



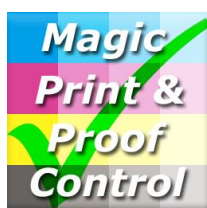
COLORSOURCE

E-mail : support@color-source.net
<https://www.color-source.net>
<https://www.solutioniso12647.com>

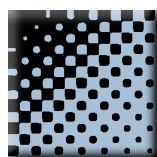
Magic_Proof_&_Print_Control user's guide

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Magic_Proof_&_Print_Control



PLATE



MagicPress



MagicPrepress



SPOT_Color_Manager



I) Software installation and configuration:

Please read carefully the "Software_installation_and_brief_description_Guide.pdf" at link:

https://www.iso12647solution.com/Applications_downloads/Software_installation_and_brief_description_Guide.pdf

Measuring proof and press control bars and else color targets:

The **Software installation and brief description Guide** shows how to make your colorimetric or spectral text measurement files. All Colorsource applications can do the best with your measurement files; but of course, the most complete and helpful results require processing spectral measurement files, which contain much more information than their derived colorimetric measurement files. When using **Magic_Proof_&_Print_Control**, spectral data are only compulsory if you want to check Printworks dot gain curves using DIN (ISO12647) or T or I spectral responses.

Free and paid features of the software:

All control functions for CMYK or else color proof simulating prints with one to ten inks are FREE. After a 30-day trial period, users should register with Colorsource for receiving their **free operating key**.

A few print-specific control features, which can be used during the 30-day trial period, are an inexpensive paying option. See the rates on page <https://www.iso12647solution.com/Buy.htm>

II) Functions of Magic_Proof_&_Print_Control:

Magic_Proof_&_Print_Control is designed for checking CMYK proofs and prints according to **ISO12647-2-3-4-6-7** or **G7/IDEAlliance** standards, or according to your own traditional or digital printing standards.

Magic_Proof_&_Print_Control also allows you controlling **all proofs and prints works printed using one to ten inks, with or without a CMYK base**.

In the **Control** tab, the application offers ten **control modes** in a drop-down menu:

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

Print check according to ISO 12647-2-3-4	Offset or gravure prints according to ISO 12647-2-3-4 standards*
Print check according to ISO 12647-6	Flexo prints according to ISO 12647-6*
Print control using to ΔE_{2000}	Printworks controlled with ΔE_{2000} , future standard
Print control using to ΔE_{94}	Printworks controlled with ΔE_{2000} , private standard
Print control using to $\Delta E_{CMC2:1}$	Printworks 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

Controlling color proofs:

Users can specify their own tolerances in the **Preferences** 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** proof control standard, requires using the default **ISO12647-7** ΔE_{76} proofing tolerances, which are duly reminded at the

bottom of the **Preferences** tab. The "Restore default proof tolerances" button restores all default ΔE proofing tolerances.

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

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

1. **ISO12647-7**: Checks colors deviations using ΔE_{76} and ΔH hue deviations of primary colors and CMY greys, according to **ISO12647-7** specifications,
2. **G7/IDEAlliance**: Checks visual deviations using ΔE_{76} and ΔH and ΔF according to the specifications of G7/IDEAlliance. This is an interpretation of **ISO12647-7** promoted by the American organizations **SWOP** (SWOP stands for Standard Web Offset Print) and **GRACoL** (GRACoL stands for General Requirements for Applications in Commercial Offset Lithography). In principle this interpretation of ISO 12647-7 is applicable only for checking 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 $\Delta E_{CMC2:1}$, ΔE_{94} or ΔE_{2000} visual distance's assessment formula).

Controlling color prints:

Users can specify in the **Preferences** tab their own tolerances 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 the **Preferences** tab. For checking prints using visual distance assessment formulae $\Delta E_{CMC2:1}$, ΔE_{94} or ΔE_{2000} - better but not standardized - you can specify your own default print tolerances at the bottom of the **Preferences** tab. The "Restore default print tolerances" button restores all default print tolerances.

For CMYK presses calibrated for matching **ISO 12647-2** (Offset), **12647-3** (Newspapers), **12647-4** (Rotogravure), or **12647-6** (Flexography), the application 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 $\Delta E_{CMC2:1}$, ΔE_{94} or ΔE_{2000}).

In addition, for more comprehensive prints control, **Magic_Proof_&_Print_Control** also allows displaying the TVI curves or dot gain curves of print works, as well as their solid inks densities.

List of the classic CMYK proof control bars Magic_Proof_&_Print_Control can check:

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

- **Fogra Media Wedge 2 control bar** (Obsolete but still used),
- **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 **Magic_Proof_&_Print_Control** 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, easily usable on prints with **MagicPress** and **MagicPrepress** for optimal CMYK press calibration:

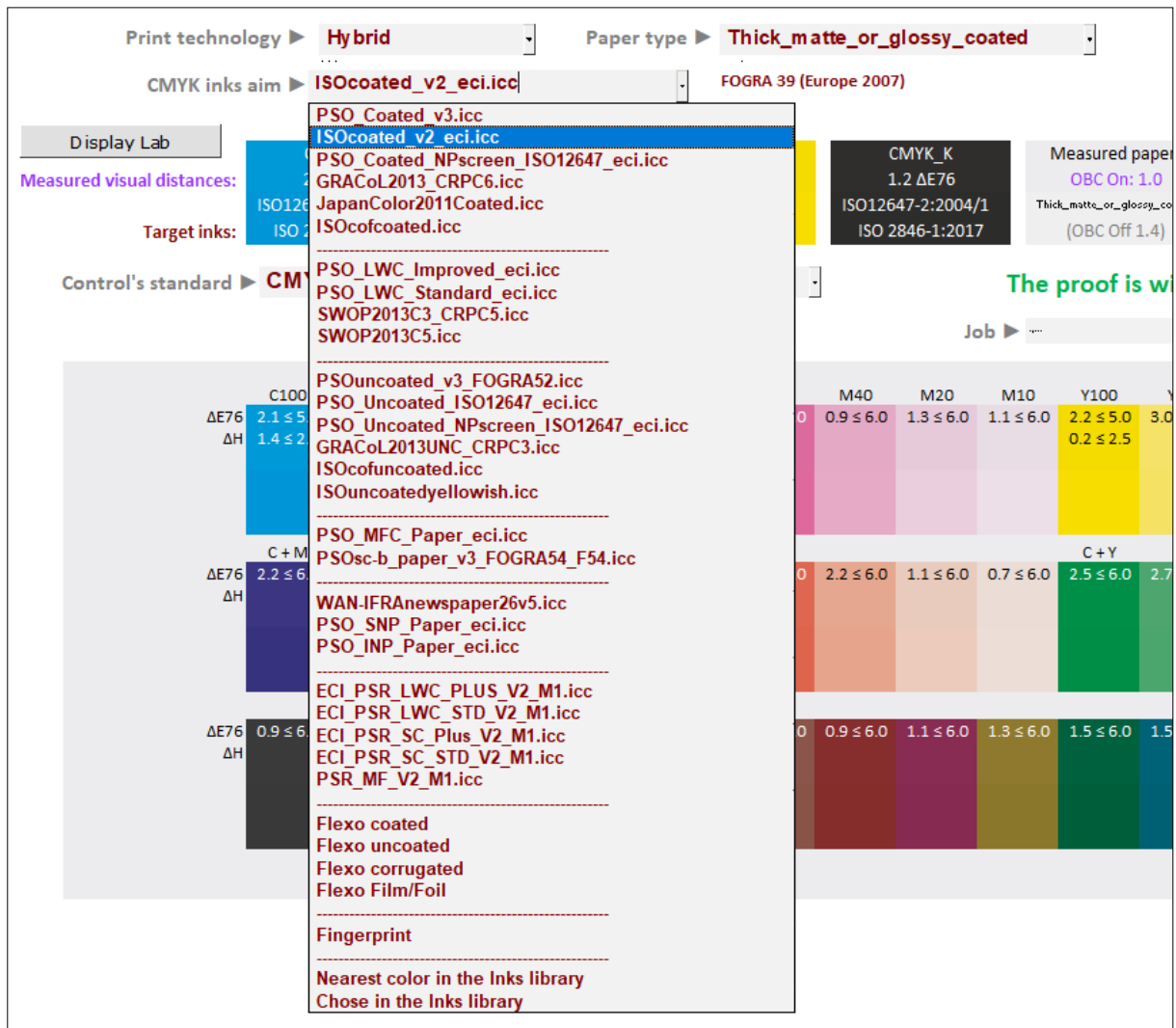


CMYK + Orange + Green + Purple control bar e.g., for setting 7 colors offset press on cardboard using **MagicPress** and **MagicPrepress** applications:



List of the ISO12647-2-3-4-6 CMYK color aims offered by the application:

Magic_Proof_&_Print_Control offers all ISO12647-2-3-4-6 and WAN-IFRA and G7/IDEAlliance modern CMYK color aims that are actually used today in the field:



The screenshot shows the application interface with the following settings:

- Print technology:** Hybrid
- Paper type:** Thick_matte_or_glossy_coated
- CMYK inks aim:** ISOcoated_v2_eci.icc
- FOGRA 39 (Europe 2007)**
- Control's standard:** CMY
- Measured visual distances:**
 - ΔE_{76} 2.1 $\leq$ 5
 - ΔH 1.4 $\leq$ 2
- Target inks:** ISO
- CMYK_K:** 1.2 ΔE_{76}
- Measured paper:** OBC On: 1.0, Thick_matte_or_glossy_co (OBC Off 1.4)
- Job:** ...
- Color bars and targets:**
 - C100
 - C + M
 - W
 - M40, M20, M10, Y100, Y
 - C + Y
 - 0, 0.9 $\leq$ 6.0, 1.1 $\leq$ 6.0, 1.3 $\leq$ 6.0, 1.5 $\leq$ 6.0, 1.5
- ISO12647-2-3-4-6 CMYK inks:**
 - PSO_Coated_v3.icc
 - ISOcoated_v2_eci.icc
 - 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
 - ECL_PSR_LWC_PLUS_V2_M1.icc
 - ECL_PSR_LWC_STD_V2_M1.icc
 - ECL_PSR_SC_Plus_V2_M1.icc
 - ECL_PSR_SC_STD_V2_M1.icc
 - PSR_MF_V2_M1.icc
 - Flexo coated
 - Flexo uncoated
 - Flexo corrugated
 - Flexo Film/Foil
 - Fingerprint
 - Nearest color in the Inks library
 - Chose in the Inks library

You will find all useful technical information on this subject in our up-to-date paper summarizing all the ISO12647-2-3-4-6-7 and G7/IDEAlliance up-to-date standards:

https://www.color-source.net/en/Docs_Formation/2021_POINT_ABOUT_ISO_12647_STANDARDS.pdf

Automatic closest ISO12647 CMYK aim standard detection:

When opening a - colorimetric or spectral - measurement file of any classic CMYK control bar, the application 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's measurement file: **This closest standard is then automatically proposed and used as the default aim standard** for checking your color proof.

