



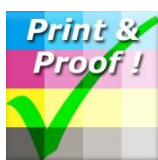
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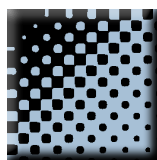
Measuring Colorsource press control and calibration charts using MYIROtools application (For Konica-Minolta MYIRO et FD7)

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Magic_Proof_&_Print_Control



PLATE



MagicPress



MagicPrepress



SPOT_Color_Manager



Measuring Colorsource press control and calibration charts using Konica-Minolta MYIRO or FD7.

1) Format of the measurement files processed by Colorsource applications:

Colorsource applications use conventional measurement files in **CGATS** standardized text format (Committee for Graphic Arts Technologies Standards), which can be produced by a wide range of 45/0° spectrophotometers (**X-Rite i1Pro**, **i1Pro 2**, **i1Pro 3**, **Konica-Minolta Myiro**, **FD7**, **Techkon SpectroDens** etc.), combined with a wide range of color charts measurement software, most of which are free. X-Rite **i1Pro 1, 2 and 3** connected spectrophotometers can be used in their lowest cost **BASIC** versions with **Colorsource** applications.

Spectral measurements, the only complete information about color, allow **Colorsource** applications to calculate all the adjustment instructions you need to properly calibrate, drive and control your CMYK printing presses, and more generally your printing presses using one to ten inks, with or without a CMYK process base.

If your measurement file only contains colorimetric data (e.g., the C.I.E. L*a*b* D50 2° apparent color of each patch in the chart), **Colorsource** applications can use this data, but the results displayed will often be less complete; for example, it is not possible to calculate the density corrections to be made on a press, or to check the formulation of a PANTONE ink, in the absence of spectral data.

2) Proof and press control bars supplied with each Colorsource application:

Of course, you can design and use your own control bars and according reference files, but **Colorsource** application offer, in their distribution's ZIP, a choice of ready-made classic charts. Each press calibration and/or proof control bar we supply includes a **printable** image (e.g., a CMYK TIF or PDF image of the chart), plus:

- The charts' reference file in standard **CGATS** text format, allowing measuring the control bar using free measurement software **MeasureTool** or **i1Profiler**, with X-Rite **i1Pro**, **i1Pro 2** or **i1Pro 3** spectrophotometer,
- The charts' reference file in **MYIROtools** proprietary **XML** format, allowing s measuring the control bar using free **MYIROtools** application, with Konica-Minolta **MYIRO** spectrophotometer (or with **FD7**, which is very unnecessarily expensive!).

Current limitations of Konica-Minolta MYIROtools software (v1.40.0012):

- a) To date, **MYIROtools** software can only measure CMYK press and proof control bars:

MYIROtools therefore allows you using **MYIRO** with Colorsource applications for all classic CMYK four-color printing process and quality control applications. For example, for setting your CMYK presses matching ISO12647-2-3-4-6 CMYK print standards. You can use **MYIRO** with **MagicPress**, **MagicPrepress**, **Magic_Proof_&_Print_Control** applications, plus **PLATE** application for CtP calibration and offset plate control.

Using a connected **MYIRO** spectrophotometer with Colorsource application is much more efficient and far less expensive than using an **FD7**!

But as **MYIROtools** does not know how to measure press calibration or press control charts using more than four inks, it is still better to use an X-Rite spectrophotometer from the **i1Pro** family if you do not print only CMYK.

- b) To date, **MYIROtools v1.40.0012** software does record your CMYK charts measurement files in CGATS spectral format, but care must be taken to avoid a BIG bug that can corrupt your measurement file when saving it.

Actually, Colorsource applications do detect if your measurement file has been corrupted by **MYIROtools**, and we could even correct this corrupted file, but this is not a development priority for us, given the very low number of users of **MYIROtools** and **FD7** spectrophotometers. The number may be so low that bugs remain uncorrected for many years...

Moreover, we consider big companies such as Konica-Minolta should be able to debug **MYIROtools** software they released ... more than 4 years ago!

Anyhow, we shall explain you in this document how to avoid this bug.

3) Examples of reference files in CGATS (i1Pro) and XML (MYIRO) format:

The following example is a simple CMYK control bar that can be used with **MagicPress**, to determine in one single scan the four optimal CMYK print densities to be used for matching the solid CMYK aim colors specified by any public or private CMYK print standard such as ISO12647-2-3-4 or 6.



