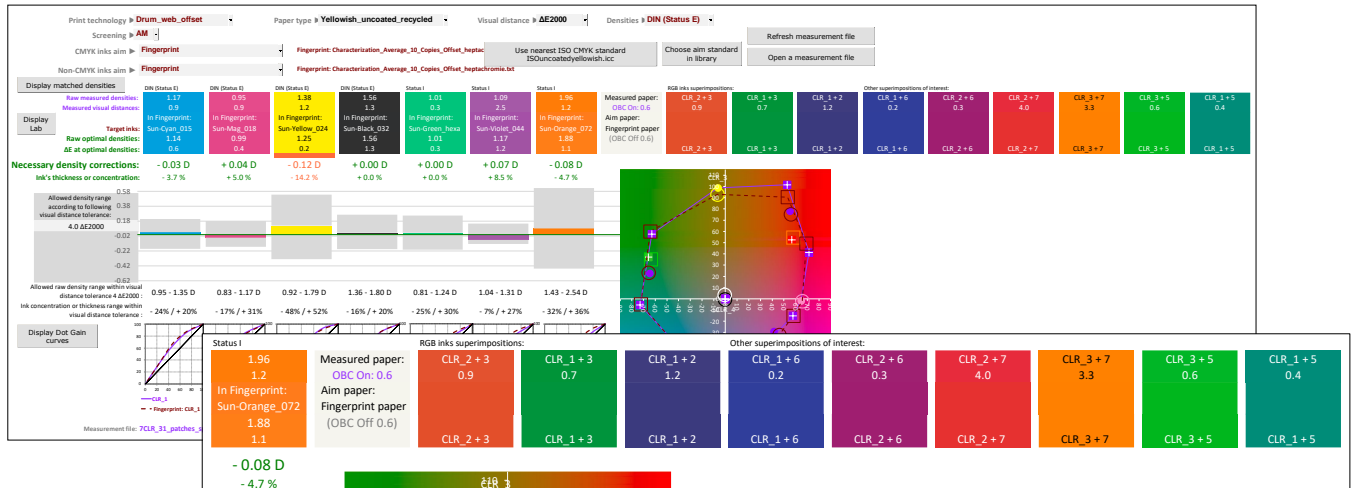
	4.0	5.0	3.0	3.0	+/- 5%	+/- 10%
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Note that the color quality's diagnostic at the bottom of the tab is dedicated to press calibration applications and therefore always uses the **print tolerances** specified in **Prefs.** tab. When you use **MagicPress** for controlling a color proof and not a printout, the proof's color quality diagnosis is provided in the **Control** tab, not in the **Expertise** tab.

## Other results displayed by the **Optimal\_Densities** tab:

### Overlays of interest:

The tab displays the N measured solid inks and corrections to be made, and then the paper tint, and then, if present on the measured press control bar, the colors of the 200% **overlays of interest**:

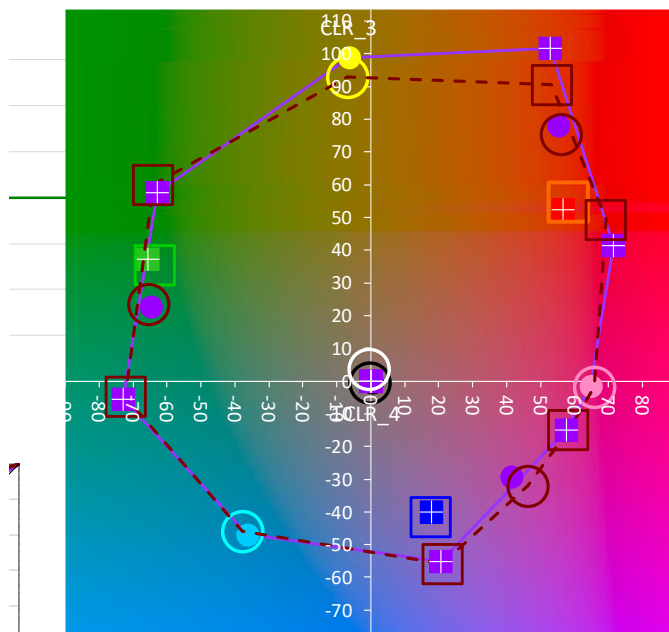


We call "**overlays of interest**" the two-to-two solid inks' overlays that it makes sense to monitor for wet-on-wet printing processes. For example, for 7 colors offset sheet-fed on coated yellowish cardboard, we supplement the basic CMY color gamut with green, purple and orange inks. The overlays to watch out for are as follows:

- Red (**M + Y**), Green (**C + Y**), Blue (**C + M**), which will always be present also in four-color,
- **Orange + M** and **Orange + Y**, since **orange** ink is intended to complete the color gamut here,
- **Green + Y** and **Green + C**, since **green** ink is intended to complete the color gamut here,
- **Purple + C** and **Purple + M**, since **purple** ink is intended to complete the color gamut here.

On present example, all the overlays of interest are present on the measured press calibration strip, and all the corresponding aim colors are also present in the **Fingerprint** file used as the target standard. (As a reminder, this **Fingerprint** could also be recorded as a private standard in the standards' library with **MagicPrepress**, and this registered print standard be transmitted as an Excel file to **MagicPress** and **Magic\_Proof\_&\_Print\_Control**).

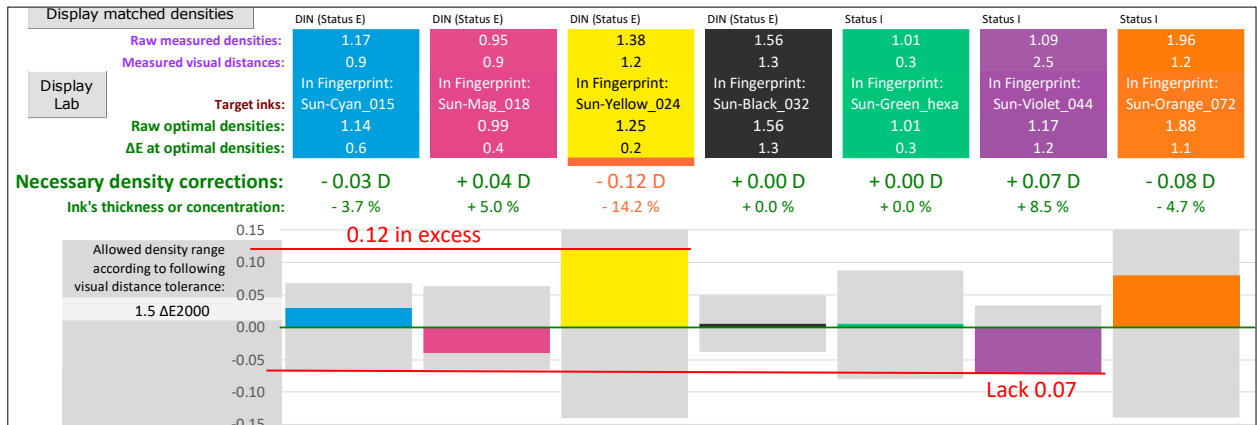
### Measured and aim color gamut's:



In **purple** the measured color gamut,

In **brown dotted**, the color gamut of the target standard.

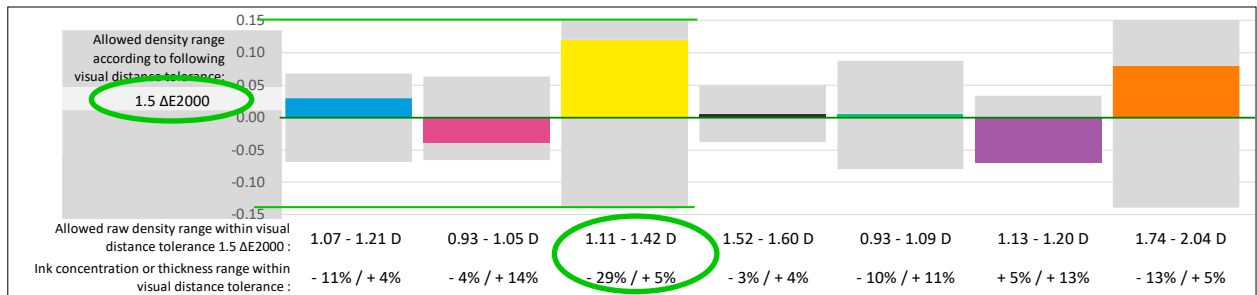
## Graph showing each ink's excess or lack of density:



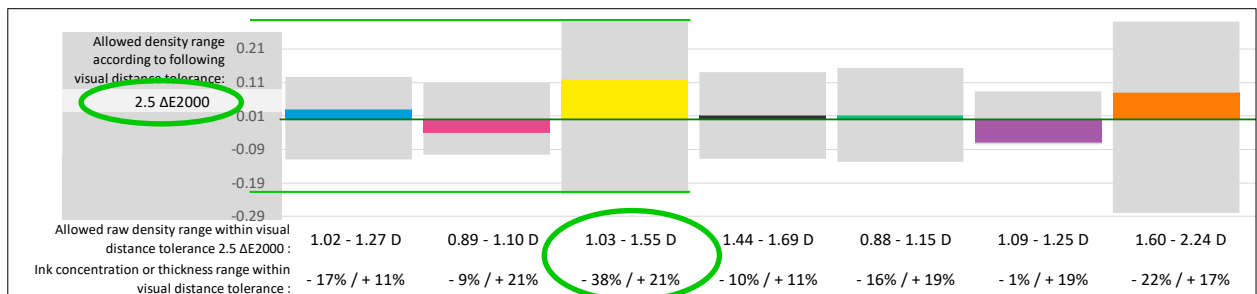
## Displaying the allowed density range for each ink, within an arbitrarily chosen visual distance tolerance:

For example, a **1.5 ΔE2000** maximum visual distance has been set below. This narrow tolerance is demanding, since it is used generally only for high-quality printing of spot colors, and not for ISO12647 CMYK prints, nor for 7 colors prints.

**MagicPress** shows hereunder that for printing the solid yellow ink withing this low 1.5 ΔE2000 tolerance, you can use print densities between **1.11 and 1.42 D**, which allows to decrease the ink's thickness down to **-29%** or to increase it up to **+5%**: i.e., a **48% yellow ink thickness' change is allowed for staying within a low visual distance's tolerance of 1.5 ΔE2000**. And of course, the yellow ink 's correction curve cannot be valid in this important range of ink thicknesses...



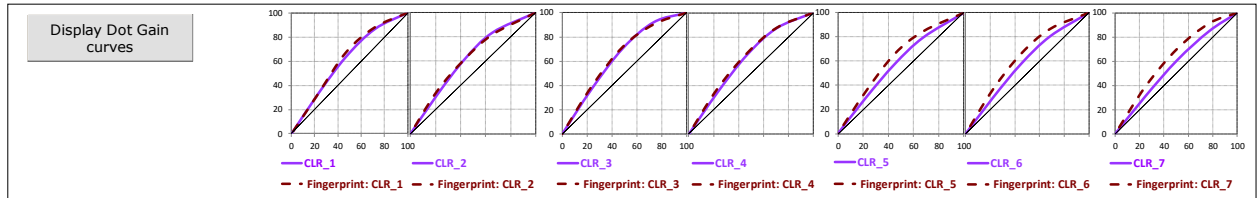
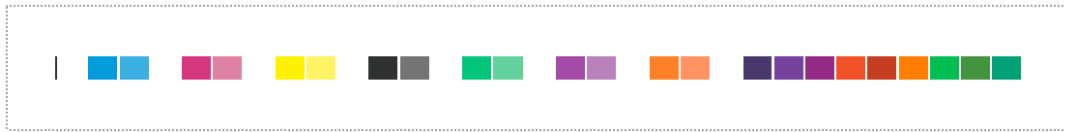
If a maximum **2.5 ΔE2000** visual distance tolerance is allowed below:



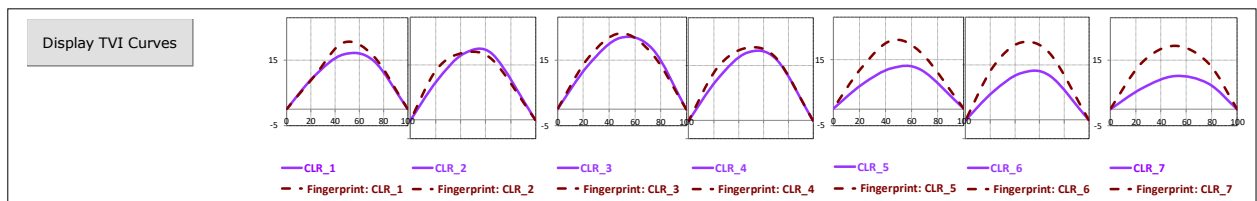
In this case, any print density of between **1.03 and 1.55 D** can be used for the yellow ink, which allows reducing the ink's thickness up to **-38%** or increasing it up to **+21%**: i.e., a **95% yellow ink thickness' change is allowed for staying within a low 2.5 ΔE2000 visual distance's tolerance**.