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

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

Other kinds of color aims offered by the application:

Magic_Proof_&_Print_Control also offers in its drop-down menu customizable special targets:



"Fingerprint" color aim:

This allows you specifying your own aim colors. Your aim colors are specified by using any reference colorimetric or spectral measurement file as a "Fingerprint", opened in the **Fingerprint** tab of the application.

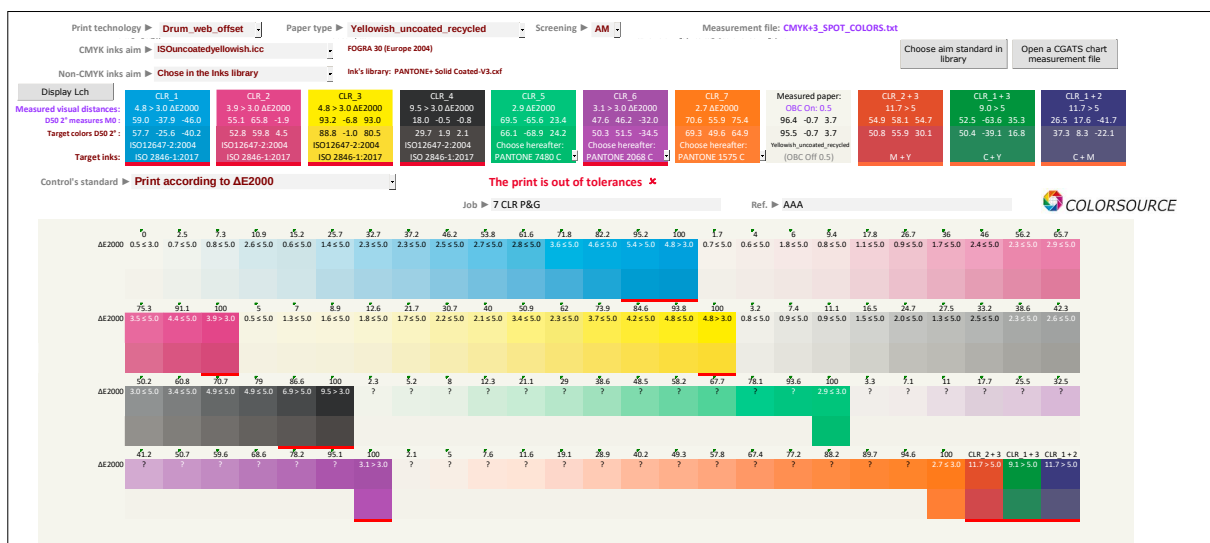
Using a well-adapted reference measurement file ("press fingerprint") can allow you:

1. Checking all digital printing processes offering many different color gamut's. Digital printing processes cannot be standardized and therefore require establishing specific reference colors and TVI curves, that lead to specific Fingerprint measurement files,
2. Specifying easily the reference colors for any control bars from any reference I.C.C. profile characterizing any traditional printing press or digital printer.

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

These choices are useful for controlling traditional printworks with spot colors or their digital color proofs, when using a specific control bar comprising all the inks in the printing process:

For example, a CMYK + 3 x PANTONE print can be equipped with a classic CMYK control bar (e.g., Fogra), and/or a 7-colors control bar:





COLOR SOURCE S.A.S. - R.C.S. ÉVRY 453 219 768 - SIRET 453 219 768 00018 - CODE APE 7022Z

Any CMYK or N-Colors printing standard can be specified by the following parameters:

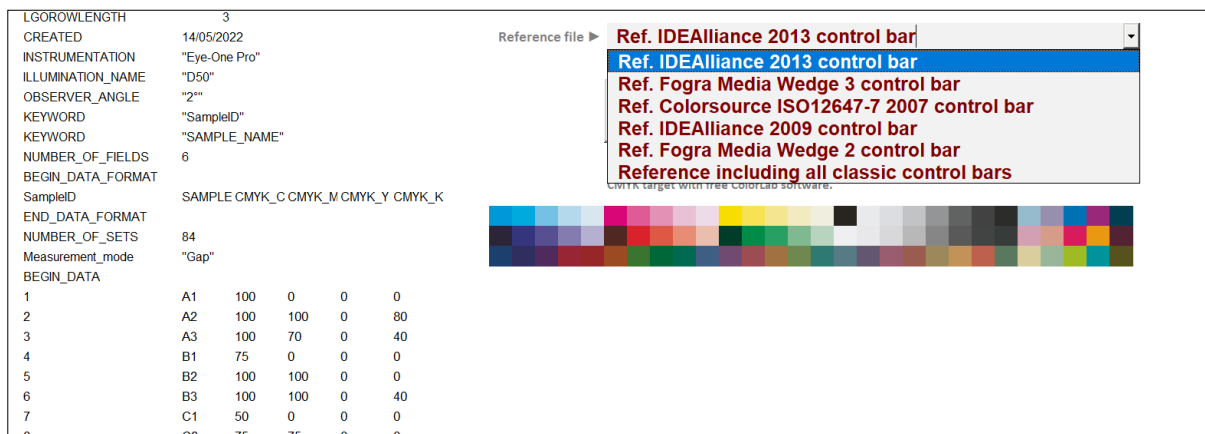
- Printing technology (Sheet-fed offset, web offset, gravure, flexo or other),
- Paper type,
- Number N of inks,
- Screening type and dither value,
- Screen angles, for classic screenings,
- Densitometric spectral response to be used for measuring the TVI curves,
- Inks' names,
- Spectral and/or colorimetric value of each solid (100%) ink,
- Print sequence of the N inks,
- Values of the N TVI curves of the N inks,
- Spectral and/or colorimetric values of the two-to-two overlays of the solid inks,
- Using or not paper's optical brighteners correction (OBC), for computing the aim colorimetric values of the print standard.

MagicPrepress application also manages a library of correction curves' sets, so that, for each one of the print standards in the library, a set of optimal correction curves specifically associated with each press can be easily computed, recorded and updated when necessary. All or part of **MagicPrepress**' standards' library can be exported as a simple Excel file (.xlsx) containing one or more printing standards, along with the set(s) of correction curves associated with the press(es) of the workshop.

This print standards' Excel file can be imported by **MagicPress** for easy and fast press density calibration, and also by free **Magic_Proof_&_Print_Control** application, in order to check all color proofs and prints matching each printing standards. All this without risks of errors or confusions, when so many different public and private print standards have to be matched in a print house.

Classic CMYK control bars reference files stored in the Charts tab:

The **Charts** tab allows you to view and export the reference files (in CGATS text format) of all classic CMYK control bars recognized by **Magic_Proof_&_Print_Control**:



LGOROWLENGTH	3
CREATED	14/05/2022
INSTRUMENTATION	"Eye-One Pro"
ILLUMINATION_NAME	"D50"
OBSERVER_ANGLE	"2°"
KEYWORD	"SampleID"
KEYWORD	"SAMPLE_NAME"
NUMBER_OF_FIELDS	6
BEGIN_DATA_FORMAT	
SampleID	SAMPLE CMYK_C CMYK_M CMYK_Y CMYK_K
END_DATA_FORMAT	
NUMBER_OF_SETS	84
Measurement_mode	"Gap"
BEGIN_DATA	
1	A1 100 0 0 0
2	A2 100 100 0 80
3	A3 100 70 0 40
4	B1 75 0 0 0
5	B2 100 100 0 0
6	B3 100 100 0 40
7	C1 50 0 0 0
8	C2 75 75 0 0

All these control bars can be measured with the free measurement software **MeasureTool** (i1Pro or i1Pro2) or **i1Profiler** (i1Pro or i1Pro2 or i1Pro3). For measuring any control bar (CMYK or N-Colors), simply use its reference text file in CGATS format with **MeasureTool** or **i1Profiler**.

Note that free **Colorlab** application allows you to automatically generate a printable image of any control bars (CMYK or N-Colors) from its CGATS reference file, up to eight colors. (E.g., CMYK + Orange + Blue + Green + Purple).

N-Colors printable color charts are exported by **Colorlab** as a multichannel TIF that you just need to convert to multilayer in Photoshop, and then save as .EPS, after appropriate renaming of each layer.

Printable CMYK images of all classic CMYK control bars can therefore also be produced automatically from their respective reference text files, and they are provided as well as printable CMYK TIF in **Magic_Proof_&_Print_Control** ZIP distribution kit.