The associated CGATS reference file for measuring this chart with **MeasureTool** or **i1Profiler** software, (Named **CMYK_RGB.txt** in the ZIP distribution kit), is as follows:

```

LGOROWLENGTH 1
CREATED "1/26/2014" # Time: 14:58
KEYWORD "SampleID"
KEYWORD "SAMPLE_NAME"
NUMBER_OF_FIELDS 6
BEGIN_DATA_FORMAT
SampleID SAMPLE_NAME CMYK_C CMYK_M CMYK_Y CMYK_K
END_DATA_FORMAT
NUMBER_OF_SETS 8
Measurement_mode "gap"
BEGIN_DATA
1 A1 100 0 0 0
2 B1 0 100 0 0
3 C1 0 0 100 0
4 D1 0 0 0 100
5 E1 0 0 0 0
6 F1 0 100 100 0
7 G1 100 0 100 0
8 H1 100 100 0 0
END_DATA

```

Regardless of the software you use to measure this CMYK chart, the resulting spectral measurement file will contain on a same line for each patch: An index number (e.g., 1 for patch **1**), then the name of the patch (e.g., **A1**), then the patch CMYK value (e.g., **100, 0, 0, 0**), then its spectral values (e.g., **0.0685, 0.119, 0.2103, etc.**: With **i1Pro**, **i1Pro2**, or **i1Pro 3**, 36 reflectance values for the 36 visible wavelengths ranging from 380 to 730 nm by 10 nm steps):

```

LGOROWLENGTH 1
CREATED "11/16/2020" # Time: 12:10
INSTRUMENTATION "Eye-One Pro"
MEASUREMENT_SOURCE "WhiteBase=Absolute Filter=No"
KEYWORD "SampleID"
KEYWORD "SAMPLE_NAME"
NUMBER_OF_FIELDS 42
BEGIN_DATA_FORMAT
SampleID SAMPLE_NAME CMYK_C CMYK_M CMYK_Y CMYK_K nm380 nm390 etc... nm710 nm720 nm730
END_DATA_FORMAT
NUMBER_OF_SETS 8
BEGIN_DATA
1 A1 100 0 0 0 0.0685 0.119 0.2103 ... 0.4778 0.5704 0.669
2 B1 0 100 0 0 0.0959 0.093 0.1027 ... 0.1661 0.1828 0.1946
3 C1 0 0 100 0 0.0479 0.0384 0.0314 ... 0.0316 0.0315 0.0338
4 D1 0 0 0 100 0.0114 0.0118 0.0137 ... 0.0181 0.0191 0.0196
5 E1 0 0 0 0 0.3509 0.3998 0.4931 ... 0.9202 0.9836 1.0024
6 F1 0 100 100 0 0.0271 0.0215 0.0183 ... 0.0217 0.0222 0.024
7 G1 100 0 100 0 0.0191 0.0226 0.0291 ... 0.0411 0.0447 0.052
8 H1 100 100 0 0 0.0271 0.0456 0.0723 ... 0.1507 0.1781 0.2051
END_DATA

```



Below is the **XML** reference file for measuring the same CMYK control bar using **MYIROtools** software (Named **CMYK_RGB.xml** in the ZIP distribution kit):

```
<?xml version="1.0" encoding="UTF-8"?>
<Data Version="05.00" Application="MYIROtools" Identifier="ChartDefinition">
  <Chart UUID="{https://color-source.net: Best software for Print Houses}" UNIT="0" ChartName="CMYK_RVB" Recog="etc. ...=" "">
    <Sheet Height="5650" AreaCount="1" PatchCount="8" BarcodeLeftTopX="0" Page="1" Width="11200" etc. ="0">
      <Area PatchHeightGap="1200" PatchHeight="1150" LeftTopX="1500" Number="1" PatchCount="8" etc....="2300">
        <Patch ColorFormat="CMYK" ColorValue4="0" Row="1" ID="1" ColorValue2="0" Column="1" ColorValue3="0" ColorValue1="10000"/>
        <Patch ColorFormat="CMYK" ColorValue4="0" Row="1" ID="2" ColorValue2="10000" Column="2" ColorValue3="0" ColorValue1="0"/>
        <Patch ColorFormat="CMYK" ColorValue4="0" Row="1" ID="3" ColorValue2="0" Column="3" ColorValue3="10000" ColorValue1="0"/>
        <Patch ColorFormat="CMYK" ColorValue4="10000" Row="1" ID="4" ColorValue2="0" Column="4" ColorValue3="0" ColorValue1="0"/>
        <Patch ColorFormat="CMYK" ColorValue4="0" Row="1" ID="5" ColorValue2="0" Column="5" ColorValue3="0" ColorValue1="0"/>
        <Patch ColorFormat="CMYK" ColorValue4="0" Row="1" ID="6" ColorValue2="10000" Column="6" ColorValue3="10000" ColorValue1="0"/>
        <Patch ColorFormat="CMYK" ColorValue4="0" Row="1" ID="7" ColorValue2="0" Column="7" ColorValue3="10000" ColorValue1="10000"/>
        <Patch ColorFormat="CMYK" ColorValue4="0" Row="1" ID="8" ColorValue2="10000" Column="8" ColorValue3="0" ColorValue1="10000"/>
      </Area>
    </Sheet>
  </Chart>
</Data>
```

The spectral **CGATS** measurement file produced by **MYIROtools** will have a slightly different content, but it does contain all the necessary information for Colorsource **MagicPress** (or **MagicPrepress**) application:



CGATS.17																	
ORIGINATOR	"MYIROtools"																
DESCRIPTOR	"MYIROtools CGATS export file"																
CREATED	"2023-05-24T19:14:18"																
INSTRUMENTATION	"KONICA MINOLTA, INC. MYIRO-1, Serial No. 10001972"																
MEASUREMENT_SOURCE	"M1"																
WEIGHTING_FUNCTION	"ILLUMINANT,Auto"																
WEIGHTING_FUNCTION	"OBSERVER,2"																
DATA_FORMAT_IDENTIFIER	"nm380"																
Etc...																	
DATA_FORMAT_IDENTIFIER	"nm720"																
DATA_FORMAT_IDENTIFIER	"nm730"																
NUMBER_OF_FIELDS	47																
NUMBER_OF_SETS	8																
BEGIN_DATA_FORMAT																	
SAMPLE_ID	CMYK	CMYK	CMYK	CMYK	XYZ_X	XYZ_Y	XYZ_Z	LAB_L	LAB_A	LAB_B	nm380	nm390	etc...	nm710	nm720	nm730	
END_DATA_FORMAT																	
BEGIN_DATA																	
	1	100	0	0	0	0.069	0.119	0.21	0.345	0.478	0.57	0.669	0.7339		0.0333	0.0353	0.0462
	2	0	100	0	0	0.096	0.093	0.103	0.134	0.166	0.183	0.1946	0.1875		0.787	0.7909	0.8046
	3	0	0	100	0	0.048	0.038	0.031	0.031	0.032	0.032	0.0338	0.0419		0.8794	0.8831	0.8897
	4	0	0	0	100	0.011	0.012	0.014	0.016	0.018	0.019	0.0196	0.02		0.0389	0.0418	0.0446
	5	0	0	0	0	0.351	0.4	0.493	0.707	0.92	0.984	1.0024	0.9865		0.9345	0.937	0.9408
	6	0	100	100	0	0.027	0.022	0.018	0.02	0.022	0.022	0.024	0.0269		0.7925	0.7967	0.8101
	7	100	0	100	0	0.019	0.023	0.029	0.036	0.041	0.045	0.052	0.0644		0.0351	0.037	0.0478
	8	100	100	0	0	0.027	0.046	0.072	0.113	0.151	0.178	0.2051	0.2122		0.0416	0.0429	0.0535
END_DATA																	

4) Measurement of a press calibration bar over several copies, for computing press correction curves from the average value of charts' measurements on several copies:

In the previous example, measuring a single CMYK chart is sufficient, since **MagicPress** calculates the four optimal CMYK density corrections to be made from a single measurement of any CMYK chart including solid colors, printed with any CMYK densities.

But when using **MagicPrepress** application in order to match a printing standard, we recommend measuring the press calibration chart not on a single, but on several printed copies, in order to compute the press correction curves from an average measurement that characterizes the average press behavior. This is why each press calibration bar dedicated to **MagicPrepress** is supplied with several reference files, which allow measuring the press calibration chart on a single or on several printed copies.

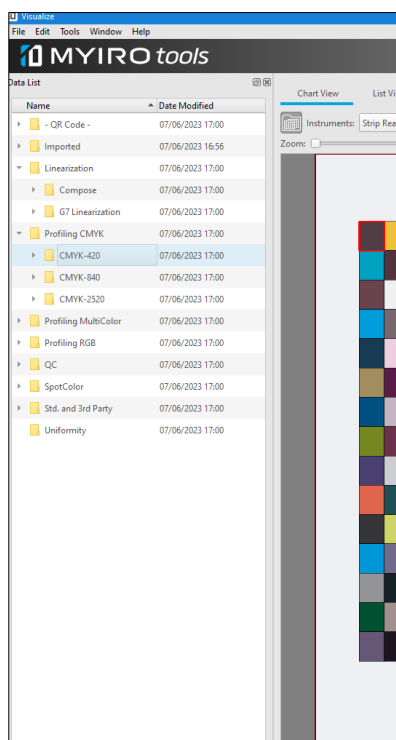
For example, the following press calibration chart is very convenient for working on web offset presses. It can be used with **MagicPress** (a single scan is enough for computing the optimal CMYK print densities), and with **MagicPrepress** (You can scan this chart on 15 different printed copies, in order to establish or update your CMYK plates correction curves, taking into account the average of 15 charts measurements):



- The reference file named **CMYK_offset_1_line_32_patches.xml** allows measuring this chart once, on a single copy, for computing your optimal CMYK print densities, using **MagicPress** (Or using **MagicPrepress** if you do not own **MagicPress**),
- The reference file named **CMYK_offset_1_line_32_patches_15X.xml** allows measuring this same chart **15** times, on 15 different copies. (15 x 32 patches = 480 patches in total).