This **MagicPress** feature demonstrates – once again – that only obtaining small visual distances from the intended printing standard is not enough. And this explains many setbacks, if we try to calibrate a CMYK press "to the eye". In reality, setting a press matching ISO12647-2-3-4-6 or G7/IDEAlliance standards is very simple, fast, and inexpensive... provided you use the appropriate tools.

## Displaying each ink's measured and aim TVI curves:



The left-hand side button allows switching between the two curves display modes:



- The densities measured on the print are displayed as TVI or dot gain curves in **purple**.  
Note that the graph of measured curves is only displayed if the measured press calibration bar contains not only the 100% ink patches, but also one x% screened ink patch at least. Because only screened ink patch(es) measurement(s) in addition to solid and paper allows calculating tone curves.
- The TVI or dot gain curves of the chosen target standard are displayed as **brown dotted lines**.  
Note that target tonal curves will only be displayed if the color targets chosen for CMYK and/or non-CMYK inks actually specify these target curves. For example, if a target standard is specified by a **Fingerprint** file, the measurement file opened in the **Fingerprint** tab must contain not only the aim solid inks patches' measures, but also at least one x% screened ink patch. Because only screened ink patch(es) measurement(s) in addition to solid and paper allows calculating tone curves.

When you choose from the standards 'library, a target printing standard previously created with **MagicPress**, all target tonal curves are well specified, since **MagicPress** only agrees to save a standard if it is fully specified, including all inks' aim TVI curves.

With the following CMYK press calibration target for matching ISO12647-x standards, the TVI curves will not be displayed:



With the following press calibration target, the CMYK TVI curves will be displayed:



In practice, displaying with **MagicPress** the inks' tonal curves of the measured print - even approximately when the measured calibration strip only offers one screened patch per ink - makes it easy monitoring the dot gain curve of each ink.

And this is very useful, for example when creating a new print standard, since the game very often consists into printing the highest possible inks' densities, in order to maximize the print's color gamut, without however exploding the dot gains and causing problems of capping or smearing, which depend on the printing technology, print medium, inks and screening.



# COLORSOURCE

Print with 4 colors : CMYK without spot color

You can save all your files input and record access paths by saving your application ("Ctrl s")

Measurement file: **One\_very\_bad\_sheet\_F39\_Spectral.txt**

11/16/2010 # Time: 12:20:00

Open charts CGATS measurement file

Open the charts measurement files folder

Print technology ▶ **Offset\_sheet\_fed** Paper type ▶ **Thick\_matte\_or\_glossy\_coated** Visual distance ▶ **ΔE2000** Densities ▶ **DIN (Status E)**

Screening ▶ **AM** CMYK inks aim ▶ **ISOcoated\_v2\_eciicc** **FOGRA 39 (Europe 2007)**

Use nearest ISO CMYK standard **GRACoL2013UNC\_CRPC3.icc** Choose aim standard in library

Refresh measurement file Open a measurement file

Display matched densities

DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)
Raw measured densities: 0.79	0.87	1.08	1.39
Measured visual distances: 11.5 > 4.0	9.6 > 4.0	1.1	4.9 > 4.0
Target inks: ISO12647-2:2004/1	ISO12647-2:2004/1	ISO 2846-1:2017	ISO12647-2:2004/1
Raw optimal densities: 1.37	1.31	1.17	1.62
ΔE at optimal densities: 1.0	1.2	0.5	2.5

Necessary density corrections:

+0.58 D	+0.44 D	+0.10 D	+0.23 D
Ink's thickness or concentration: +101.5 %	+69.0 %	+12.0 %	+20.8 %

Allowed density range according to following visual distance tolerance: 2.5 ΔE2000

Allowed raw density range within visual distance tolerance 2.5 ΔE2000:

1.24 - 1.51 D	1.19 - 1.45 D	0.94 - 1.51 D	1.59 - 1.65 D
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Ink concentration or thickness range within visual distance tolerance:

+78% / +128%	+49% / +93%	-17% / +56%	+18% / +24%
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Measured paper: OBC On: 0.7 Aim paper: Thick\_matte\_or\_g (OBC Off 1.9)

RGB inks superimpositions: M+Y 6.5 > 5, C+Y 11.0 > 5, C+M 10.3 > 5

Measurement file: **One\_very\_bad\_sheet\_F39\_Spectral.txt**

Print with 4 colors : CMYK without spot color

You can save all your files input and record access paths by saving your application ("Ctrl s")

Measurement file: **One\_good\_sheet\_with\_75%\_Spectral.txt**

11/16/2010 # Time: 17:18:00

Open charts CGATS measurement file

Open the charts measurement files folder

Print technology ▶ **Offset\_sheet\_fed** Paper type ▶ **Thick\_matte\_or\_glossy\_coated** Visual distance ▶ **ΔE2000** Densities ▶ **DIN (Status E)**

Screening ▶ **AM** CMYK inks aim ▶ **ISOcoated\_v2\_eciicc** **FOGRA 39 (Europe 2007)**

Use nearest ISO CMYK standard **GRACoL2013\_CRPC3.icc** Choose aim standard in library

Refresh measurement file Open a measurement file

Display matched densities

DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)
Raw measured densities: 1.47	1.42	1.46	1.62
Measured visual distances: 0.6	0.8	0.9	1.0
Target inks: ISO12647-2:2004/1	ISO12647-2:2004/1	ISO 2846-1:2017	ISO12647-2:2004/1
Raw optimal densities: 1.45	1.45	1.35	1.62
ΔE at optimal densities: 0.5	0.6	0.3	1.0

Necessary density corrections:

-0.02 D	+0.03 D	-0.11 D	+0.01 D
Ink's thickness or concentration: -2.0 %	+3.0 %	-9.2 %	+0.5 %

Allowed density range according to following visual distance tolerance: 1.5 ΔE2000

Allowed raw density range within visual distance tolerance 1.5 ΔE2000:

1.36 - 1.54 D	1.36 - 1.56 D	1.18 - 1.56 D	1.55 - 1.70 D
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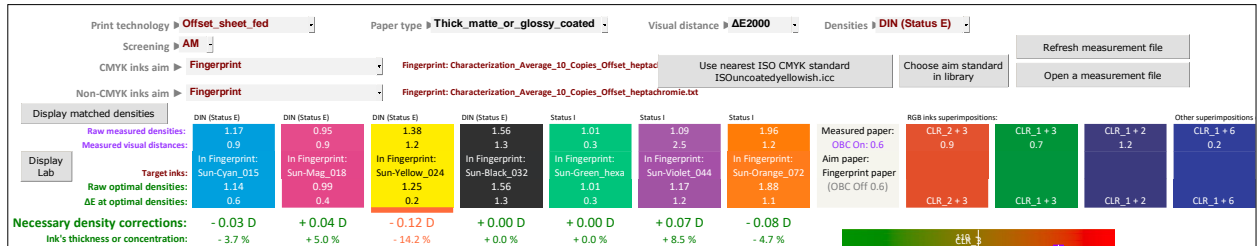
Ink concentration or thickness range within visual distance tolerance:

-10% / +6%	-6% / +13%	-24% / +9%	-5% / +7%
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Display TVI Curves

Measurement file: **One\_good\_sheet\_with\_75%\_Spectral.txt**

## The **Optimal\_Densities** tab's drop-down menus:



Print technology: **Offset sheet fed** | Paper type: **Thick\_matte\_or\_glossy\_coated** | Visual distance: **AE2000** | Densities: **DIN (Status E)**

Screening: **AM** | CMYK inks aim: **Fingerprint** | Fingerprint: **Characterization\_Average\_10\_Copies\_Offset\_heptac** | Use nearest ISO CMYK standard: **ISOUncoatedyellowish.icc** | Choose aim standard in library | Refresh measurement file | Open a measurement file

Non-CMYK inks aim: **Fingerprint** | Fingerprint: **Characterization\_Average\_10\_Copies\_Offset\_heptachromie.txt**

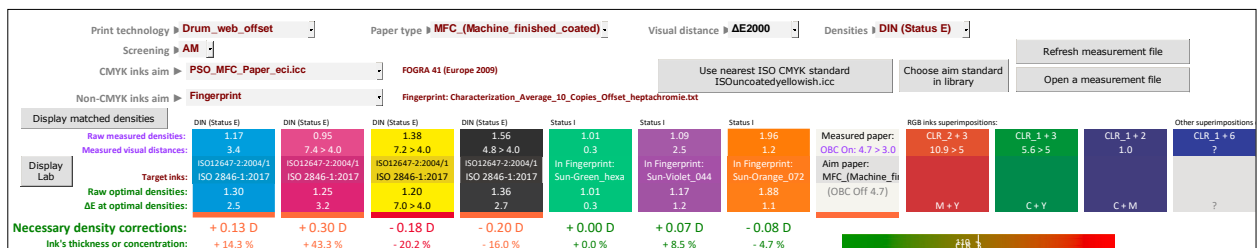
Display matched densities	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Status I	Status I	Status I	Measured paper:	RGB inks superimpositions:	Other superimpositions	
Raw measured densities:	1.17	0.95	1.38	1.56	1.01	1.09	1.96	Measured paper: OBC On: 0.6	CLR_2 + 3	CLR_1 + 2	CLR_1 + 6
Measured visual distances:	0.9	0.9	1.2	1.3	0.3	2.5	1.2	Aim paper: Fingerprint paper (OBC Off 0.6)	CLR_2 + 3	CLR_1 + 3	CLR_1 + 6
Target inks:	In Fingerprint: Sun-Cyan_015	In Fingerprint: Sun-Mag_018	In Fingerprint: Sun-Yellow_024	In Fingerprint: Sun-Black_032	In Fingerprint: Sun-Green_hexa	In Fingerprint: Sun-Violet_044	In Fingerprint: Sun-Orange_072				
Raw optimal densities:	1.14	0.99	1.25	1.56	1.01	1.17	1.88				
AE at optimal densities:	0.6	0.4	0.2	0.2	0.3	1.2	1.1				
Necessary density corrections:	-0.03 D	+0.04 D	-0.12 D	+0.00 D	+0.00 D	+0.07 D	-0.08 D				
Ink's thickness or concentration:	-3.7 %	+5.0 %	-14.2 %	+0.0 %	+0.0 %	+8.5 %	-4.7 %				

The "Print technology" menu allows you to declare **sheet-fed offset**, **web offset**, **flexography** or **rotogravure** print technology. This restricts the list of the ISO12647-x CMYK targets offered in the "CMYK inks aim" drop-down menu, for easier and faster access to the chosen CMYK aim standard.

If you choose "Offset sheet fed" or "Drum web offset" in the "Print technology" menu, the "Screening" menu appears, allowing to choose as a target the ISO12647-2 standards for offset printing with stochastic screening on thick coated or uncoated white papers, if you declare using **FM screening**.

If you choose "Hybrid" from the "Print technology" menu, then the "CMYK inks aim" menu offers a list of all up-to-date **ISO12647-2-3-4-6**, **SWOP**, **GRACoL** and **WAN-IFRA** CMYK aim standards.