Note that **Charts** tab also allows you exporting a "universal reference file" containing all CMYK patches of all classic CMYK control bars:

LGOROWLENGTH 8

CREATED 14/05/2022

INSTRUMENTATION "Eye-One Pro"

ILLUMINATION_NAME "D50"

OBSERVER_ANGLE "2°"

KEYWORD "SampleID"

KEYWORD "SAMPLE_NAME"

NUMBER_OF_FIELDS 6

BEGIN_DATA_FORMAT SampleID

END_DATA_FORMAT SAMPLE_CMYK_C CMYK_M CMYK_Y CMYK_K

NUMBER_OF_SETS 232

Measurement_mode "Gap"

BEGIN_DATA

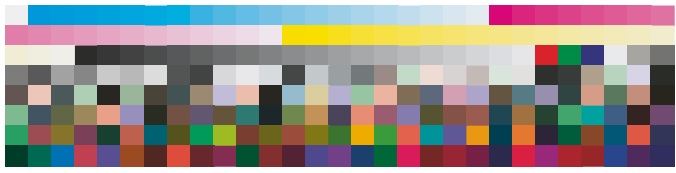
1	A1	0	0	0	0
2	A2	0	60	0	0
3	A3	0	0	15	0
4	A4	55	44.5	46	0
5	A5	70	70	70	0
6	A6	50	0	50	0
7	A7	75	0	75	0
8	A8	100	0	100	80
9	B1	100	0	0	0
10	B2	0	55	0	0
11	B3	0	0	10	0

Reference file ▶ **Reference including all classic control bars**

Export the control bar CGATS text reference file

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

You can use this text reference file with free ColorLab application and with any ICC profile, for computing a CMYK Fingerprint containing all aim colors of all conventional control bars.



This file is exported by default as **"Reference including all classic control bars.txt"** and it is also supplied in the application's installation ZIP. When used with free **Colorlab** software, this universal reference file allows you calculating the Lab colors of all patches of all classic CMYK control bars, according to any aim CMYK I.C.C. profile. **MagicPrepress** user's guide contain this work procedure for computing Fingerprint data for I.C.C. profiles.

This allows you producing easily a reference measurement file that you can use as a **Fingerprint** with **Magic_Proof_&_Print_Control**, in order to check any CMYK proof against your own reference colors.

For example, you can easily compute, using **Colorlab** with a **Fogra27** I.C.C. profile, the Lab colors of all patches of the **"Reference including all classic control bars.txt"** file, when they are printed according to Fogra27 standard. The resulting virtual measurement file (That is present in the distribution ZIP with name **"Universal_Fogra27_fingerprint_for_all_classic_charts.txt"**) can then be used as a **Fingerprint** for checking any color proof simulating Fogra27 standard, provided the color proof is fitted with one of the classic **Fogra** or **G7 /IDEAlliance** or **Colorsource** CMYK control bars.

On below example, we check a **Fogra Media Wedge 3** control bar against **Fogra27** aim colors, by specifying CMYK aim colors as **Fingerprint "Universal_Fogra27_fingerprint_for_all_classic_charts.txt"**:



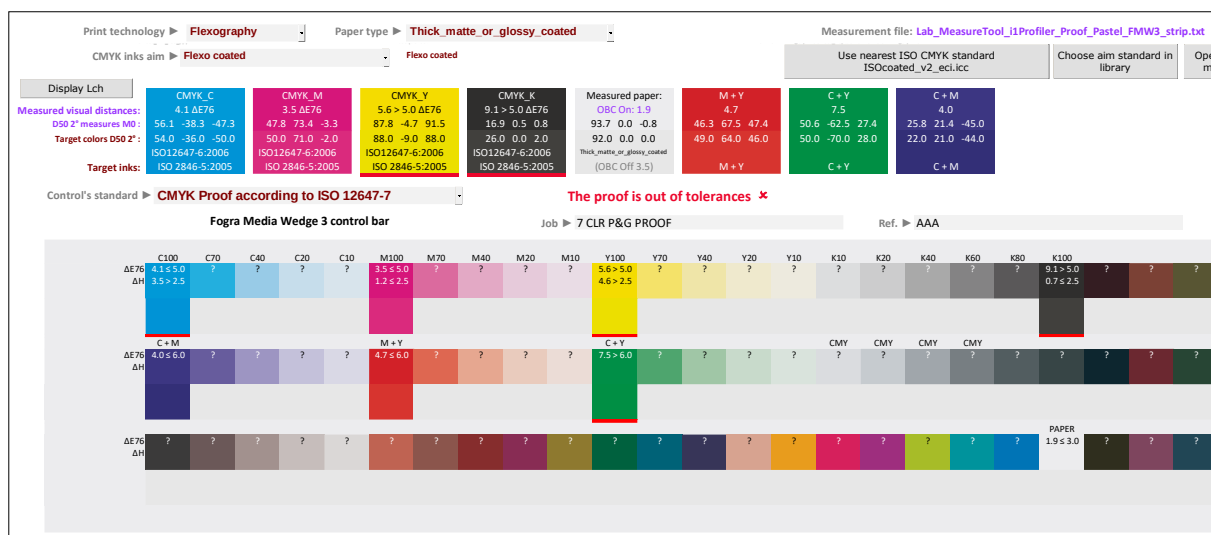
The measured Fogra Media Wedge 3 control bar is diagnosed as bad here, because it was actually printed on a color proof matching more recent Fogra39 standard, still widely used today.

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

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

However, given the wide variety of flexo clichés, dithering, 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.

But all patches of any classic CMYK 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 printer:



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

And 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 internet's CMYK test forms that also include a press characterization chart, for establishing the CMYK profiles of their presses calibrated to 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.

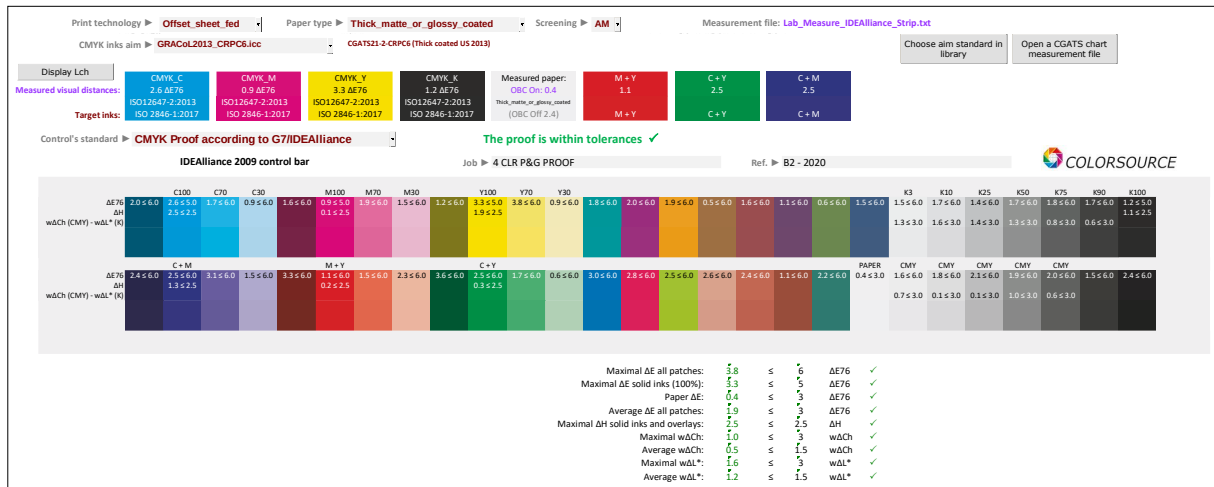
The resulting virtual measurement file can then be used as a reference **Fingerprint** for checking the color proofs simulating the flexographic press, provided they are fitted with one of the classic **Fogra** or **G7/IDEAlliance** or **Colorsource** CMYK control bars.