5) Practical measurement of proof control bars and press calibration charts using MYIROtools software (with Konica-Minolta MYIRO or FD7 spectrophotometers):

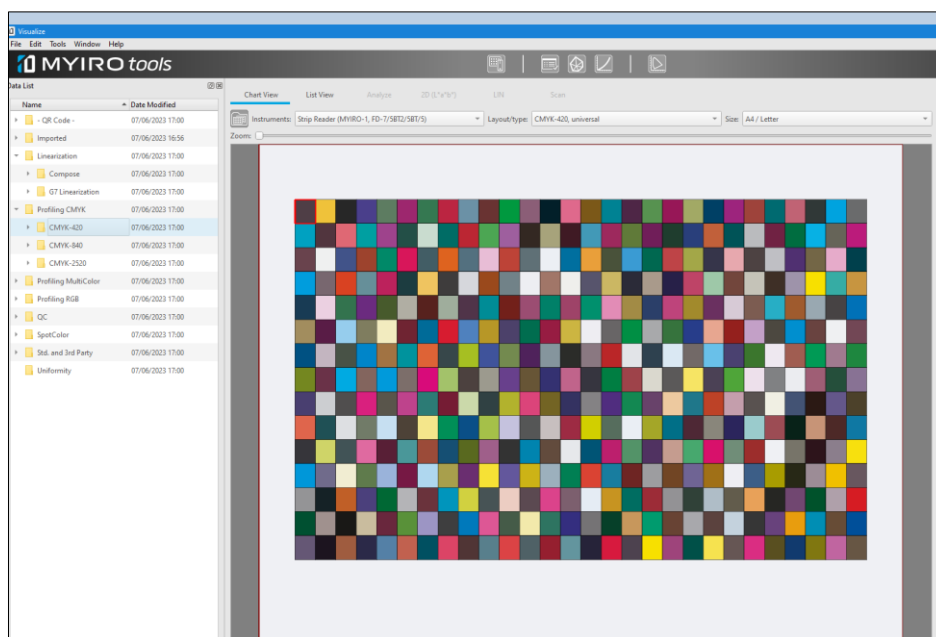
Download link of **MYIROtools** for Windows: <https://www.myiro.com/fr/downloads>



5-1) Charts and reference files installed by default with MYIROtools:

Once installed, the **MYIROtools v1.40.0012** software has only offered, for almost four long years, to print and measure a very limited choice of pre-programmed CMYK and RGB patterns, intended either for the characterization of presses or color printers by RGB or CMYK ICC profiles, or for quality control (Measuring a few proof CMYK control bars):

- A few CMYK linearization charts,
- 3 RGB charts offering 420, 840 and 2520 patches,
- 3 CMYK charts offering 420, 840 and 2520 patches,
- A few classic third party CMYK targets (ECI2002 etc.)
- A few classic CMYK control bars (Fogra, G7/IDEAlliance etc.)
- And since a few days only (**v1.41.0008**) a very limited number of N-Color charts... that need to be debugged

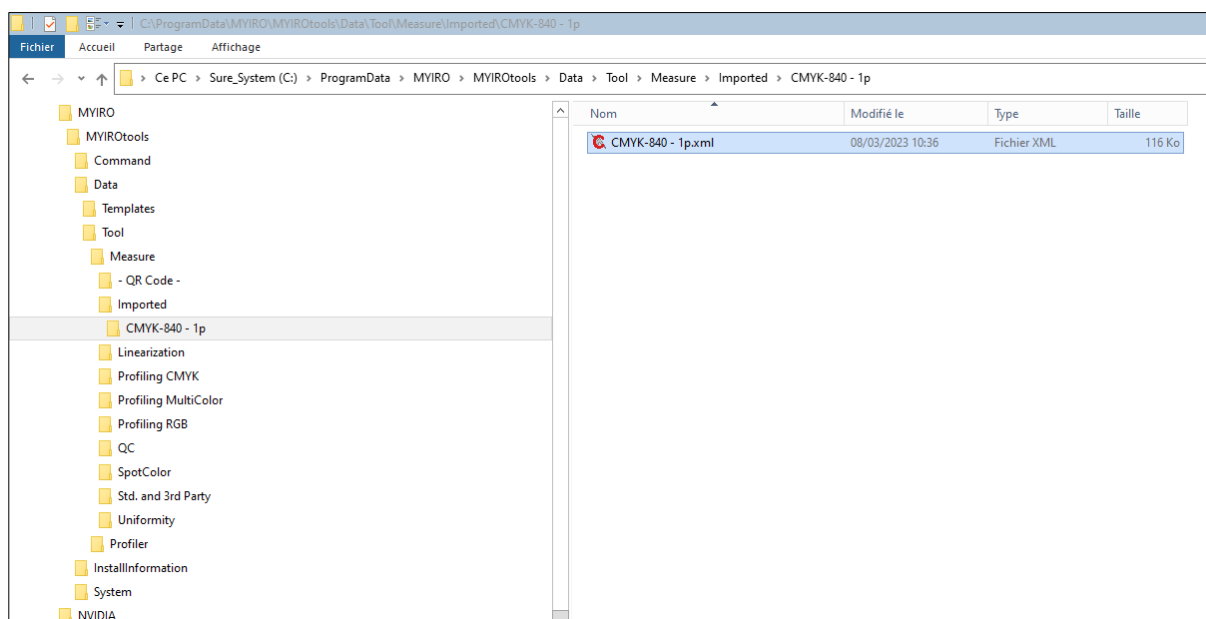


Of course, professional users often need to measure their own CMYK test charts with **MYIROtools**, including all or part of the test charts dedicated to Colorsource press calibration applications.