Declaring the paper type in the "Paper type" drop-down menu is done automatically if you choose as a CMYK target one of the **ISO12647-2-3-4-6**, **SWOP**, **GRACoL** or **WAN-IFRA** standards:



Print technology: **Drum web offset** | Paper type: **MFC\_(Machine\_finished\_coated)** | Visual distance: **AE2000** | Densities: **DIN (Status E)**

Screening: **AM** | CMYK inks aim: **PSO\_MFC\_Paper\_eclicc** | FOGRA 41 (Europe 2009) | Use nearest ISO CMYK standard: **ISOUncoatedyellowish.icc** | Choose aim standard in library | Refresh measurement file | Open a measurement file

Non-CMYK inks aim: **Fingerprint** | Fingerprint: **Characterization\_Average\_10\_Copies\_Offset\_heptachromie.txt**

Display matched densities	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Status I	Status I	Status I	Measured paper:	RGB inks superimpositions:	Other superimpositions	
Raw measured densities:	1.17	0.95	1.38	1.56	1.01	1.09	1.96	Measured paper: OBC On: 4.7 > 3.0	CLR_2 + 3	CLR_1 + 2	CLR_1 + 6
Measured visual distances:	2.4	2.4 > 4.0	7.2 > 4.0	4.9 > 4.0	0.3	2.5	1.2	Aim paper: MFC_(Machine_fi (OBC Off 4.7))	CLR_2 + 3	CLR_1 + 3	CLR_1 + 6
Target inks:	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	In Fingerprint: Sun-Green_hexa	In Fingerprint: Sun-Violet_044	In Fingerprint: Sun-Orange_072				
Raw optimal densities:	1.30	1.25	1.20	1.36	1.01	1.17	1.88				
AE at optimal densities:	2.5	3.2	7.0 > 4.0	2.7	0.3	1.2	1.1				
Necessary density corrections:	+0.13 D	+0.30 D	-0.18 D	-0.20 D	+0.00 D	+0.07 D	-0.08 D				
Ink's thickness or concentration:	+14.3 %	+43.3 %	-20.2 %	-16.0 %	+0.0 %	+8.5 %	-4.7 %				

The "Densities" menu allows you choosing the densitometric spectral response **MagicPress** uses for computing the inks densities. The spectral response can be chosen from **DIN (Status E)**, **ANSI T**, **Status I**, or **Visual Density**. **Din (Status E)** and **ANSI T** spectral responses have historically been designed solely for the densitometric measurement of C, M, Y and K offset inks, in Europe **DIN (Status E)** and the United States (**ANSI T**).

### If the press calibration control bar measurement file is spectral:

(Note that using spectral measurement files (containing the reflectance curve of each patch of the measured target), and not colorimetric (containing only the D50 2° Lab and/or XYZ measurements of each patch), is recommended, because without spectral measurements **MagicPress** cannot calculate the density corrections to be made.)

If we choose a spectral response **DIN (Status E)** or **ANSI T**:

- This spectral response will be applied for the density measurements of C, M, Y and K inks, if present,
- All non-CMYK inks, if present, will be measured using **Status I**.

Please note that today, with ISO12647 standardization of CMYK prints and associated CMYK ink bases, there is hardly any valid reason to use two different CMYK spectral responses in Europe and United States for offset density measurements. And moreover, using status I could be more relevant today...

If we choose a **Status I** spectral response:

- All CMYK and non-CMYK inks will be measured using **Status I**.

If we choose a spectral response **Visual density**:

- All CMYK and non-CMYK inks will be measured using **Visual Density**.

### If the press calibration control bar measurement file is only colorimetric:

- All CMYK and non-CMYK inks will be measured in **Visual Density**, regardless of the chosen spectral response **DIN (Status E)**, **ANSI T**, **Status I**, or **Visual Density**.



In any case, the spectral response actually used by **MagicPress** for computing each density is displayed for each ink:

CMYK inks aim ▶ <b>PSO_MFC_Paper_eci.icc</b>		FOGRA 41 (Europe 2009)		Use nearest ISO CMYK st ISOuncoatedyellowish			
Non-CMYK inks aim ▶ <b>Fingerprint</b>		Fingerprint: Characterization_Average_10_Copies_Offset_heptachromie.txt					
Display matched densities	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Status I	Status I	Status I
Raw measured densities:	1.17	0.95	1.38	1.56	1.01	1.09	1.96
Measured visual distances:	3.4	7.4 > 4.0	7.2 > 4.0	4.8 > 4.0	0.3	2.5	1.2
Display	D50 2° measures M0: 58.4 -36.4 -46.9	56.0 64.7 -1.7	93.2 -6.4 98.8	18.0 0.4 -0.4	69.3 -64.9 22.8	49.5 41.5 -29.1	70.5 55.1 78.1

In practice, at inks' densities calibration step, it is better to choose a spectral response close to that used by your workshop densitometer or ink keys reader, so as to optimize matching of their density measurements.

For CMYK inks in Europe, some ink keys readers use DIN (Status E), others use Status I, and almost all workshop densitometers work using DIN (Status E), since this was specified by the old ISO12647 standards before 1996, which were based on densitometry and not on colorimetry.

When using **MagicPress** for adjusting solid inks' densities, we therefore have a good freedom to choose our spectral response between **DIN** and **I** (or **ANSI T** in the United States), **but we recommend to always use DIN (Status E) when using MagicPrepress for computing CMYK correction curves**, since the reference aim TVI curves specified by ISO12647-2-3-4-6 standards have all been established using this **DIN spectral response (Status E)**. When necessary, **MagicPrepress** reminds it to Users, if they choose a ISO12647-2-3-4-6 CMYK aim standard, but choose a spectral response different from **DIN (Status E)**.

## Pairing MagicPress' densities with a third-party instrument:

For conventional ISO12647-x CMYK settings, we can use **MagicPress**:

- With same spectral response as the third-party instrument, we want to emulate: For densitometers **DIN (Status E)** in Europe and **ANSI T** in the United States. **Status I** is sometimes useful for best emulation of some ink keys readers that use this spectral response.
- **Without polarizing filter**, for an unbiased measurement of C.I.E. Lab D50 2° colors,
- **In self-backing measurement mode**, which is the mode used for establishing the ISO12647-x presses' characterization files and according CMYK I.C.C. profiles that are used for making the CMYK color separations and color proofs.

Above **measurement conditions** are the most judicious for all conventional CMYK calibrations to ISO12647 standards (See, if necessary, our in-depth article about ISO12647 standards, which explains all this in detail).

Under the relevant measurement conditions summarized above, the densities computed by **MagicPress** are identical to those calculated, for example, by ProfileMaker's **MeasureTool** module; but they are generally lower than those displayed by **workshop densitometers** and **ink keys readers** of the Market, since:

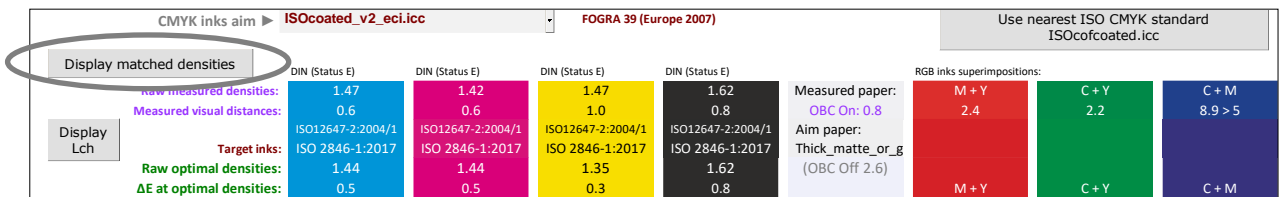
1. Historically, in order to be compatible with ISO12647 standards before 1996, workshop densitometers delivered in Europe measured densities using DIN spectral response (Status E), **but with polarizing filter**. They measure higher densities than those computed by **MagicPress** and **i1Pro 1, 2, 3** without a polarizing filter,
2. Some ink keys readers work using **Status I, with polarizing filter** and on a **black background** (ink keys control strip measured on a matte black rail), and therefore display much higher density values than **MagicPress** used under relevant measurement conditions:

For example, on a 100% black offset ink aiming ISO12647-2 standards on thick coated paper, a paper-relative density measured **1.80** by **MagicPress** will be measured as high as **2.10** by some ink keys readers.

But this is not a problem in practice, **since the density corrections specified by MagicPress to the Press Conductor are directly applicable to the higher density values displayed by the third-party measuring instruments**:

If, for example, **MagicPress** asks to decrease by **0.10** the solid black density (Correction requested = **- 0.10 D**), all you need is to add this correction value to the **2.10** measured density by the ink keys reader, and therefore specify a density target of **2.10 + - 0.10 = 2.00**.

However, it may be more comfortable getting **MagicPress** display same densities as your workshop densitometer or ink keys reader, and that is why there is a **"Display matched densities"** button in the **Optimal\_Densities** tab:

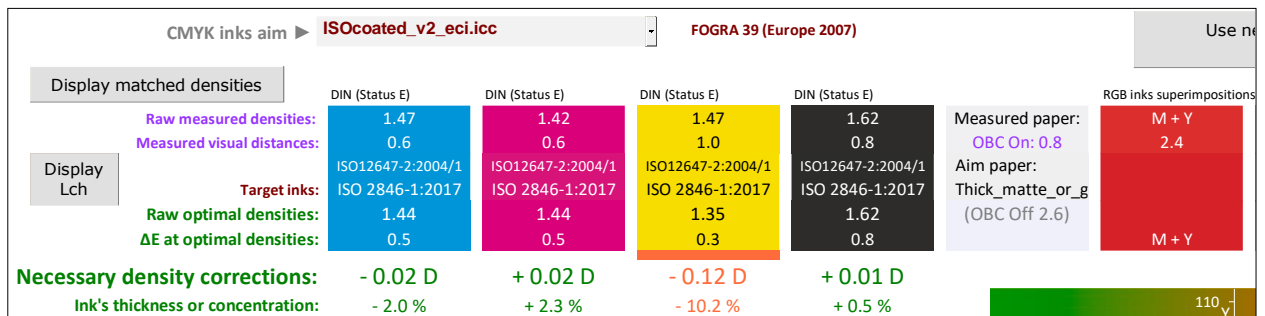


CMYK inks aim ► ISOcoated\_v2\_eci.icc FOGRA 39 (Europe 2007) Use nearest ISO CMYK standard ISOcofcoated.icc

**Display matched densities**

	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Measured paper:	RGB inks superimpositions:		
Raw measured densities:	1.47	1.42	1.47	1.62	OBC On: 0.8	M + Y	C + Y	C + M
Measured visual distances:	0.6	0.6	1.0	0.8	Aim paper:	2.4	2.2	8.9 > 5
	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	Thick_matte_or_g (OBC Off 2.6)			
Target inks:	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017				
Raw optimal densities:	1.44	1.44	1.35	1.62				
ΔE at optimal densities:	0.5	0.5	0.3	0.8				

Below, for matching **Fogra39** aim standard, solid Cyan paper-relative density measured in self-backing mode with an **i1Pro** without polarizing filter is **1.47** when using **DIN** spectral response (**Status E**) and self-backing mode:

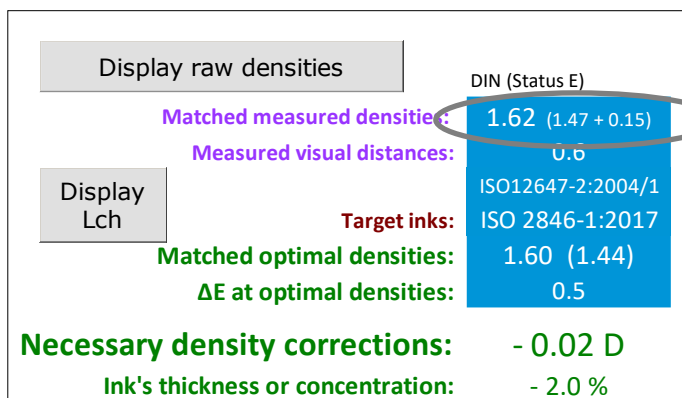


CMYK inks aim ► ISOcoated\_v2\_eci.icc FOGRA 39 (Europe 2007) Use nearest ISO CMYK standard ISOcofcoated.icc