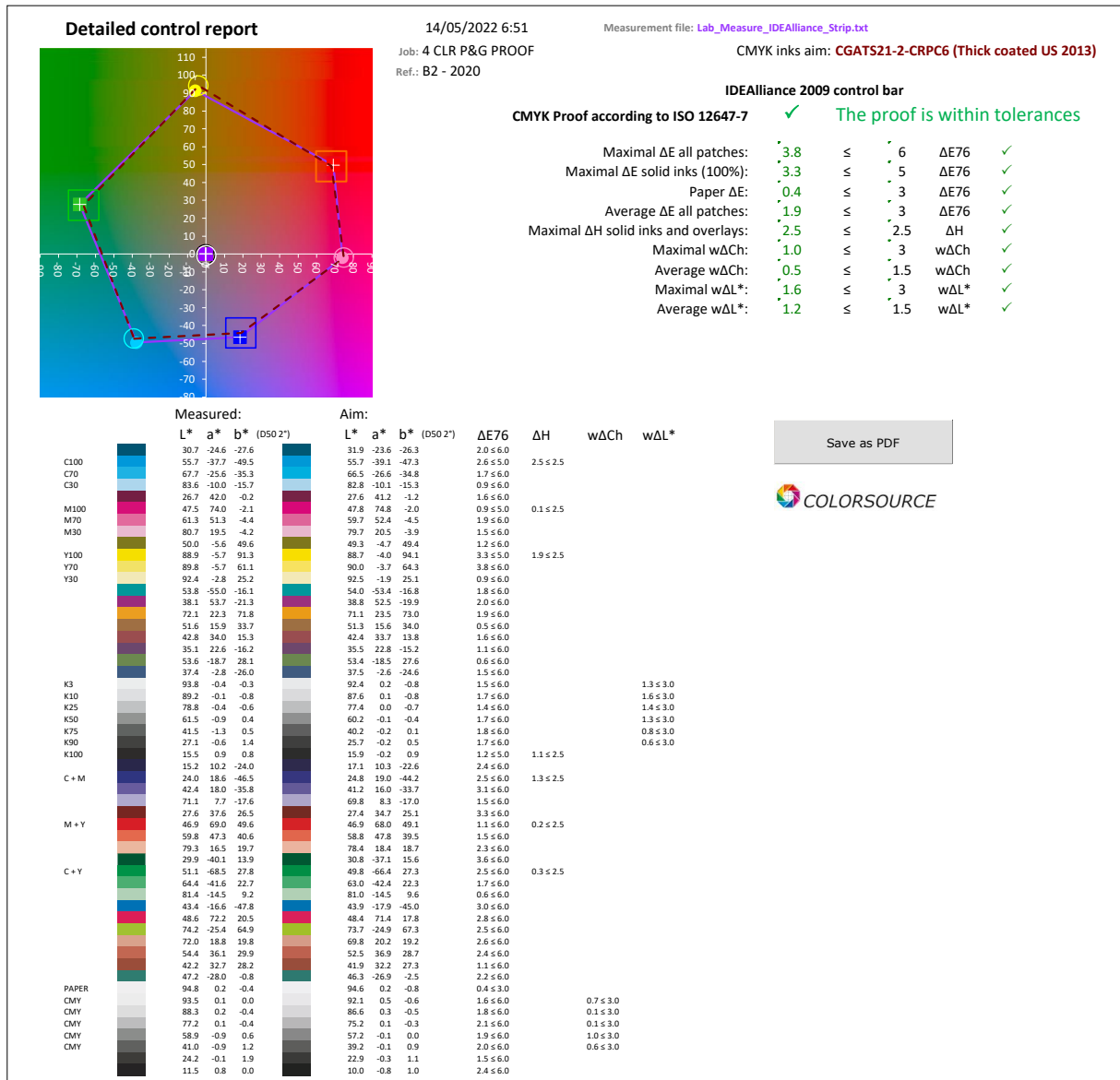
COLORSOURCE

Displaying the diagnosis of a color proof:

Global report of a GRACoL color proof check in the **Control** tab:



Detailed report of a GRACoL color proof check in the **Report** tab:



Ticket summarizing a GRACoL color proof check in the **Ticket** tab:

Job: 4 CLR P&G PROOF	Date of control: 14/05/2022 6:51
Ref.: B2 - 2020	IDEAlliance 2009 control bar
Lab_Measure_IDEAlliance_Strip.txt	
CMYK inks aim: CGATS21-2-CRPC6 (Thick coated US 2013)	
CMYK Proof according to ISO 12647-7 ✓ The proof is within tolerances	
Maximal ΔE all patches: 3.8 ≤ 6 ΔE76 ✓	
Maximal ΔE solid inks (100%): 3.3 ≤ 5 ΔE76 ✓	
Paper ΔE: 0.4 ≤ 3 ΔE76 ✓	
Average ΔE all patches: 1.9 ≤ 3 ΔE76 ✓	
Maximal ΔH solid inks and overlays: 2.5 ≤ 2.5 ΔH ✓	
Maximal wΔCh: 1.0 ≤ 3 wΔCh ✓	
Average wΔCh: 0.5 ≤ 1.5 wΔCh ✓	
Maximal wΔL*: 1.6 ≤ 3 wΔL* ✓	
Average wΔL*: 1.2 ≤ 1.5 wΔL* ✓	

Displaying the diagnosis of a color print work:

Magic_Proof_&_Print_Control offers five control modes for prints:

Print check according to ISO 12647-2-3-4	Offset or gravure prints according to ISO 12647-2-3-4 standards
Print check according to ISO 12647-6	Flexo prints according to ISO 12647-6
Print control using to ΔE2000	Printworks controlled with ΔE2000, future standard
Print control using to ΔE94	Printworks controlled with ΔE2000, private standard
Print control using to ΔECMC2:1	Printworks controlled with ΔECMC2:1, private standard

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

- For the CMYK print works control modes that are standardized by ISO12647-2-3-4, the checked color criteria and associated ΔE 76 tolerances are specific. Of course, ISO12647-2-3-4 ΔE 76 tolerances are wider for controlling printed works than for controlling the associated color proofs (ISO12647-7).

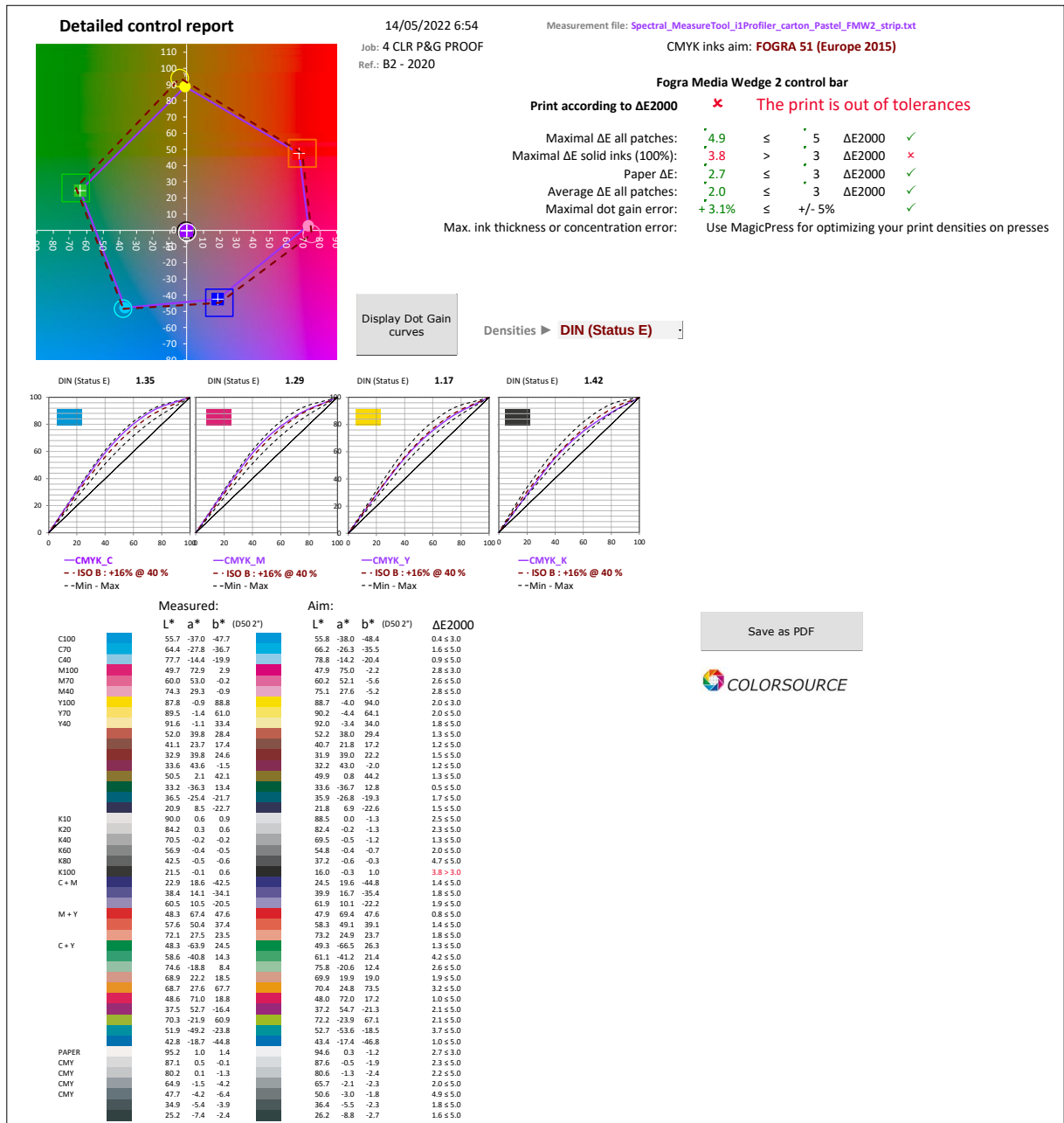
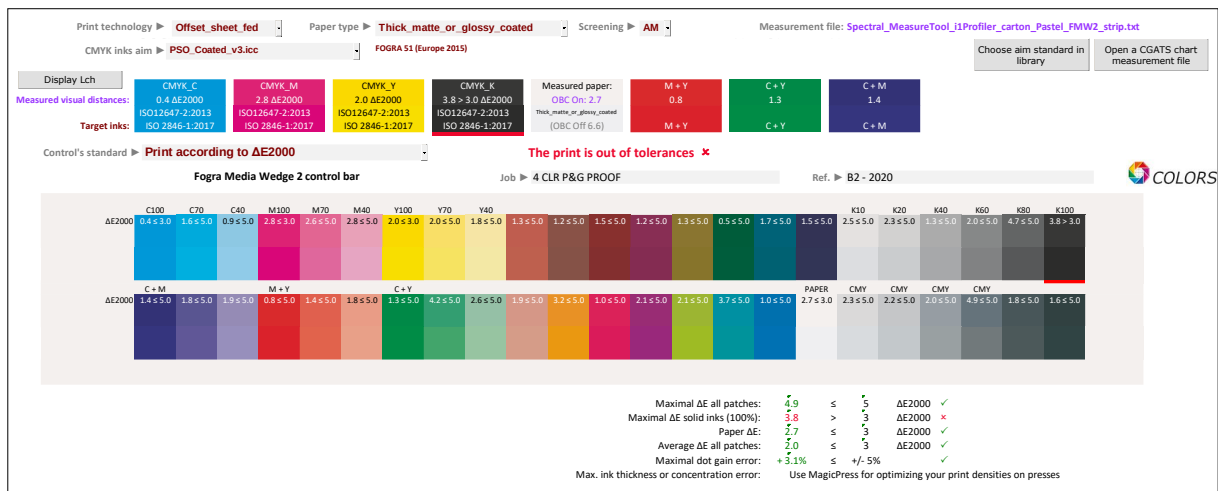
For non-ISO controls, that are using much better formulae such as ΔE2000 for estimating the actually perceived visual distances, it is logical (and realistic) to also allow wider tolerances for print works than for the afferent color proofs.

- 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).