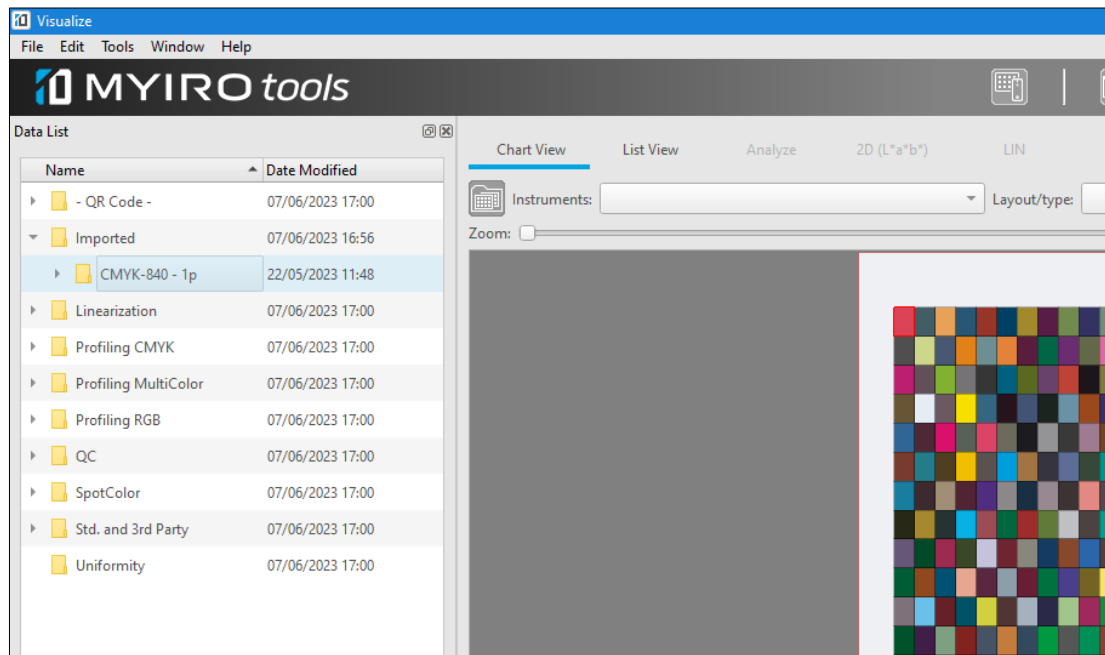
In this scope, **MYIROtools** allows importing third-party CMYK test charts, strangely specified **not by the classic and convenient CGATS format**, but by **XML files, in a proprietary and undocumented format!**

All imported test charts specified by files in this XML format must be placed in the following Windows hidden directory: <C:\ProgramData\MIYRO\MIYROtools\Data\Tool\Measure\Imported>

An example of a CMYK chart specified by an xml file is provided when installing **MYIROtools**: This sample file is named **CMYK-840 - 1p.xml**, and placed in a sub directory having same root name **CMYK-840 - 1p**:



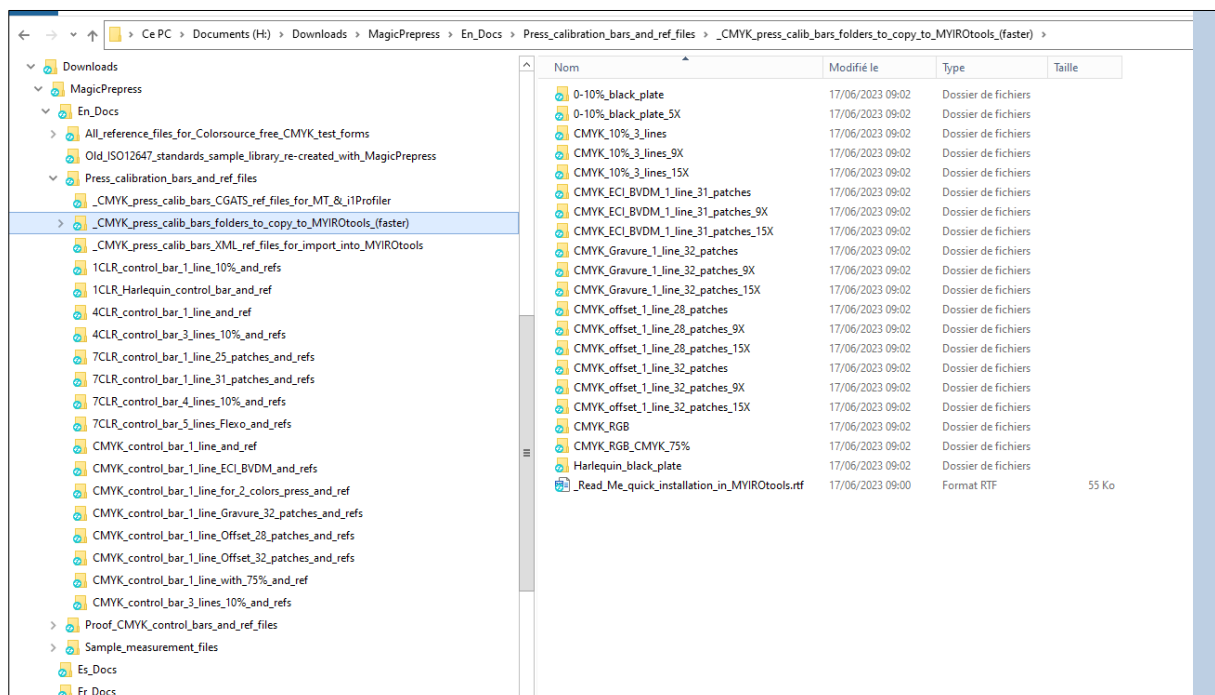
This **CMYK-840 - 1p** imported pattern supplied as an example can be measured by **MYIROtools** application, by selecting it in the **Imported** section of **MYIROtools**:



Colorsource has developed a program that automatically converts any CMYK chart specified by a standard CGATS reference file, into an xml reference file with **MYIROtools**' proprietary XML format. Therefore, **Colorsource** now provides all CMYK charts with their reference files both in **CGATS format for X-Rite** users, and **XML format for Konica-Minolta** users.

For faster installation, **Colorsource** applications distribution ZIPs provide as well the CMYK charts references for **MYIROtools** all in a single directory. For example, if you unzipped **MagicPrepress.zip** in your **Downloads** directory, you will find as below all the sub directories containing the necessary XML references in:

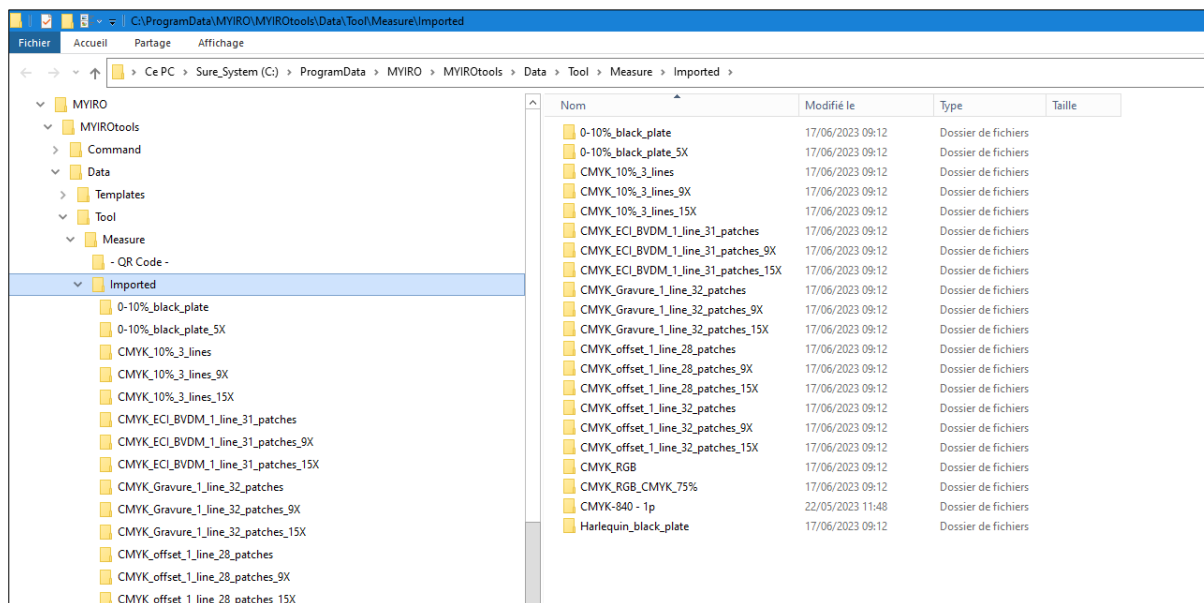
[H:\Downloads\MagicPrepress\En_Docs\Press_calibration_bars_and_ref_files_CMYK_press_calib_bars_folders_to_copy_to_MYIROtools_\(faster\)](H:\Downloads\MagicPrepress\En_Docs\Press_calibration_bars_and_ref_files_CMYK_press_calib_bars_folders_to_copy_to_MYIROtools_(faster))