**Display matched densities**

	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Measured paper:	RGB inks superimpositions:		
Raw measured densities:	1.47	1.42	1.47	1.62	OBC On: 0.8	M + Y	C + Y	C + M
Measured visual distances:	0.6	0.6	1.0	0.8	Aim paper:	2.4		
	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	Thick_matte_or_g (OBC Off 2.6)			
Target inks:	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017				
Raw optimal densities:	1.44	1.44	1.35	1.62				
ΔE at optimal densities:	0.5	0.5	0.3	0.8				
<b>Necessary density corrections:</b>	- 0.02 D	+ 0.02 D	- 0.12 D	+ 0.01 D				
<b>Ink's thickness or concentration:</b>	- 2.0 %	+ 2.3 %	- 10.2 %	+ 0.5 %				110

If the same 100% cyan patch is measured **1.62** in SB mode, with a DIN (Status E) workshop densitometer equipped with a **polarizing filter**, enter directly in **MagicPress** the density value **1.62** instead of **1.47**:



**Display raw densities**

DIN (Status E)

**Matched measured densities:** 1.62 (1.47 + 0.15)

Measured visual distances: 0.6

ISO12647-2:2004/1

**Target inks:** ISO 2846-1:2017

**Matched optimal densities:** 1.60 (1.44)

ΔE at optimal densities: 0.5

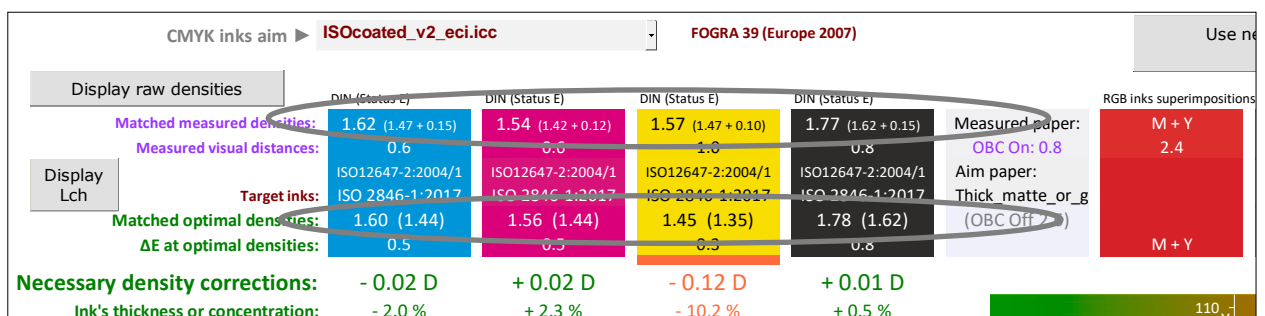
**Necessary density corrections:** - 0.02 D

**Ink's thickness or concentration:** - 2.0 %

**MagicPress** will then display for the Cyan 100% the value of the workshop densitometer (**1.62** and no longer **1.47**), and will also change the optimal density, which will be displayed as **1.60** and no longer **1.45**. Of course, the density and pigment concentration corrections instructions will not be changed.

The button **" Display raw densities"** allows switching display between **raw** or **matched** relative densities.

**MagicPress** allows, in the same way, to independently match the density measurements on all the inks of any print process:



CMYK inks aim ► ISOcoated\_v2\_eci.icc FOGRA 39 (Europe 2007) Use nearest ISO CMYK standard ISOcofcoated.icc

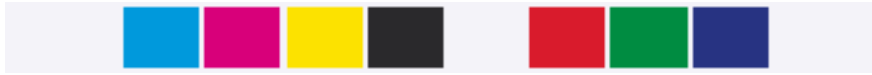
**Display raw densities**

	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	Measured paper:	RGB inks superimpositions:		
Matched measured densities:	1.62 (1.47 + 0.15)	1.54 (1.42 + 0.12)	1.57 (1.47 + 0.10)	1.77 (1.62 + 0.15)	OBC On: 0.8	M + Y	C + Y	C + M
Measured visual distances:	0.6	0.6	1.0	0.8	Aim paper:	2.4		
	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	ISO12647-2:2004/1	Thick_matte_or_g (OBC Off 2.6)			
Target inks:	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017				
Matched optimal densities:	1.60 (1.44)	1.56 (1.44)	1.45 (1.35)	1.78 (1.62)				
ΔE at optimal densities:	0.5	0.5	0.3	0.8				
<b>Necessary density corrections:</b>	- 0.02 D	+ 0.02 D	- 0.12 D	+ 0.01 D				
<b>Ink's thickness or concentration:</b>	- 2.0 %	+ 2.3 %	- 10.2 %	+ 0.5 %				110

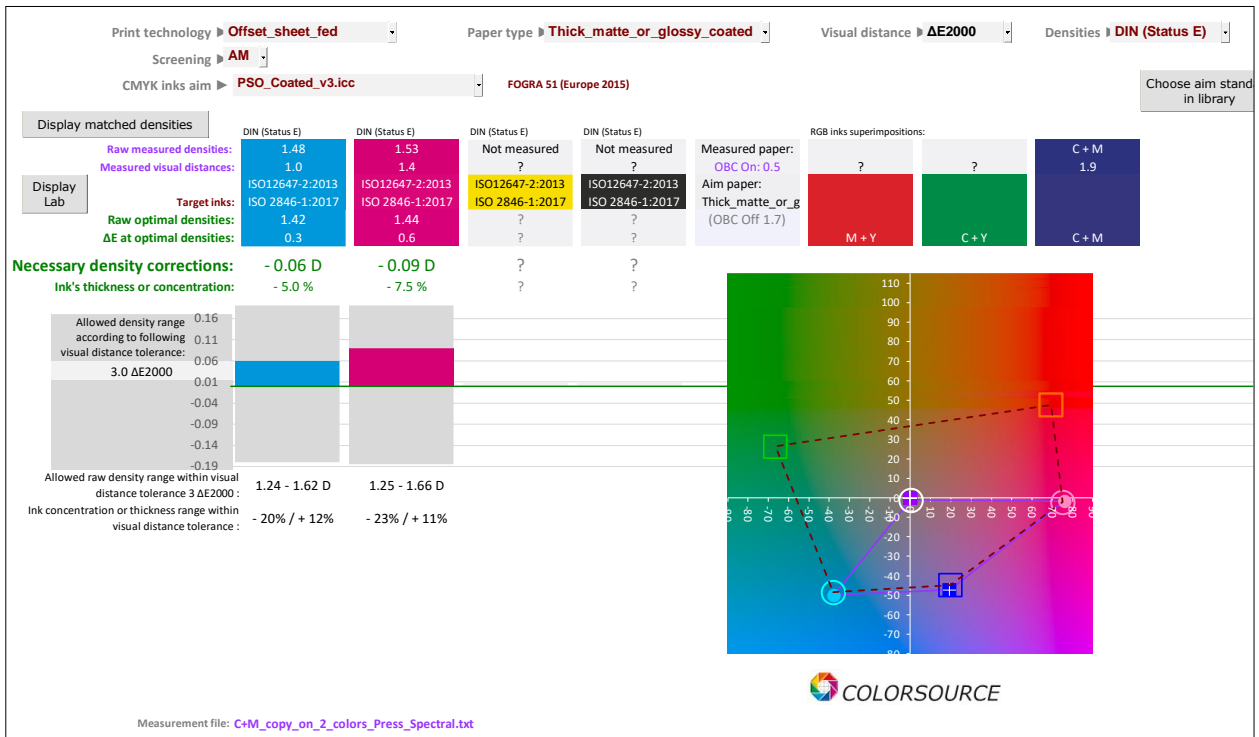
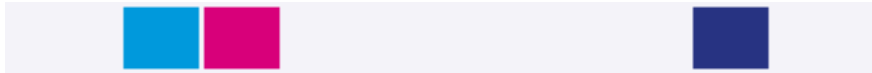
## Using MagicPress with 2-colors offset presses:

When printing CMYK with two-color presses, it is very important to print the first paper pass (usually Cyan + Magenta) with optimal densities. The press calibration target to be used is the same as for a 4-colors press:

### Press calibration chart with no gap or white gaps:



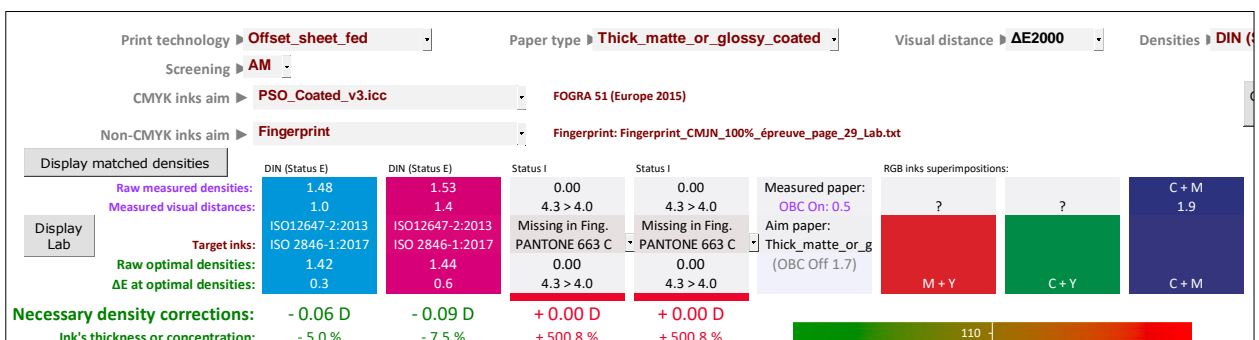
After the first paper pass, this calibration chart should be measured **patch by patch** in manual mode:



### Example of a press calibration chart with cyan gaps, more convenient for 2-colors presses:



After the first paper pass, this press calibration chart can be measured by scanning:



## Controlling color proofs and print works:

As we have often seen Press Operators try to print the colors of bad digital proofs (unverified proofs made on poorly calibrated printers), we have provided **MagicPress** with the features that allow to easily and quickly check all the color proofs received before any print, and also check the color prints produced during the print run.

The **Control** tab allows controlling the quality of printworks according to ISO12647-2-3-4-6 standards or according to your own criteria, and controlling proofs according to ISO12647-7 standards or according to your own criteria.

In this tab **MagicPress** offers ten control modes in a drop-down menu:

Control mode	Purpose of the control
Proof check according to <b>ISO 12647-7</b>	CMYK color proofs, according to ISO12647-7*
Proof check according to <b>G7/IDEAlliance</b>	CMYK color proofs, according to US interpretation of ISO12647-7*
Proof control using $\Delta E2000$	CMYK color proofs controlled with $\Delta E2000$ , <b>future standard</b>
Proof control using $\Delta E94$	CMYK color proofs controlled with $\Delta E94$ , private standard
Proof control using $\Delta E_{CMC2:1}$	CMYK color proofs controlled with $\Delta E_{CMC2:1}$ , private standard

Print check according to <b>ISO 12647-2-3-4</b>	Offset or gravure prints according to ISO 12647-2-3-4 standards*
Print check according to <b>ISO 12647-6</b>	Flexo prints according to ISO 12647-6*
Print control using to $\Delta E2000$	Print works controlled with $\Delta E2000$ , <b>future standard</b>
Print control using to $\Delta E94$	Print works controlled with $\Delta E2000$ , private standard
Print control using to $\Delta E_{CMC2:1}$	Print works controlled with $\Delta E_{CMC2:1}$ , private standard

(\*) See our up-to-date whitepaper summarizing all the modern ISO12647-2-3-4-6-7 and G7/IDEAlliance CMYK print standards: [https://www.color-source.net/en/Docs\\_Formation/2021\\_POINT\\_ABOUT\\_ISO\\_12647\\_STANDARDS.pdf](https://www.color-source.net/en/Docs_Formation/2021_POINT_ABOUT_ISO_12647_STANDARDS.pdf)

## Controlling print works:

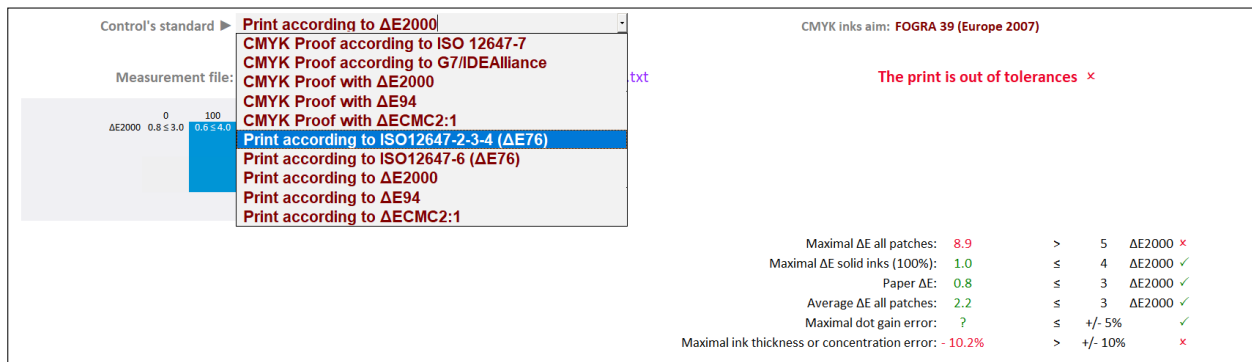
Users can specify their own tolerances in **Prefs.** tab for each one of the control modes proposed for print works. Of course, controlling prints according to the official **ISO 12647-2-3-4-6** CMYK standards requires using the **ISO12647-2-3-4-6** print tolerances by default, which are duly reminded at the bottom of **Prefs.** tab. The "**Restore default print tolerances**" button restores all default print tolerances.