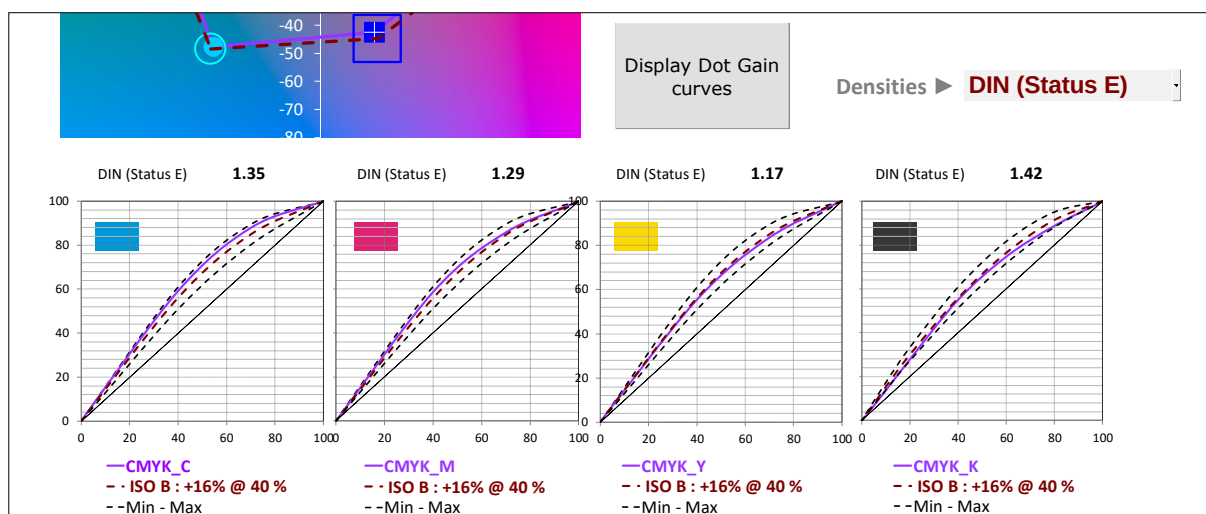
This is why, in its five print control modes, **Magic_Proof_&_Print_Control** also displays in its **Report** tab, in addition to the diagnosis of color deviations, an informative densitometric control of the print:

- The density of each solid ink,
- The TVI curve (and/or dot gain curve) measured on each ink,
- Minimal and maximal aim TVI curves for each ink according to the TVI tolerance set in the **Preferences** tab,
- Maximal measured dot gain error of all inks.

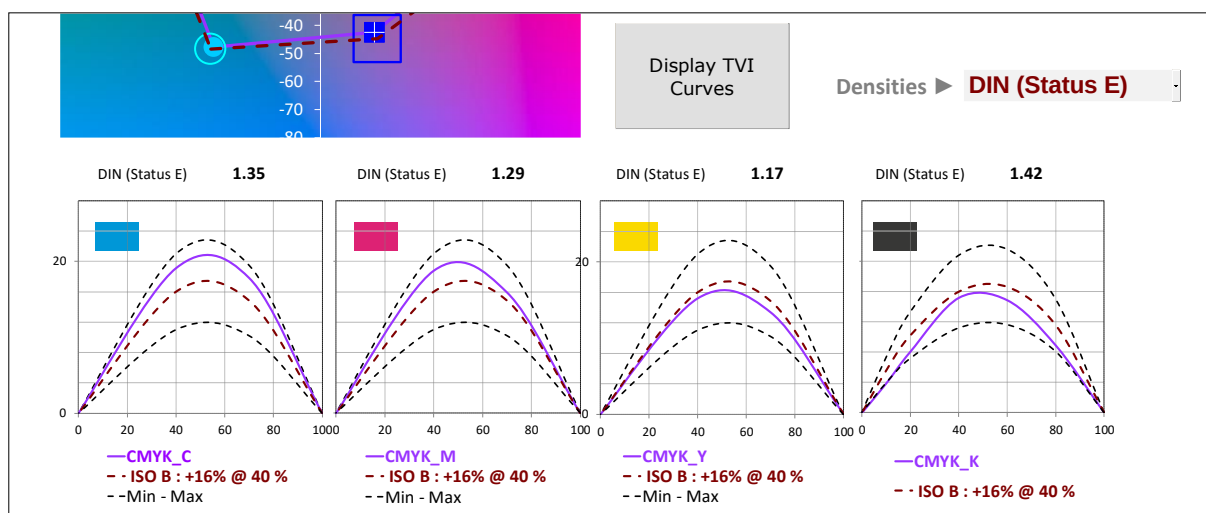
Example: Checking a CMYK print on coated white cardboard:



Displaying the inks' TVI curves against min and max tolerance curves:



Displaying the inks' dot gain curves against min and max tolerance curves:



Control ticket:

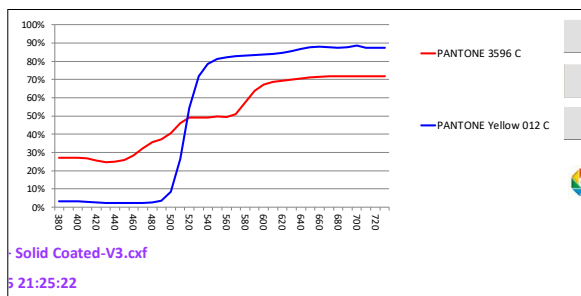
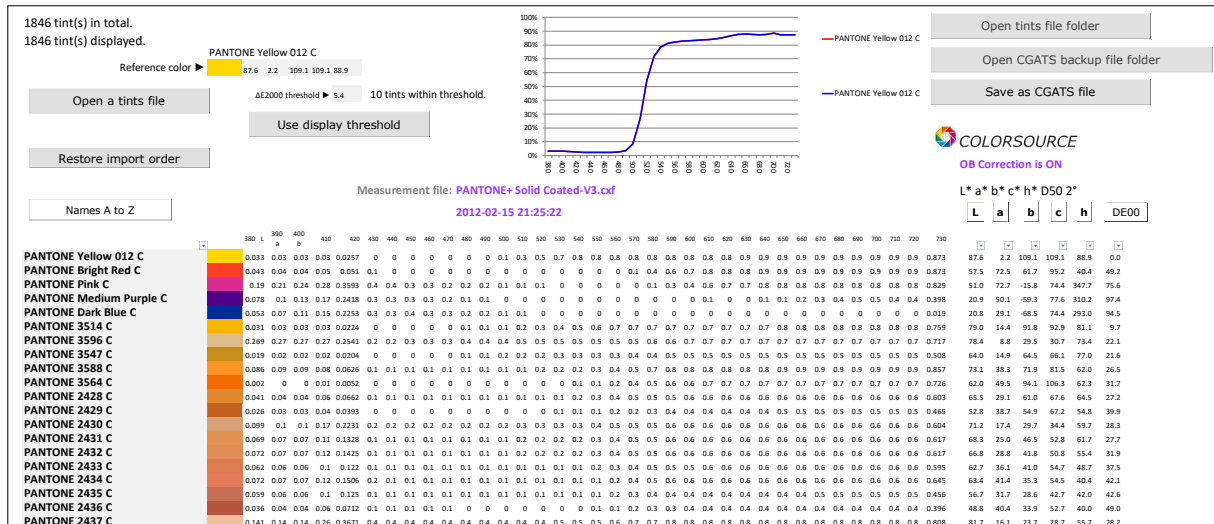
Job: 4 CLR P&G PROOF	Date of control: 14/05/2022 6:59
Ref.: B2 - 2020	Fogra Media Wedge 2 control bar
Spectral_MeasureTool_i1Profiler_carton_Pastel_FMW2_strip.txt	
CMYK inks aim: FOGRA 51 (Europe 2015)	
Print according to ΔE_{2000}	✗ The print is out of tolerances
Maximal ΔE all patches: 4.9	≤ 5 ΔE_{2000} ✓
Maximal ΔE solid inks (100%): 3.8	> 3 ΔE_{2000} ✗
Paper ΔE : 2.7	≤ 3 ΔE_{2000} ✓
Average ΔE all patches: 2.0	≤ 3 ΔE_{2000} ✓
Maximal dot gain error: +3.1%	≤ +/- 5% ✓



A few functions of the InksLib tints' library:

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

Colors displayed in the **InksLib** tab:



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 visual distances ΔE_{2000} 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 ΔE_{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 display monitor, declared in the **Preferences** tab,
- Using or not the optical brighteners' correction, as chosen in the **Preferences** tab: If we choose to correct optical brighteners (which we recommend), the apparent Lab color calculated for each shade will take into account the hue of the measured paper, which of course, influences our color perception.