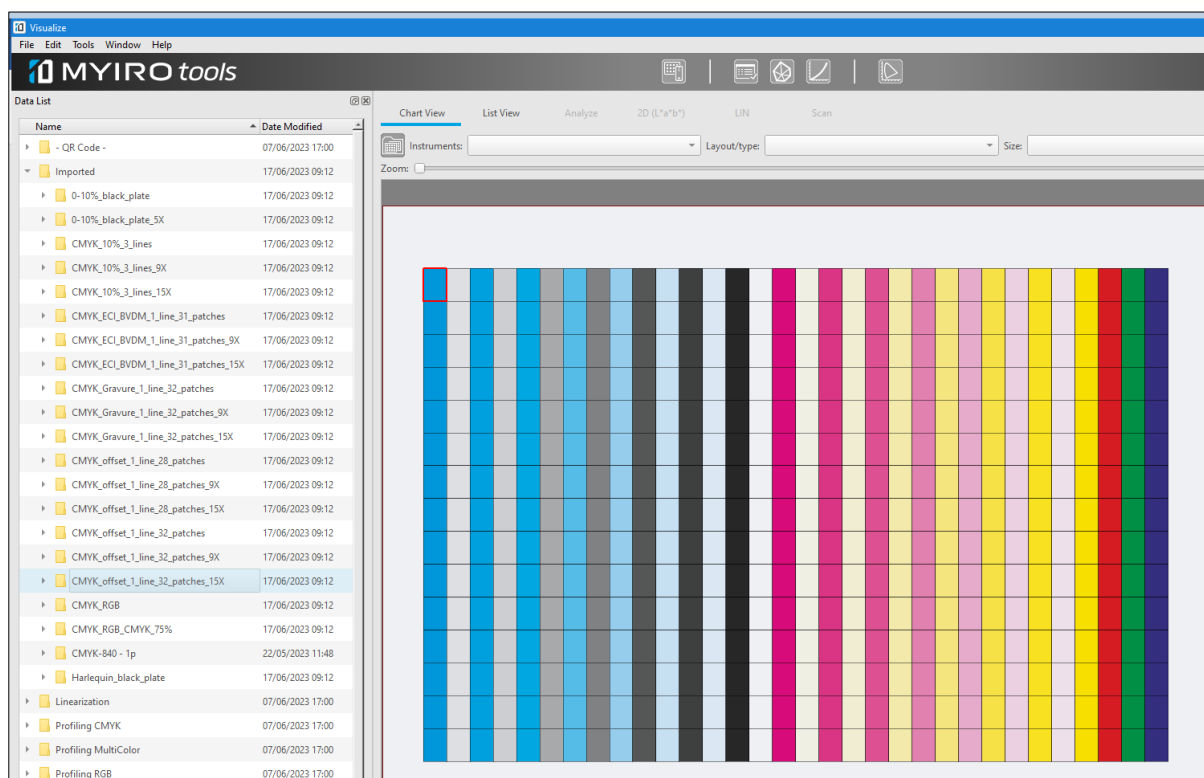
5-2) Installation of the XML reference files in MYIROtools application for measuring Colorsource CMYK control bars and press calibration charts:

All you have to do is copy and paste (or drag and drop) the xml mirror directories to the MYIROtools Imported charts folder: <C:\ProgramData\MYIRO\MYIROtools\Data\Tool\Measure\Imported>

This gives you the following:

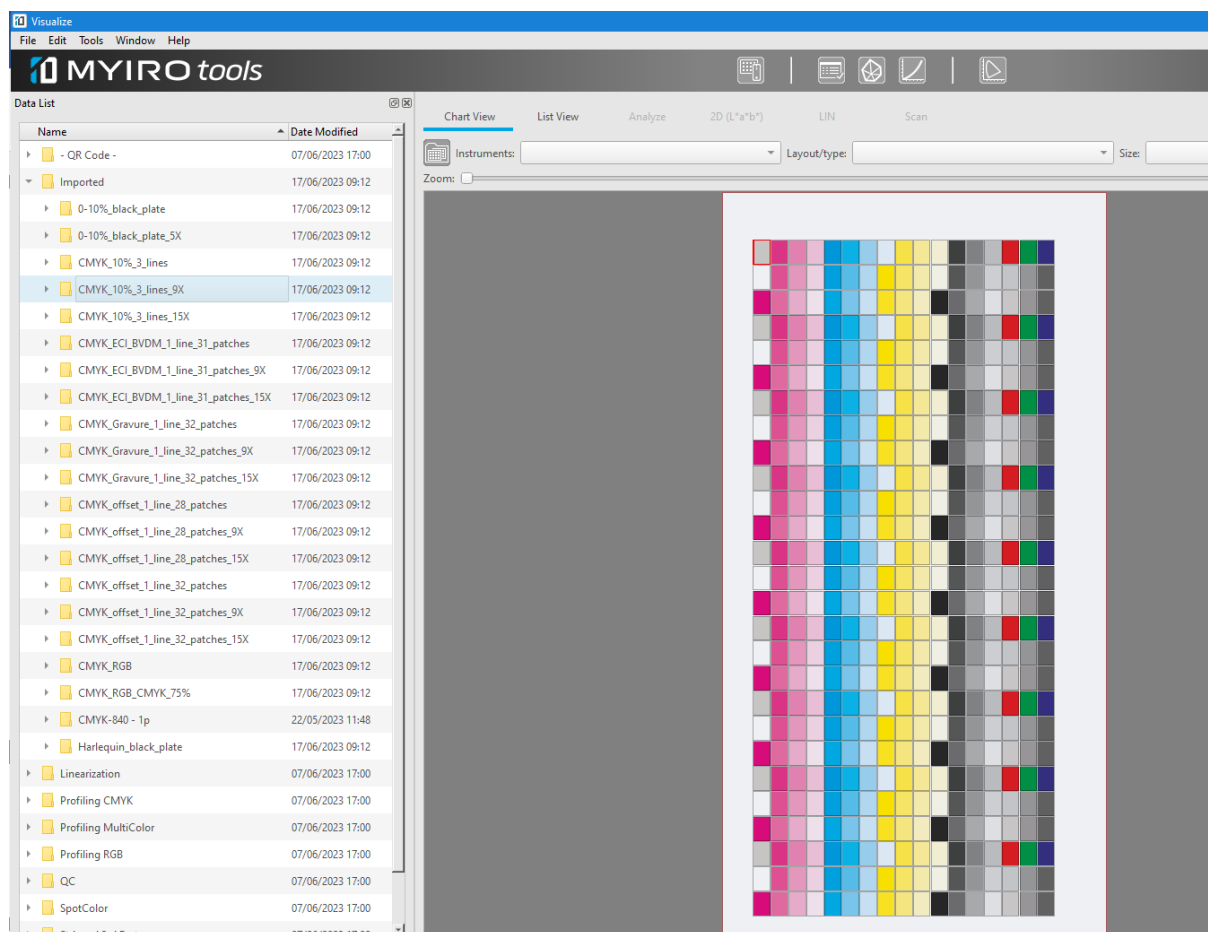
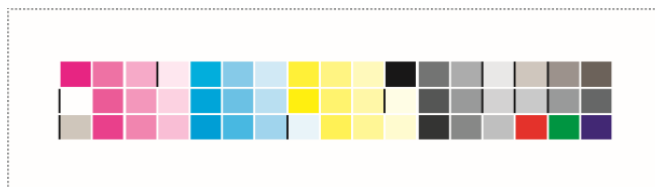