For checking prints using visual distance assessment formulae  $\Delta E_{CMC2:1}$ ,  $\Delta E94$  or  **$\Delta E2000$**  - better but not standardized - you can as well specify your own print tolerances default values at the bottom of **Prefs.** tab.

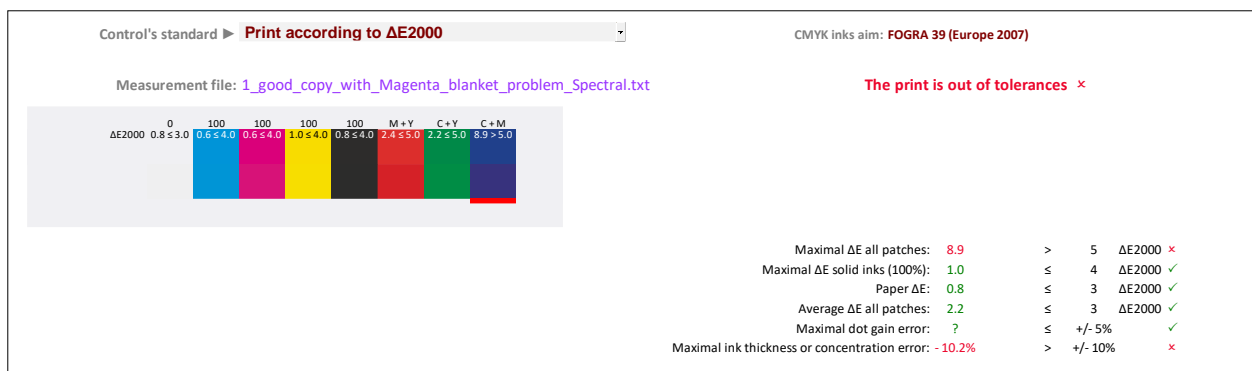
For CMYK presses calibrated for matching **ISO 12647-2** (Offset), **12647-3** (Newspapers), **12647-4** (Rotogravure), or **12647-6** (Flexography), **MagicPress** allows checking prints' color compliance according to following standards:

1. **ISO 12647-2-3-4**: Control of **offset** and **rotogravure** CMYK prints,
2. **ISO 12647-6**: Control of **flexographic** CMYK prints,
3. Or control of prints works according to your own standards (Color differences estimated using  $\Delta E_{CMC2:1}$ ,  $\Delta E94$  or  **$\Delta E2000$** ).

Print check according to <b>ISO 12647-2-3-4</b>	Offset or gravure prints according to ISO 12647-2-3-4 standards
Print check according to <b>ISO 12647-6</b>	Flexo prints according to ISO 12647-6
Print control using to $\Delta E2000$	Print works controlled with $\Delta E2000$ , <b>future standard</b>
Print control using to $\Delta E94$	Print works controlled with $\Delta E2000$ , private standard
Print control using to $\Delta E_{CMC2:1}$	Print works controlled with $\Delta E_{CMC2:1}$ , private standard



## Displaying the diagnosis of a color print work:



### Main differences between checking color proofs and color prints are as follows:

1. For the CMYK print works control modes that are standardized by ISO12647-2-3-4, the checked color criteria and associated tolerances are specific. Of course, ISO12647-2-3-4 tolerances are wider for controlling printed works than for controlling the associated color proofs (ISO12647-7).

For non-ISO controls, that are using much better formulae such as ΔE2000 for estimating the actually perceived visual distances, it is logical (and realistic) to also allow wider tolerances for print works than for the afferent color proofs.

2. For controlling offset, gravure and flexo prints' color quality, we are also interested by the TVI curve of each ink, since, for complying with any public or private standard, it is almost always enough to adjust the Lab color of each solid ink by playing on its density (So easy by using **MagicPress** application), and then match its aim TVI curve (So easy when using **MagicPrepress** application).

This is why, in its five printed control modes, **MagicPress** also displays in its **Control** tab, in addition to the diagnosis of visual distances, an informative densitometric control of the print:

- The maximal measured dot gain error.
- The maximum ink thickness or concentration's error, which indicates whether the print was made under conditions for which the correction curves programmed in the prepress workflow are valid or not.

## Controlling color proofs:

Control mode	Purpose of the control
Proof check according to <b>ISO 12647-7</b>	CMYK color proofs, according to ISO12647-7
Proof check according to <b>G7/IDEAlliance</b>	CMYK color proofs, according to US interpretation of ISO12647-7
Proof control using $\Delta E_{2000}$	CMYK color proofs controlled with $\Delta E_{2000}$ , <b>future standard</b>
Proof control using $\Delta E_{94}$	CMYK color proofs controlled with $\Delta E_{94}$ , private standard
Proof control using $\Delta E_{CMC2:1}$	CMYK color proofs controlled with $\Delta E_{CMC2:1}$ , private standard

Users can specify their own tolerances in **Prefs.** Tab, for each one of the five modes offered for checking color proofs. Of course, controlling CMYK proofs according to the official **ISO 12647-7** CMYK proof control standard, requires using the default **ISO 12647-7** proofing tolerances, which are duly reminded at the bottom of **Prefs.** tab. The "**Restore default proof tolerances**" button restores all default proofing tolerances.

For checking color proofs using  $\Delta E_{CMC2:1}$ ,  $\Delta E_{94}$  or  **$\Delta E_{2000}$**  - better but not standardized by ISO12647-7, you can specify your own default proofing tolerances values at the bottom of **Prefs.** tab.

**MagicPress** allows checking proofs simulating a CMYK press matching **12647-2** (Offset), **12647-3** or **WAN-IFRA** (Newspapers), **12647-4** (Rotogravure) or **G7/IDEAlliance**, according to following standards:

1. **ISO 12647-7**: Checks visual distances using  $\Delta E_{76}$  and  $\Delta H$  hue deviations of primary colors and CMY greys, according to **ISO 12647-7** specifications,
2. **G7/IDEAlliance**: Checks visual deviations using  $\Delta E_{76}$  and  $\Delta H$  and  $\Delta F$  according to the specifications of G7/IDEAlliance. This is an interpretation of **ISO 12647-7** promoted by the American organizations **SWOP** (SWOP stands for Standard Web Offset Print) and **GRACoL** (GRACoL for General Requirements for Applications in Commercial Offset Lithography). In principle this interpretation of ISO 12647-7 is applicable only for the inspection of CMYK proofs simulating one of the published **SWOP** or **GRACoL** offset printing standards.
3. Or according to your own standards and tolerances (Control of proofs using  $\Delta E_{CMC2:1}$ ,  $\Delta E_{94}$  or  **$\Delta E_{2000}$**  visual distance's assessment formula).

## List of the classic CMYK proof control bars MagicPress can check:

For conventional CMYK control bars, the type of measured control bars is **automatically determined** from the following well-known control bars:

- **Fogra Media Wedge 2 control bars** (Obsolete but still in use),
- **Fogra Media Wedge 3 control bar**,
- **IDEAlliance 2009 Control bar**,
- **IDEAlliance 2013 Control bar**,
- **ISO 12647-7 Colorsource control bar**.



UGRA/FOGRA media wedge 2 control bar - <https://www.fogra.org>



UGRA/FOGRA media wedge 3 control bar - <https://www.fogra.org>



IDEAlliance free ISO 12647-7 2009 control strip - <https://www.idealliance.org>



IDEAlliance free ISO 12647-7 2013 control strip - <https://www.idealliance.org>



Colorsource free ISO 12647-7 control bar - <https://www.iso12647solution.com/>

More generally **MagicPress** allows checking any CMYK or non-CMYK control bar printed with up to 10 different inks, and including all pure ink% steps, paper, and the two-by-two solid inks overlays.

Like what:

**CMYK strip on one line**, easy to use for CMYK prints works with **MagicPress** and **MagicPrepress** press calibration applications:

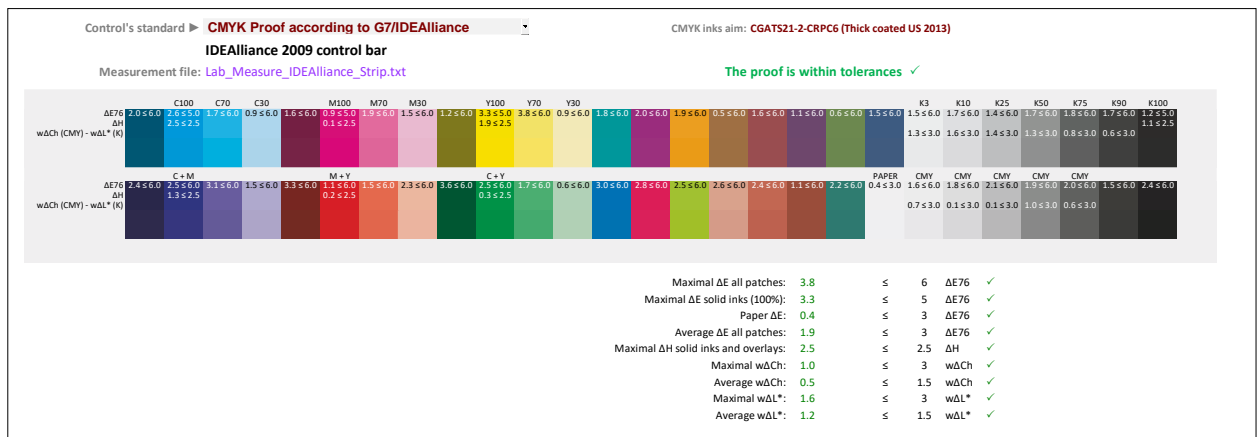
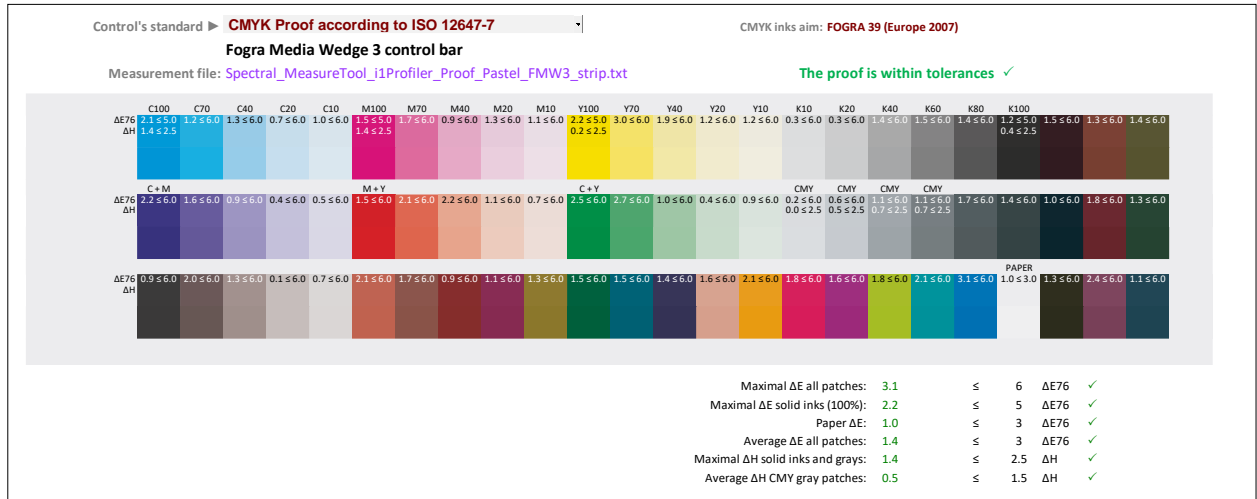


**CMYK + Orange + Green + Purple control bar**, e.g., for setting 7 colors offset press on cardboard using **MagicPress** and **MagicPrepress** applications:



### Automatic closest ISO12647 CMYK aim standard detection:

When opening the measurement file of any classic CMYK control bar, **MagicPress** automatically detects the type of the control bar, and also the ISO12647-2-3-4-6 or GRACoL or SWOP or WAN-IFRA CMYK standard whose colors are closest to your proof measurement file: **This closest standard is then automatically proposed and used as the default CMYK aim standard** for checking your color proof:



This automatic choice of the closest public ISO12647 CMYK target is quite relevant, as long as your CMYK color proof, without necessarily being good ... is not catastrophic!