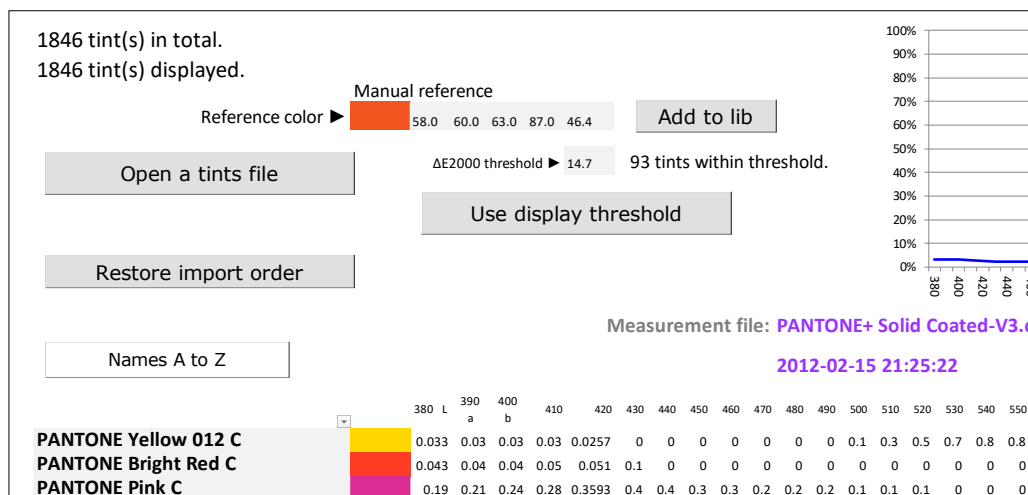
(*) We recommend using whenever possible color libraries specified by spectral reflectance values rather than by simple colorimetric apparent colors, but the ink's library may contain non-spectrally specified tints originating from:

- 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:



COLORSOURCE

For example, hereafter: L, a, b, c, h = 58.0, 60.0, 63.0, 87.0, 46.4

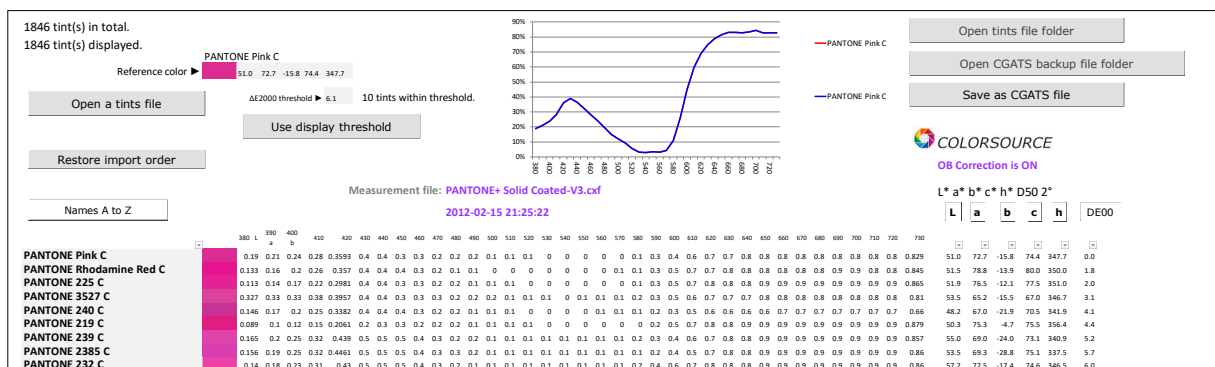


Sorting and searching for tints:

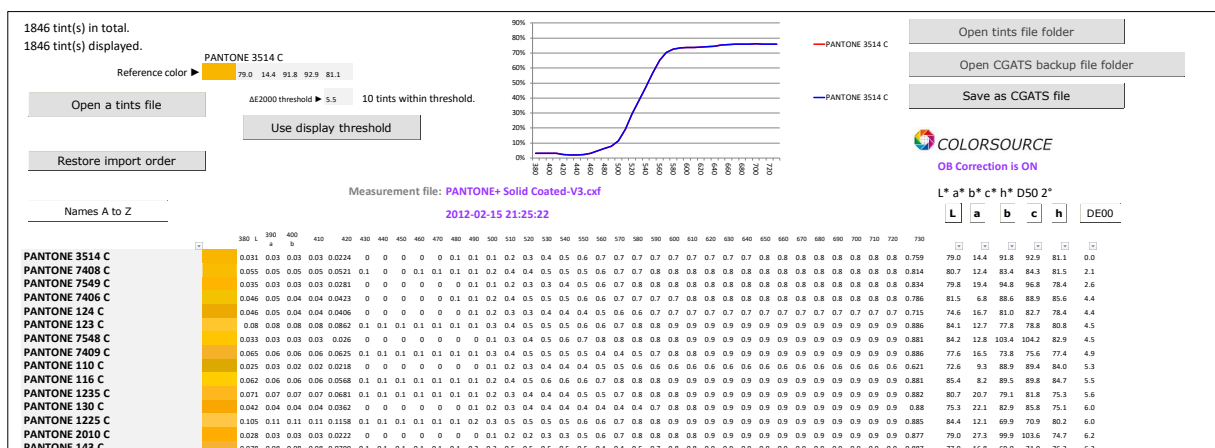
When double-clicking the name of a tint in the library:

1. This shade comes at the top of the list (Line 1) and thus becomes the reference tint,
2. All other shades in the library automatically rank in succession, in order of increasing ΔE2000 visual distance with the reference tint in line 1.

For example, if we double-click on the name "PANTONE Pink C", we get the following display:

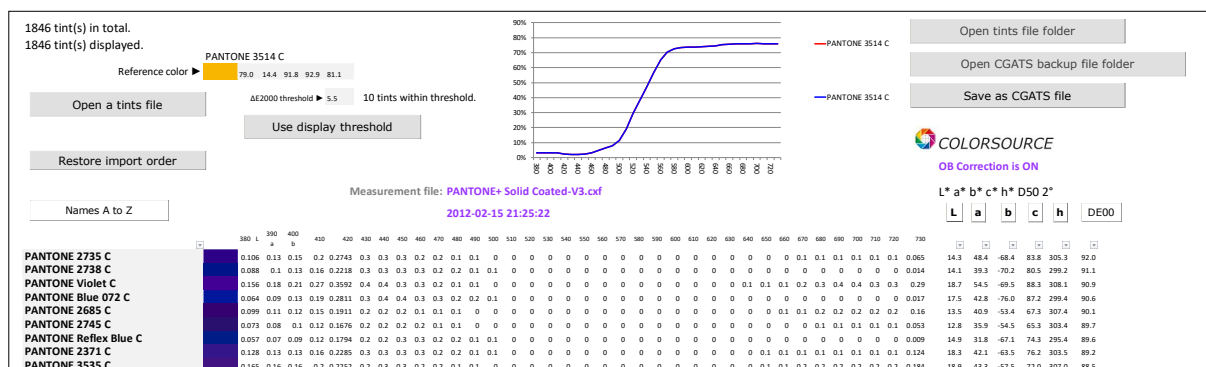


Another example, if we double-click on the name "PANTONE 3514 C", we get the following display:



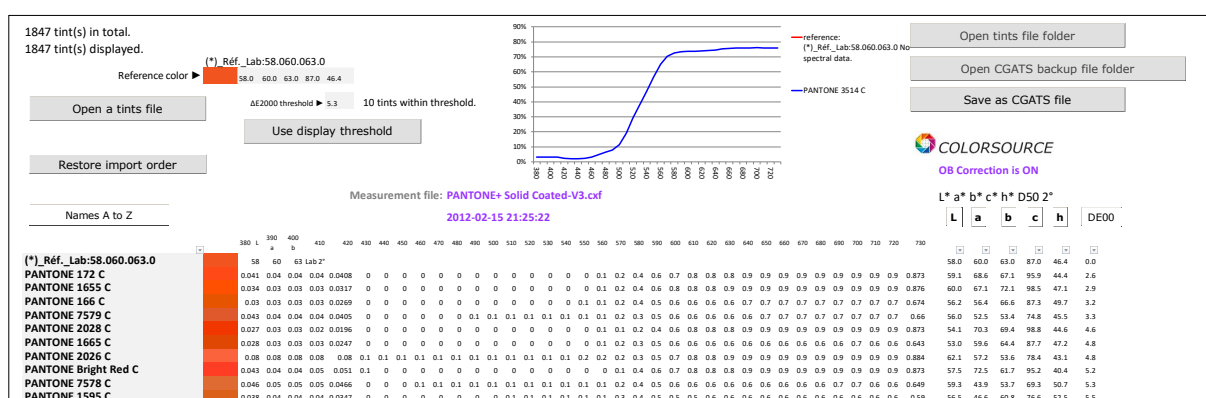
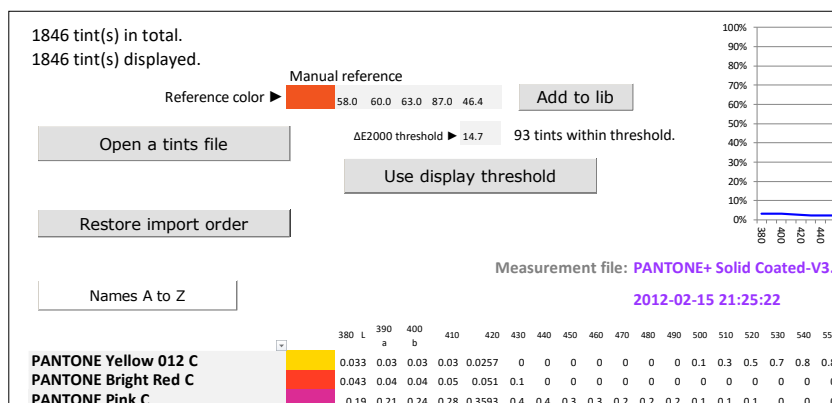
The increasing visual distances between the reference tint and subsequent hues are displayed in the last column DE00.

If the **DE00** button is pressed, the colors are no longer displayed in order of increasing visual distance but in order of decreasing visual distance from the reference color:



The reference tint can be chosen by double-clicking the name of any hue in the library, but also by directly typing three Lab or Lch colorimetric co-ordinates for specifying a reference apparent color, and then pressing the **"Add to lib"** button and double-clicking the Lab hue thus created manually.

The hues in the library are then ranked in order of visual deviation ΔE_{2000} with the tint added manually as a reference color:

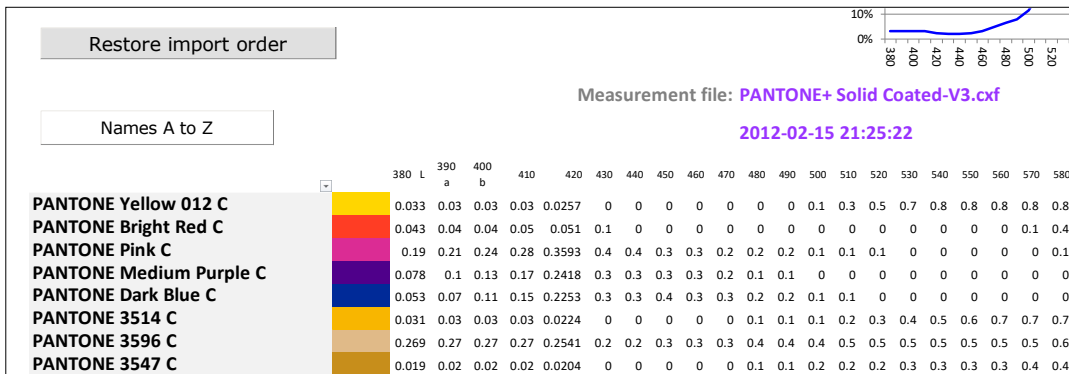


Any manually specified Lab or Lch reference color can thus be added to the library, which allows, for example, an easy and fast search of all available spot colors closest to any measured Lab color.