Then if you select, for example as below, the imported chart named **CMYK_offset_1_line_32_patches_15X**, you can measure on 15 copies the following offset calibration chart offering 32 patches on a single line:



6) MYIROtools v1.40.0012 software bug when saving measurement files made in CGATS format:

For example, let us measure as below our calibration chart offering 10% steps on 3 lines, and this on 9 copies printed in a row, by choosing as below the **CMYK_10%_3_lines_9X** reference file:



When saving your measurement file in CGATS format, two different recordings may occur (!):

- Either you save your measurement file in CGATS format as soon as your measurements are finished **AND** you keep the default file name proposed by **MYIROtools** application:
For example, **MYIROtools** saves your CGATS spectral measurement file as **CMYK_10%_3_lines_9X_00002.txt**,
- Either you do not save your measurement file in CGATS format as soon as your measurements are finished: You select a different window on your PC desktop before returning to **MYIROtools** window, **OR** you save your measurement file as soon as you finish reading it, but you type a file name different from the default file name **MYIROtools** suggested, for example you name your CGATS measurement file "**My_Measurments_over_9_copies.txt**",

In both cases, the measurement files recorded by MYIROtools v1.40.0012 have a BAD index column!
(And this bug remains NOT corrected in the just-released **v1.41.0008** version).

Free **Colorlab** software allows you to generate your CMYK printable chart from any CGATS text reference file (Do **Filter/Layout and Format/Test Chart Define**). **Colorlab** also allows you generating printable N-CLR charts from N-CLR text reference files, with 4 to 8 colors: The generated chart is a TIF with alpha channels to be imported in Photoshop and then converted into multilayer .eps. Simply name each layer and assign it a Lab color for a more pleasant or realistic display.

Download link of the **Colorlab** software:

<https://www.xrite.com/service-support/downloads/c/colorlab-utility-freeware-v281x>

8) Create custom color targets to be used as Fingerprints by MagicPress, MagicPrepress or Magic_Proof_&_Print_Control, from CMYK or N-Colors I.C.C. profiles:

Colorsource applications allow you choosing for aim standard any of the **ISO 12647-2, 12647-3, 12647-4, 12647-6, G7/IDEAlliance**, or **WAN-IFRA** public CMYK print standards.

Colorsource applications allow you as well specifying **your own private CMYK or N-Colors aim printing standards** by specifying them by a **Fingerprint**.

A **Fingerprint** is a CMYK or N-CLR press characterization file that can be declared to be the aim standard to be matched. A **Fingerprint** measurement file can be established by measuring a reference press characterization test chart (Averaging a few press' characterization measurement files is even better).

A **Fingerprint** measurement file can also be computed from any existing CMYK or N-CLR press I.C.C. profile, such as for example "**Euroscale.ICC**" or "**USSheetFed_coated.icc**" CMYK profiles.

Colorlab v2.8.13 application allows computing for any CMYK or N-Colors chart specified by its CGATS text reference file, the Lab colors that will be obtained on paper: This makes it easy to obtain the colors in the form of a CGATS text file C.I.E. Lab targets any frame for any ICC profile.

Of course, this also works for the chart reference files supplied with **Colorsource** applications, which allows you to very quickly calculate your **aim** colors according to any ICC profile for **MagicPress, MagicPrepress** and **Magic_Proof_&_Print_Control** applications, then use these colors in their **Fingerprint** tab.

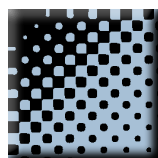
Download link of the **Colorlab** software:

<https://www.xrite.com/service-support/downloads/c/colorlab-utility-freeware-v281x>

Magic_Proof_&_Print_Control



PLATE



MagicPress



MagicPrepress



SPOT_Color_Manager