And nothing prevents you from manually specifying another target by using the **CMYK inks aim** drop-down menu in the **Optimal Densities** tab.

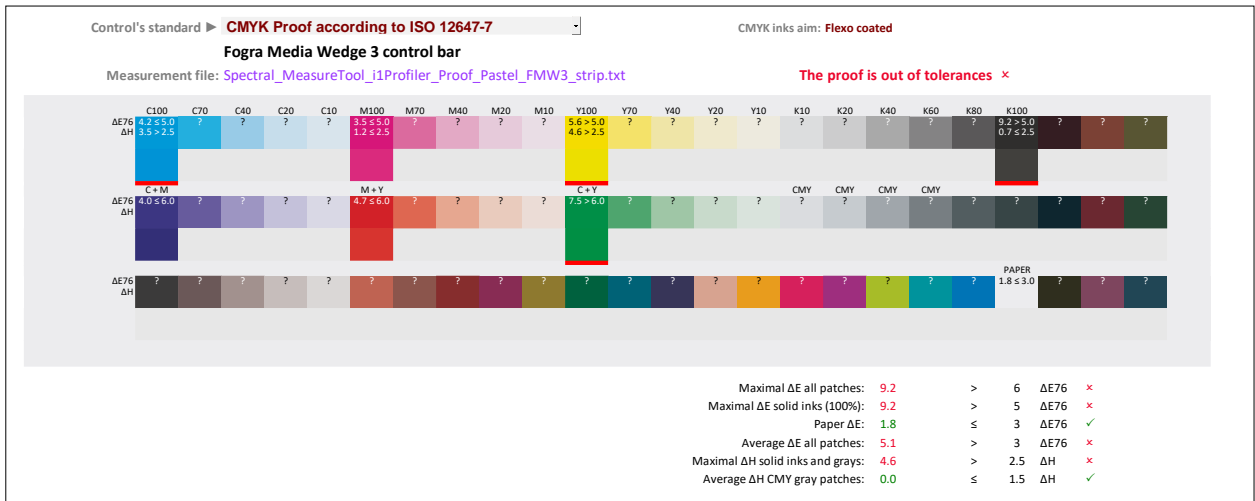
### Checking flexographic color proofs or printouts matching ISO12647-6 standards:

Please note that **ISO12647-6** standard specifies the Lab D50 2° colors of the solid CMYK inks and their RGB overlays, as well as the CMYK aim TVI curves, for each major type of flexographic print media.

However, given the wide variety of flexo clichés, screenings, and anilox that are used in the field, it was not possible publishing a standard CMYK I.C.C. profile for each major type of flexographic printing media.

**Consequently, all patches of any classic CMYK proof control bars can only be checked if the CMYK I.C.C. profile of the flexographic press is known, and this profile I.C.C. can only be published and guaranteed by the flexographic print house.**





It is therefore essential that print houses know how to calibrate their presses matching CMYK ISO12647-6 standards, and know how to establish and publish their presses CMYK I.C.C. profiles under these standardized printing conditions that fix their CMYK solid colors, RGB overlays colors and CMYK TVI curves.

Because in any case, without a press CMYK I.C.C. profile, it is impossible to perform optimized color separations and color proofs upstream.

Our **MagicPress** and **MagicPrepress** applications allow any Print House to easily set their flexo presses matching **ISO 12647-6** standards, using for example one of our free CMYK test forms that also include a press characterization chart, for establishing the CMYK profiles of their presses calibrated for matching ISO12647-6 standards.

Then by using the I.C.C. profile of any flexographic press, you can calculate easily with **Colorlab** the Lab colors produced by the flexo press for all patches of "**Reference including all classic control bars.txt**" file.

The resulting virtual measurement file can then be used as a reference **Fingerprint** for checking the color proofs simulating the flexographic press, provided they are fitted with one of the classic **Fogra** or **G7/IDEAlliance** or **Colorsource** CMYK control bars.

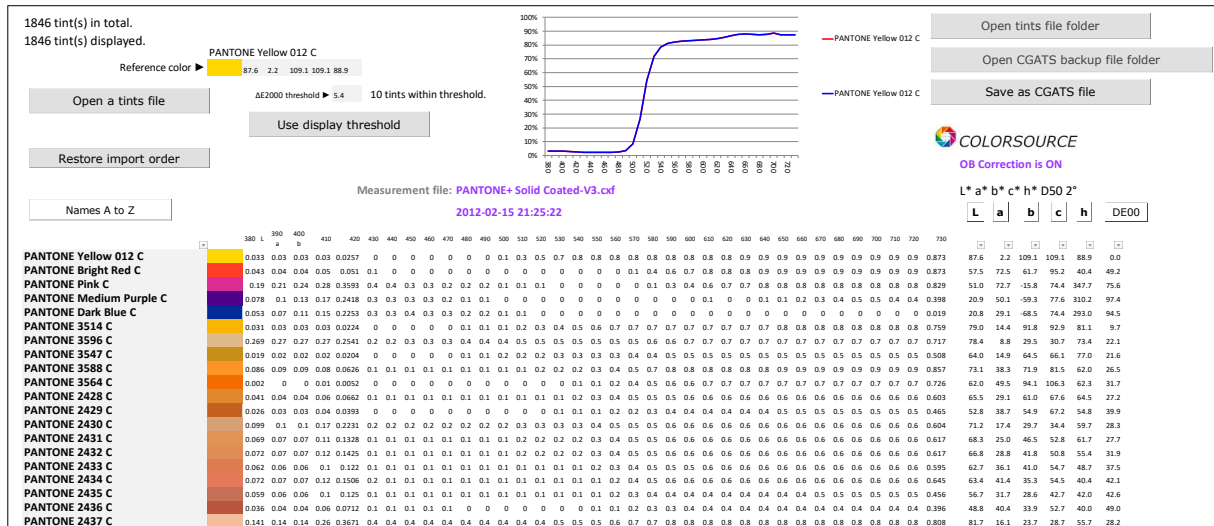
Please note that if the measurement of a control bar, on a color proof approved visually by the Customer, shows that the proof is slightly out of tolerances, the Press Operator may open this proof control bar measurement file as a Fingerprint, so as to print the solid CMYK inks as close as possible to the CMYK colors of the wrong color proof.

In the event of a color proof largely out of tolerances, the measurement file of the proof's control bar can also be used upstream as a Fingerprint with **MagicPrepress** to temporarily modify the CMYK correction curves on the workflow.

## A few functions of the InksLib tints' library:

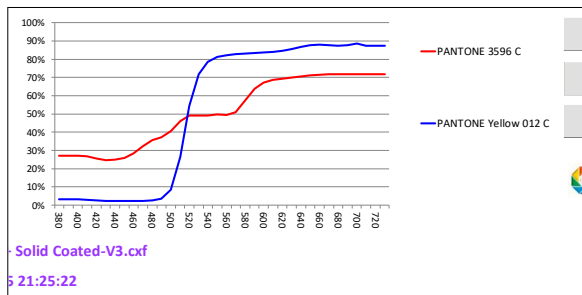
For specifying aim color standards, the **Optimal Densities** drop-down menus "CMYK inks aim" and "Non-CMYK inks aim" allow specifying aim colors by specifying ink names chosen in the **InksLib** library.

### Colors displayed in the **InksLib** tab:



The screenshot shows the InksLib interface with the following elements:

- Top Left:** "1846 tint(s) in total. 1846 tint(s) displayed." and "Reference color ▶ PANTONE Yellow 012 C" with a color swatch and L\*a\*b\* values (87.6, 2.2, 109.1, 109.1, 88.9).
- Top Center:** A spectral reflectance graph showing two curves: PANTONE Yellow 012 C (red) and PANTONE Yellow 012 C (blue).
- Top Right:** Buttons for "Open tints file folder", "Open CGATS backup file folder", and "Save as CGATS file".
- Middle Left:** "Open a tints file", "Restore import order", and "Names A to Z" buttons.
- Middle Right:** "Use display threshold" button, "COLORSOURCE" logo, "OB Correction is ON", and "L\* a\* b\* c\* h\* D50 2°" color space selector.
- Bottom:** A table of color data for various Pantone colors (Yellow 012 C to 2437 C) with columns for L, a, b, and DE00 values.



The graph at the top of the **InksLib** tab usually shows the spectral reflectance of two hues:

- The tint located in the first line of the list (here above **PANTONE Yellow 012 C**),
- The current hue on which the mouse points (here above **PANTONE 3596 C**).

The right column **DE00** lists the  $\Delta E_{2000}$  visual distances between the reference tint in the first row (Yellow 012 C)

and each of the following tints on each following line: For example, the visual distance between PANTONE Yellow 012 C and PANTONE 3514 C in line 6 is 9.7  $\Delta E_{2000}$ .

The colorimetric values of each tint are displayed by their D50 2° Lab and Lch co-ordinates (In form of L, a, b, c, h)

The apparent color shown on the PC's RGB monitor takes into account:

- The measured or specified spectral reflectance curve of the tint, if present\*,
- The D50 graphic industries lighting standard,
- The measured technical characteristics of the PC's RGB display monitor, declared in **Prefs.** tab,
- Using or not the optical brighteners' correction, as chosen in **Prefs.** tab: If we choose to correct optical brighteners (which we recommend), the apparent Lab color calculated for each tint will take into account the hue of the measured paper, which of course, influences our color perception.

(\* We recommend using whenever possible color libraries specified by spectral reflectance values rather than by simple Lab apparent colors, but the ink's library may contain non-spectrally specified tints originating from:

- Importing chart measurement's files in CGATS format containing only colorimetric values such as XYZ and/ or Lab. In accordance with I.C.C standard, these Lab and/or XYZ values are always values adapted to D50 lighting, regardless of the original light source.
- Creating a color using the application, by adding a reference tint entered manually by specifying its L, a, b or L, c, h D50 co-ordinates:



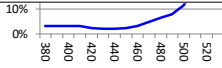


Since it is possible to sort the tints in many ways, the "Restore import order" button allows you restoring the original order of the library when it was imported:

Restore import order

Names A to Z

Measurement file: PANTONE+ Solid Coated-V3.cxf  
2012-02-15 21:25:22



	380 L	390 a	400 b	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	
PANTONE Yellow 012 C	0.033	0.03	0.03	0.03	0.0257	0	0	0	0	0	0	0	0.1	0.3	0.5	0.7	0.8	0.8	0.8	0.8	0.8	
PANTONE Bright Red C	0.043	0.04	0.04	0.05	0.051	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.4
PANTONE Pink C	0.19	0.21	0.24	0.28	0.3593	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0	0	0
PANTONE Medium Purple C	0.078	0.1	0.13	0.17	0.2418	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0	0	0	0	0	0	0	0
PANTONE Dark Blue C	0.053	0.07	0.11	0.15	0.2253	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0	0	0	0	0	0	0	0
PANTONE 3514 C	0.031	0.03	0.03	0.03	0.0224	0	0	0	0	0	0	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.7
PANTONE 3596 C	0.269	0.27	0.27	0.27	0.2541	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
PANTONE 3547 C	0.019	0.02	0.02	0.02	0.0204	0	0	0	0	0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4

### Searching for all shades close to a reference tint within a given tolerance:

Simply designate the reference tint by double-clicking on its name (or add a Lab or Lch-specified reference color manually by using the **Add to lib** button), and then specify a display threshold and then **Use display threshold**:

1847 tint(s) in total.  
16 tint(s) displayed.