In summary, if you select a tint name with the mouse:

- The spectrum of this tint, if available, is displayed by a curve,
- You can rename the tint,
- You can delete one or more selected consecutive tint ("Suppress" key on the keyboard).
- You can use this tint in reference by double-clicking on its name.

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

Measurement file: **PANTONE+ Solid Coated-V3.cxf**

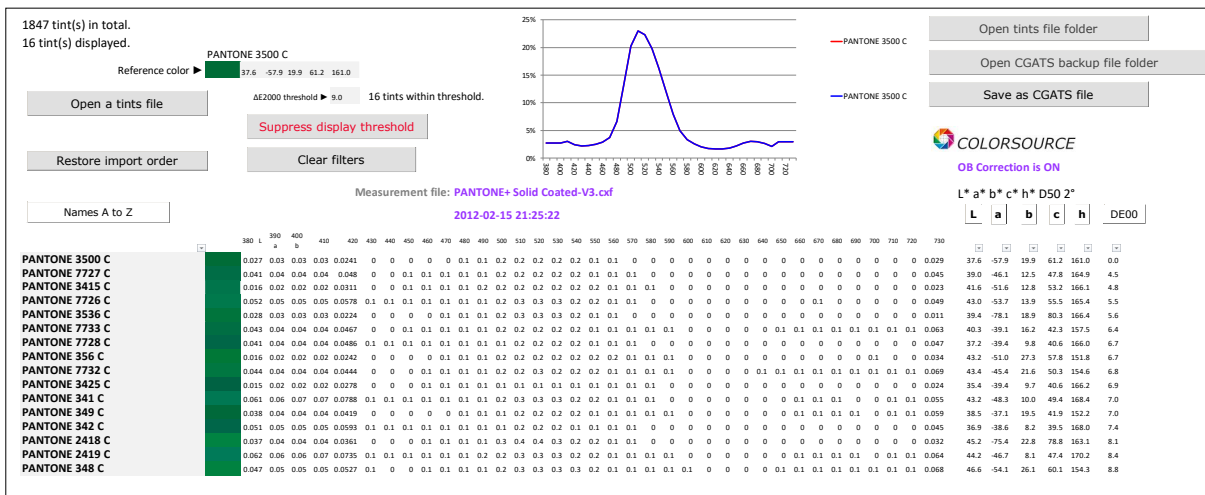
2012-02-15 21:25:22

Names A to Z

	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580
	L	a	b																		
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	0.1	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	0.1
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
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
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
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	0.6
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	0.4	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

ΔE2000 threshold: 9.0 16 tints within threshold.

Open a tints file

Restore import order

Suppress display threshold

Clear filters

Measurement file: **PANTONE+ Solid Coated-V3.cxf**

2012-02-15 21:25:22

Names A to Z

	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580
	L	a	b																		
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	0.0229
PANTONE 7727 C	0.041	0.04	0.04	0.04	0.048	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	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	0.1	0.2	0.2	0.2	0.2	0.1	0.1	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	0.2	0.1	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	0.011
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	0.063
PANTONE 7728 C	0.041	0.04	0.04	0.04	0.0486	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	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	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0	0	0	0.034
PANTONE 7732 C	0.044	0.04	0.04	0.04	0.0444	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	0.069
PANTONE 3425 C	0.015	0.02	0.02	0.02	0.0278	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0.024
PANTONE 341 C	0.061	0.06	0.07	0.07	0.0798	0.1	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	0.055
PANTONE 349 C	0.038	0.04	0.04	0.04	0.0419	0	0	0	0	0.1	0.1	0.2	0.2	0.2	0.2	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	0	0	0.045
PANTONE 2418 C	0.037	0.04	0.04	0.04	0.0361	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0.032
PANTONE 2419 C	0.062	0.06	0.06	0.06	0.0735	0.1	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	0.064
PANTONE 348 C	0.047	0.05	0.05	0.05	0.0527	0.1	0	0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.068

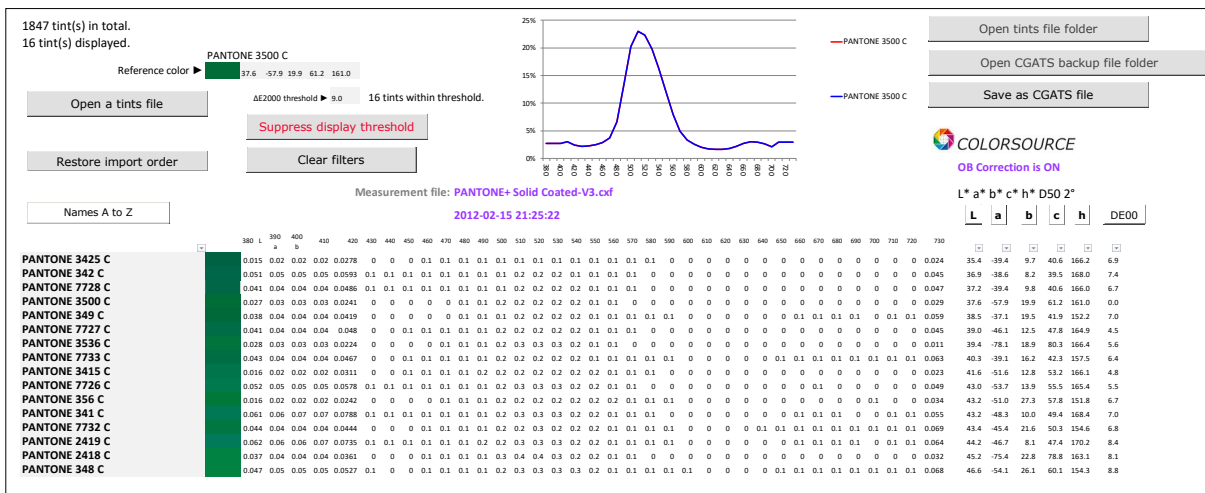
OB Correction is ON

L* a* b* c* h* D50 2°

L a b c h DE00

Sorting the tints by name, L, a, b, c, h or their ΔE2000 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

ΔE2000 threshold: 9.0 16 tints within threshold.

Open a tints file

Restore import order

Suppress display threshold

Clear filters

Measurement file: **PANTONE+ Solid Coated-V3.cxf**

2012-02-15 21:25:22

Names A to Z

	380	390	400	410	420	430	440	450	460	470	480	490	500	510	520	530	540	550	560	570	580
	L	a	b																		
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	0.024
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	0	0	0.045
PANTONE 7728 C	0.041	0.04	0.04	0.04	0.0486	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	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	0.2	0.1	0.1	0	0	0	0.0229
PANTONE 349 C	0.038	0.04	0.04	0.04	0.0419	0	0	0	0	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.059
PANTONE 7727 C	0.041	0.04	0.04	0.04	0.048	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0	0	0	0.045
PANTONE 3536 C	0.028	0.03	0.03	0.03	0.0224	0	0	0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0	0	0.011
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	0.063
PANTONE 3415 C	0.016	0.02	0.02	0.02	0.0311	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	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	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0	0	0	0.049
PANTONE 356 C	0.016	0.02	0.02	0.02	0.0242	0	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0	0	0	0.034
PANTONE 341 C	0.061	0.06	0.07	0.07	0.0798	0.1	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	0.055
PANTONE 7732 C	0.044	0.04	0.04	0.04	0.0444	0	0	0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.069
PANTONE 2419 C	0.062	0.06	0.06	0.06	0.0735	0.1	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	0.064
PANTONE 2418 C	0.037	0.04	0.04	0.04	0.0361	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0.032
PANTONE 348 C	0.047	0.05	0.05	0.05	0.0527	0.1	0	0	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.068

OB Correction is ON

L* a* b* c* h* D50 2°

L a b c h DE00

Any tint library in CxFv3 format opened by **Magic_Proof_&_Print_Control** 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 our manual on this subject:

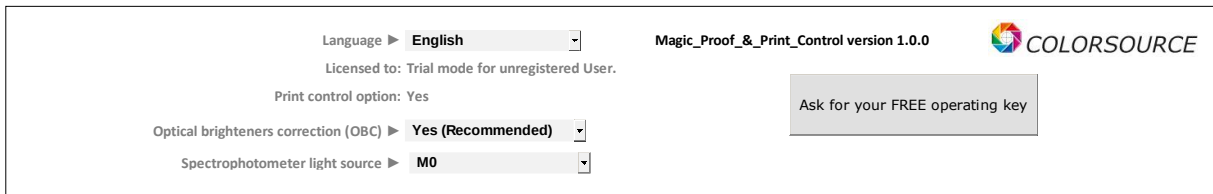
https://www.iso12647solution.com/Applications_downloads/CxF3_to_CGATS_users_guide.pdf

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 the application's language:



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

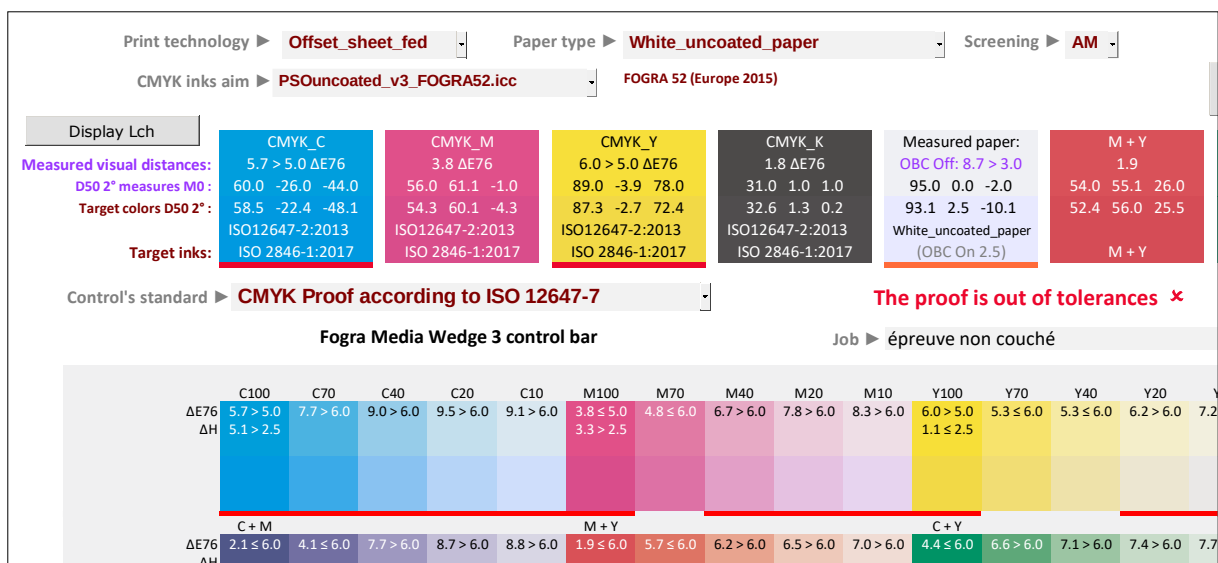
Optical brighteners' correction (OBC):

By default, the correction of paper's optical brighteners is activated: We advise you to leave it active always, 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 matching the colors that you actually perceive under D50 light.

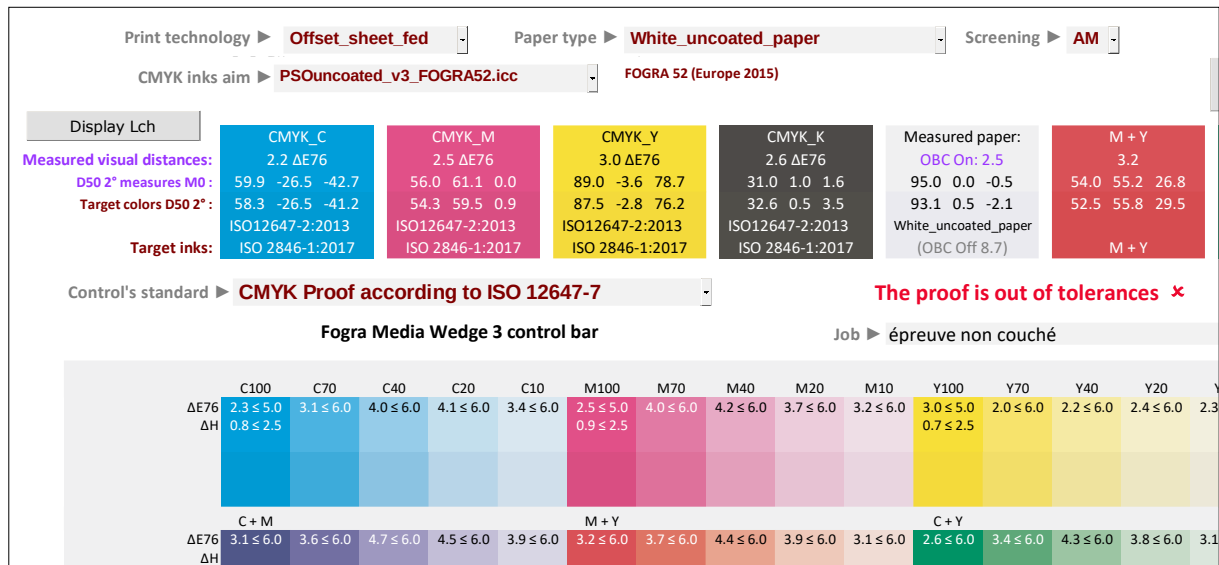
Of course, when activated, optical brighteners' correction applies to both measured and aim colors. And by this way the mistakes on some target colors published by ISO12647 **are duly corrected**. (Please read our comprehensive paper about ISO12647 that fully explain these issues).

For example, see below:

Without optical brighteners' correction (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:



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:



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

Declaring 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 strong optical brighteners.

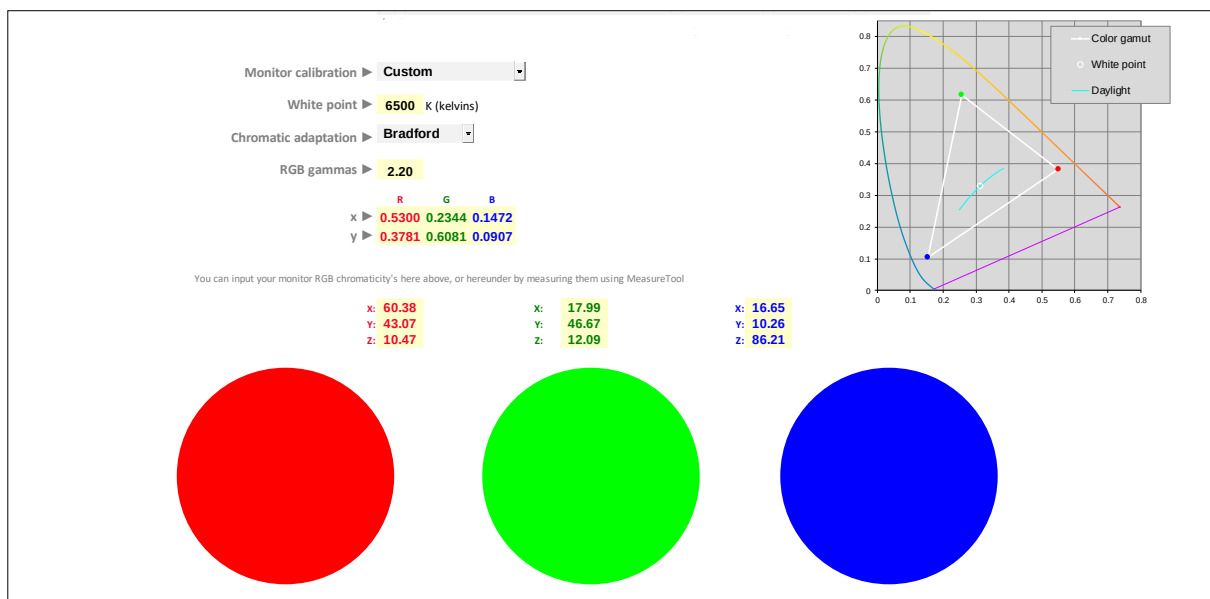
For ISO12647-x aim colors, **M0** or **M1** setting is chosen automatically, based on each aim. But for your measured colors, you must declare in the **Preferences** tab whether you are taking your measurements under **M0** or **M1** conditions.

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



By default, all Lab colors measured and/or displayed by the application 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 colors, you can declare to the application 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 for the calibration step (Following aim calibration values are only given as an example):

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

The commercial monitor calibration application will allow you reaching the arbitrary calibration parameters requested 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 apps.

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

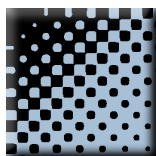
These colorimetric co-ordinates values are sometimes displayed by your monitor calibration application, in the calibration summary, at the end of the calibration and characterization process.

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



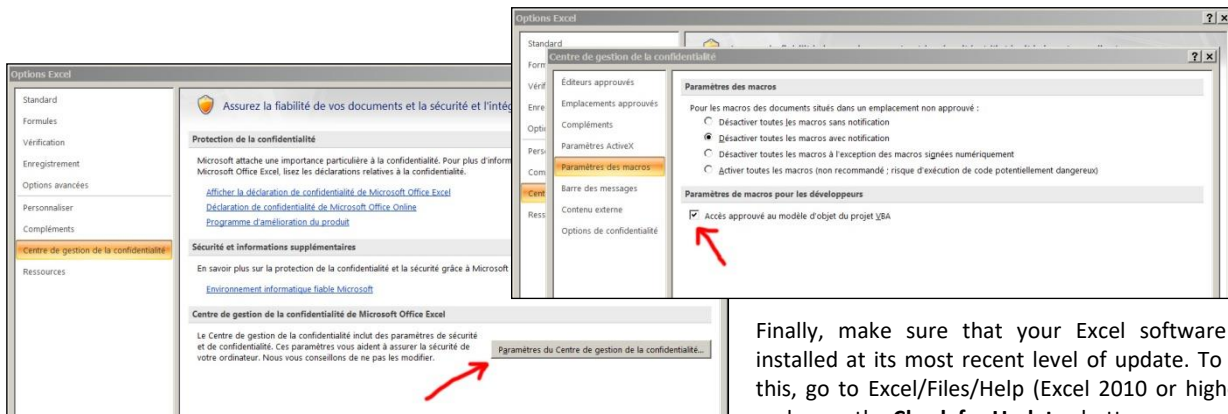


COLORSOURCE

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, Magic_Proof_&_Print_Control 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!

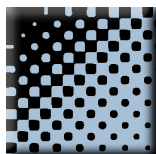
See the procedure in **MagicPrepress' user's guide**, for calculating, from your aim standard's I.C.C profile, your C.I.E. Lab aim colors, as a Fingerprint reference text measurement file.

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

Magic_Proof_&_Print_Control PLATE



MagicPress



MagicPrepress



SPOT_Color_Manager