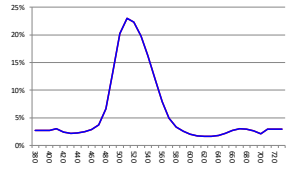
Reference color: PANTONE 3500 C  
37.6 -57.9 19.9 61.2 161.0  
 $\Delta E_{2000}$  threshold: 9.0 16 tints within threshold.

Open a tints file

Suppress display threshold

Restore import order

Clear filters



Measurement file: PANTONE+ Solid Coated-V3.cxf  
2012-02-15 21:25:22

Open tints file folder

Open CGATS backup file folder

Save as CGATS file

COLORSOURCE  
OB Correction is ON

$L^* a^* b^* c^* h^* D50^*$

L a b c h DE00

	380 L	390 a	400 b	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	
PANTONE 3500 C	0.027	0.03	0.03	0.03	0.0241	0	0	0	0	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0	0	0	0	0.029
PANTONE 7727 C	0.041	0.04	0.04	0.04	0.048	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.045
PANTONE 3415 C	0.016	0.02	0.02	0.02	0.0311	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.023
PANTONE 7726 C	0.052	0.05	0.05	0.05	0.0578	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0	0	0.049
PANTONE 3536 C	0.028	0.03	0.03	0.03	0.0224	0	0	0	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0	0	0.011
PANTONE 7733 C	0.043	0.04	0.04	0.04	0.0467	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.063
PANTONE 7728 C	0.041	0.04	0.04	0.04	0.0486	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.047
PANTONE 356 C	0.016	0.02	0.02	0.02	0.0242	0	0	0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.034
PANTONE 7732 C	0.044	0.04	0.04	0.04	0.0444	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.069
PANTONE 3425 C	0.015	0.02	0.02	0.02	0.0278	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0.024
PANTONE 341 C	0.061	0.06	0.07	0.07	0.0788	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0	0	0.055
PANTONE 349 C	0.038	0.04	0.04	0.04	0.0419	0	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.059
PANTONE 342 C	0.051	0.05	0.05	0.05	0.0593	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.045
PANTONE 2418 C	0.037	0.04	0.04	0.04	0.0361	0	0	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.032
PANTONE 2419 C	0.062	0.06	0.06	0.07	0.0735	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.064
PANTONE 348 C	0.047	0.04	0.04	0.04	0.0527	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.068

Sorting the tints by name, L, a, b, c, h or their  $\Delta E_{2000}$  distance from the reference tints, is obtained by pressing respectively the buttons **Names A to Z**, **L**, **a**, **b**, **c**, **h** or **DE00**, and always only acts on the hues displayed within the threshold, if any. When a sorting button is pressed several times, the sort order is reversed each time.

For example, the **L** button allows you to sort the tints within the display threshold by order of increasing or decreasing clarity:

1847 tint(s) in total.  
16 tint(s) displayed.

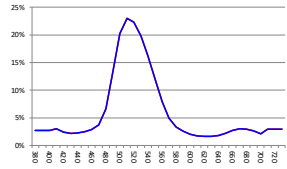
Reference color: PANTONE 3500 C  
37.6 -57.9 19.9 61.2 161.0  
 $\Delta E_{2000}$  threshold: 9.0 16 tints within threshold.

Open a tints file

Suppress display threshold

Restore import order

Clear filters



Measurement file: PANTONE+ Solid Coated-V3.cxf  
2012-02-15 21:25:22

Open tints file folder

Open CGATS backup file folder

Save as CGATS file

COLORSOURCE  
OB Correction is ON

$L^* a^* b^* c^* h^* D50^*$

L a b c h DE00

	380 L	390 a	400 b	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580	
PANTONE 3425 C	0.015	0.02	0.02	0.02	0.0278	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0.024
PANTONE 342 C	0.041	0.04	0.04	0.04	0.0486	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.047
PANTONE 7728 C	0.041	0.04	0.04	0.04	0.0486	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.047
PANTONE 3500 C	0.027	0.03	0.03	0.03	0.0241	0	0	0	0	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.029
PANTONE 349 C	0.038	0.04	0.04	0.04	0.0419	0	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.059
PANTONE 7727 C	0.043	0.04	0.04	0.04	0.0467	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.063
PANTONE 3536 C	0.028	0.03	0.03	0.03	0.0224	0	0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0	0	0.011
PANTONE 7733 C	0.043	0.04	0.04	0.04	0.0467	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.063
PANTONE 356 C	0.016	0.02	0.02	0.02	0.0242	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.034
PANTONE 7732 C	0.044	0.04	0.04	0.04	0.0444	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.069
PANTONE 3415 C	0.016	0.02	0.02	0.02	0.0311	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.023
PANTONE 7726 C	0.052	0.05	0.05	0.05	0.0578	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0	0	0.049
PANTONE 356 C	0.016	0.02	0.02	0.02	0.0242	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0	0	0	0	0.034
PANTONE 341 C	0.061	0.06	0.07	0.07	0.0788	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0	0	0.055
PANTONE 7732 C	0.044	0.04	0.04	0.04	0.0444	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.069
PANTONE 2419 C	0.062	0.06	0.06	0.07	0.0735	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.064
PANTONE 2418 C	0.037	0.04	0.04	0.04	0.0361	0	0	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.032
PANTONE 348 C	0.047	0.04	0.04	0.04	0.0527	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.068

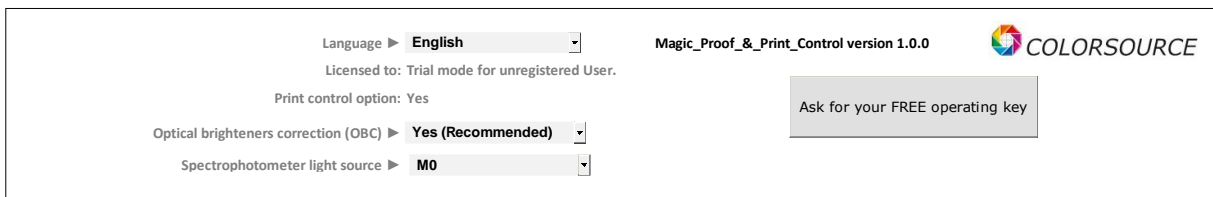
Any tint library in CxFv3 format opened by **MagicPress** can be converted and saved in CGATS format, which is much more flexible to use than CxFv3 format, and compatible with many free and good applications. See the manual on this subject: [https://www.iso12647solution.com/Applications\\_downloads/CxF3\\_to\\_CGATS\\_users\\_guide.pdf](https://www.iso12647solution.com/Applications_downloads/CxF3_to_CGATS_users_guide.pdf)

If a library contains both spectral and colorimetric tints, two files in CGATS format will be saved:

- One file containing only the tints specified by spectral values,
- One file containing only the tints specified by colorimetric values (XYZ and Lab),

## A few functions of the Preferences tab:

### Choosing MagicPress language:



At **MagicPress** very first launch, the language is automatically chosen between French, English or Spanish, depending on Windows' declared language for your keyboard. Of course, you can change this **MagicPress**' initial language afterwards.

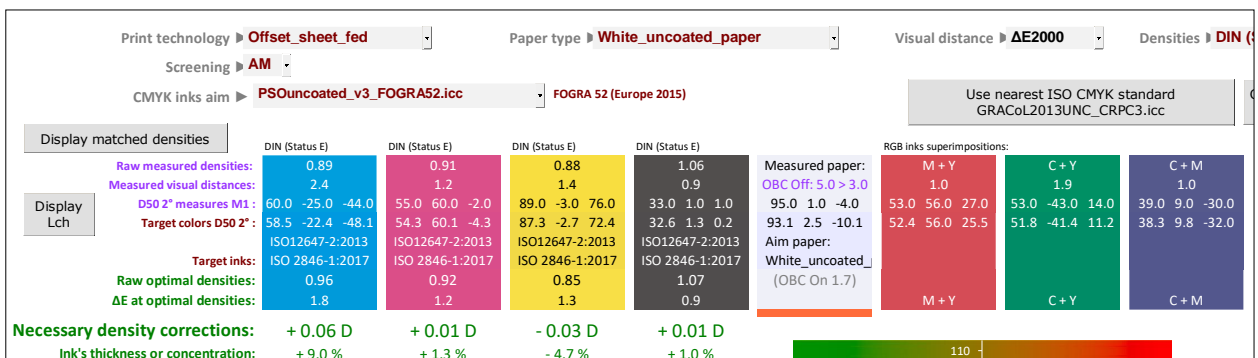
### Optical brighteners' correction (OBC):

By default, the correction of paper's optical brighteners is activated: We advise you to always keep it active, because it is essential for calculating, out of your measurement files (Control bars, reference colors used as Fingerprint and ink's libraries), apparent Lab colors that match the colors you actually perceive under D50 light.

Of course, when activated, optical brighteners' correction applies to both measured and aim colors. And the mistakes on some target colors published by ISO12647 **are duly corrected**. (Please read our comprehensive paper on ISO12647 that fully explain these issues).

For example, see below:

**Without correction of optical brighteners (OBC OFF)**, the paper's aim color published as **Fogra52** (uncoated white) is L, a, b = 93.1, 2.5, **-10.1**, which is aberrant because this does not match at all to the color we do perceive:



	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)
Raw measured densities:	0.89	0.91	0.88	1.06
Measured visual distances:	2.4	1.2	1.4	0.9
D50 2° measures M1:	60.0 -25.0 -44.0	55.0 60.0 -2.0	89.0 -3.0 76.0	33.0 1.0 1.0
Target colors D50 2°:	58.5 -22.4 -48.1	54.3 60.1 -4.3	87.3 -2.7 72.4	32.6 1.3 0.2
Target inks:	ISO 2846-1:2013	ISO 2846-1:2013	ISO 2846-1:2013	ISO 2846-1:2013
Raw optimal densities:	0.96	0.92	0.85	1.07
ΔE at optimal densities:	1.8	1.2	1.3	0.9
Necessary density corrections:	+ 0.06 D	+ 0.01 D	- 0.03 D	+ 0.01 D
Ink's thickness or concentration:	+ 9.0 %	+ 1.3 %	- 4.7 %	+ 1.0 %

Measured print run quality:	Active print tolerances ΔE2000 (Prefs.)
Maximal ΔE pure x% inks:	5.6
Maximal ΔE inks overlays:	1.9
Paper ΔE:	5.0
Average ΔE inks and overlays:	2.6
Maximal dot gain error:	+ 1.9%
Maximal ink thickness or concentration error:	+ 9%
	4.0
	5.0
	3.0
	3.0
	+/- 5%
	+/- 10%

With optical brightener's correction (OBC ON), the paper's aim color for **Fogra52** (uncoated white) becomes L, a, b = 93.1, 0.5, -2.1, which does match fairly well to the color we actually perceive:

Print technology ▶ **Offset\_sheet\_fed** Paper type ▶ **White\_uncoated\_paper** Visual distance ▶ **ΔE2000** Densities ▶ **DIN (**

Screening ▶ **AM**

CMYK inks aim ▶ **PSUncoated\_v3\_FOGRA52.icc** **FOGRA 52 (Europe 2015)**

Display matched densities

	DIN (Status E)	DIN (Status E)	DIN (Status E)	DIN (Status E)	RGB inks superimpositions:						
Raw measured densities:	0.89	0.91	0.88	1.06	Measured paper:	M + Y	C + Y	C + M			
Measured visual distances:	1.5	0.7	1.1	1.1	OBC On: 1.7	0.7	1.2	0.8			
D50 2° measures M1:	59.9 -26.6 -41.2	55.0 59.8 0.1	89.1 -3.1 77.6	33.0 0.7 2.4	95.0 0.2 -0.8	53.0 55.9 28.6	53.0 -43.5 15.7	39.0 8.2 -28.0			
Target colors D50 2°:	58.3 -26.5 -41.2	54.3 59.5 0.9	87.5 -2.8 76.2	32.6 0.5 3.5	93.1 0.5 -2.1	52.5 55.8 29.5	51.8 -42.6 15.4	38.2 7.8 -27.0			
Target inks:	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017	ISO 2846-1:2017	Aim paper:	White_uncoated_ (OBC Off 5.0)					
Raw optimal densities:	0.95	0.94	0.88	1.07		M + Y	C + Y	C + M			
ΔE at optimal densities:	0.4	0.4	1.1	1.1							
Necessary density corrections:	+ 0.06 D	+ 0.02 D	+ 0.00 D	+ 0.01 D							
Ink's thickness or concentration:	+ 8.0 %	+ 3.5 %	+ 0.5 %	+ 1.3 %							

Measured print run quality:	Active print tolerances ΔE2000 (Prefs.)	
Maximal ΔE pure x% inks:	1.5	4.0
Maximal ΔE inks overlays:	1.2	5.0
Paper ΔE:	1.7	3.0
Average ΔE inks and overlays:	1.1	3.0
Maximal dot gain error:	+ 1.9%	+/- 5%
Maximal ink thickness or concentration error:	+ 8%	+/- 10%

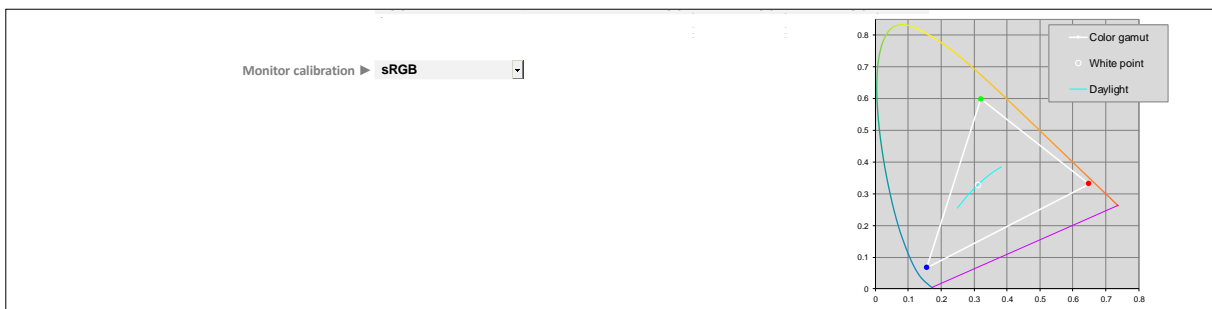
See our reference article about ISO12647-2-3-4-6-7 and G7/IDEAlliance:  
[https://www.color-source.net/en/Docs Formation/2021 POINT ABOUT ISO 12647 STANDARDS.pdf](https://www.color-source.net/en/Docs%20Formation/2021%20POINT%20ABOUT%20ISO%2012647%20STANDARDS.pdf)

## Declaring to MagicPress the internal light source your 45/0° spectrophotometer is using when measuring colors in reflection mode:

As explained in our reference paper about ISO12647 standards, using in the spectrophotometer a **D50** type light source (Measurement condition **M1**), instead of an **A** light source (2856 K incandescence that is legacy measurement condition **M0**), further exaggerates the blue cast measured on papers containing optical brighteners.

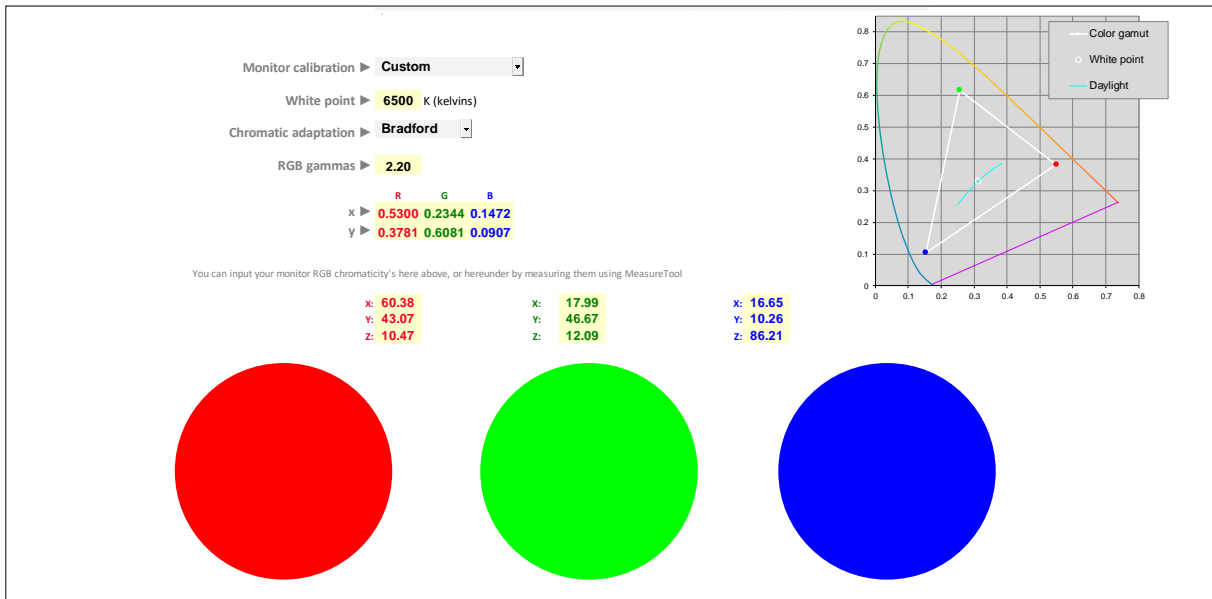
For ISO12647-x target colors, **M0** or **M1** setting is chosen automatically based on each chosen aim. **But for your measured colors, you must declare in Prefs. tab whether you are taking your measurements under M0 or M1 condition.**

## Declaring the characteristics of your PC's RGB monitor for more accurate color display:



By default, all Lab colors measured or displayed by **MagicPress** are converted to RGB via the standard office work environment **sRGB** I.C.C. profile, which is usually enough for a decent display of tints.

However, if you need a more accurate display of all tints, you can declare to **MagicPress** all the characteristics of your monitor, by choosing "**Custom**" from the **Monitor calibration** drop-down menu.



Your monitor's characteristics to be declared are as follows:

- Color temperature of the monitor (White point),
- Chosen chromatic adaptation matrix,
- Common gamma of the three R, G and B channels,
- **xy** chromaticity or XYZ measurements of each R, V and B primary color at 100% (= 255 in general).

In practice – but it is not mandatory – you can calibrate and characterize your RGB monitor using a conventional commercial software (e.g., i1Profiler in advanced mode), and choose at calibration stage (Following aim calibration values are only given as an example):

- Monitor color temperature = 6500 K (D65),
- Chromatic adaptation matrix = Bradford,
- Common gamma for the three R, G and B channels = 2.2,

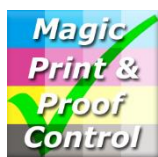
The commercial monitor calibration application will allow you reaching the arbitrary calibration parameters specified above, and then it will calculate the I.C.C. profile of your monitor under these calibration conditions, which will be used by Photoshop and other desktop publishing applications.

And because Excel does use your monitor's I.C.C. profile, you just need to declare to **MagicPress** the **xy** chromaticity or **XYZ** measurements of each R, G and B primary.

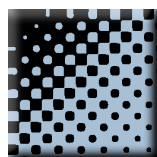
These colorimetric **xy** and/or **XYZ** co-ordinates values are sometimes displayed by your monitor's calibration application, in the calibration summary, at the end of the calibration and characterization process.

It is also very easy to measure directly on your monitor the XYZ values of the three red, green and blue circles, for example by using an i1Pro 1 or 2 in "emission" measurement mode with free **MeasureTool** application (Measurement module of the ProfileMaker application, which probably keeps the most flexible measurement application to date).

Magic\_Proof\_&\_Print\_Control



PLATE



MagicPress



MagicPrepress



SPOT\_Color\_Manager

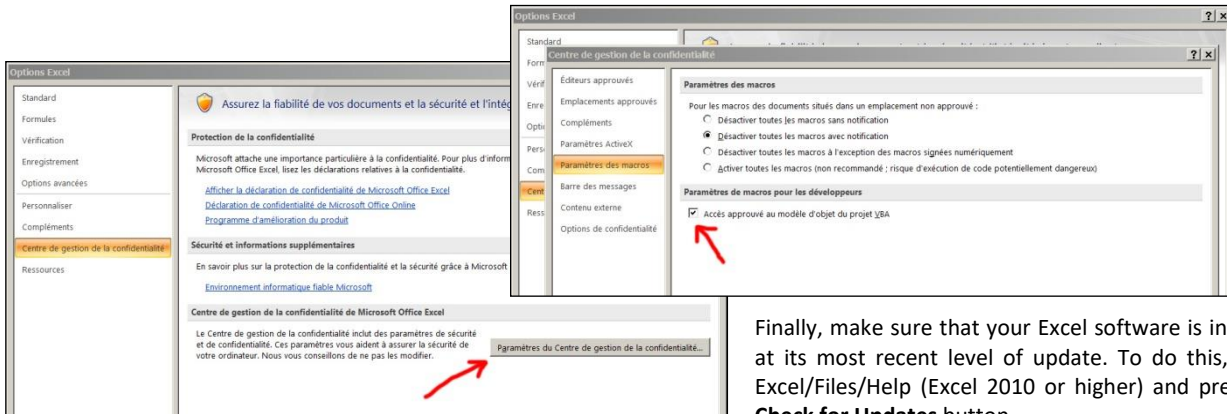




## Troubleshooting and frequently asked questions:

Use Microsoft Excel 2010, 365 or higher. Note that Excel (or Microsoft Office) must be installed with some sometimes-optional components such as Visual Basic, otherwise the applications will not start.

Launch Excel and go to Excel Options, Trust Center, and "Trust Center Settings" button: **Check the box "Trusted access to VBA project object model"**:



Finally, make sure that your Excel software is installed at its most recent level of update. To do this, go to Excel/Files/Help (Excel 2010 or higher) and press the **Check for Updates** button.

If the application does not launch, disable your antivirus: Most antiviruses do not cause any problems: AVG, Avira, native antivirus protection of Microsoft Windows etc. but rare antivirus can prevent the application from starting.

### For the same measurement file, MagicPress displays Lab values different from MeasureTool, i1Profiler or Colorlab or other:

General purpose measurement applications compute their Lab D50 2° colors without correcting paper's optical brighteners, which is quite normal because they do not know what their measurements are intended for.

If we disable the optical brighteners' correction in their **Preferences** tab, Colorsource applications compute exactly the same Lab D50 2° colors than any other measurement application such as MeasureTool. But in practice we recommend that you always activate the optical brighteners' correction, in order our applications can compute Lab colors that actually match the colors we do perceive, even when the paper contains strong optical brighteners. The optical brighteners' correction modifies, if necessary, not only on the calculation of the paper's Lab color, but also on all other printed colors.

### The results are showing too big or too small on my monitor:

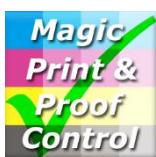
Zoom in on each tab to optimize the display according to the model of your screen: **Use the mouse wheel by holding down the "Ctrl" key**. You can hide the Excel ribbon (Right-click the ribbon, hide menu). You can also use the Full-SCREEN Excel view (**View menu ... Full screen**) because you don't need Excel menus to use Colorsource software. To exit the full-screen display mode, use the Esc key. (Escape).

### MagicPress, MagicPrepress and Magic\_Proof\_&\_Print\_Control applications offer me all modern ISO 12647-x, G7/IDEAlliance and WAN-IFRA CMYK aim colors, but I want to check if my press or my proof matches "Euroscale Coated.icc" aim colors!

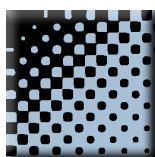
See the procedure in **MagicPrepress' user's guide**, for calculating, from your aim standard's I.C.C profile, your C.I.E. Lab aim colors, as a Fingerprint reference text measurement file.

For any other technical questions or suggestions: <mailto:support@color-source.net>

Magic\_Proof\_&\_Print\_Control



PLATE



MagicPress



MagicPrepress



SPOT\_Color\_Manager

