Equipment

User's Guide.
Prinect Spherical SPM

HEIDELBERG

Table of Contents

About This Documentation

This documentation applies to the "Spherical SPM" software license.

Note: Remember that the Online Help may not always be up-to-date with the current version of the software. Consequently, no claims can be made for changes to the software and documentation.

Structure of this Documentation

This documentation describes the range of functions of "Spherical SPM".

You will find information about the following topics in the various chapters:

- Chapter "Product Description", page 7

  This chapter provides you with an overview of the measuring device and the licenses.

- Chapter "Measure with the Color Toolbox", page 13

  This chapter describes how to measure with the Prinect Color Toolbox and the Konica Minolta CM-26d.

- Chapter "Fluorescence Measurement", page 21

  This chapter describes the fluorescence measurement to be run the first time the device is used and at regular intervals.

- Chapter "Measuring in Cockpit/Portal", page 29

  This chapter describes how to measure with the Konica Minolta CM-26d in Prinect Cockpit or the Color Library.

What you should already know

We assume that you are familiar with the Windows® operating systems and with the basic procedure for measuring colors.

Further Documentation

You can find more information in the following documentation:

- in the Online Help of the Prinect Color Toolbox
- in HEIDELBERG Prinect Licensing - User's Guide

Symbols and Styles

The following typographical conventions are used in this manual:

- References to other chapters and sections are blue (on the screen) and underlined.

  Example: See "Symbols and Styles", page 6.

- Quotes are used to indicate menus, folders, names of functions, hardware conditions, switch settings, system messages, etc.

  Example: Set the switch to "off".

- Menus, functions and sub-functions are separated by ">".

  Example: Select "File > Open...".

- A plus sign is used to indicate that several keys have to be pressed at the same time.

  Example: Press "Alt + A".

Important Information

Important information in the text is marked by symbols at the side which are used as follows:

Warning: Contains information that must be taken into consideration to protect the user from injury.

Caution: Contains information that must be taken into consideration to prevent damage to hardware or software.

Note: Contains important general or additional information on a specific topic.

Prerequisite: Lists requirements which must be fulfilled before the steps which follow can be performed.

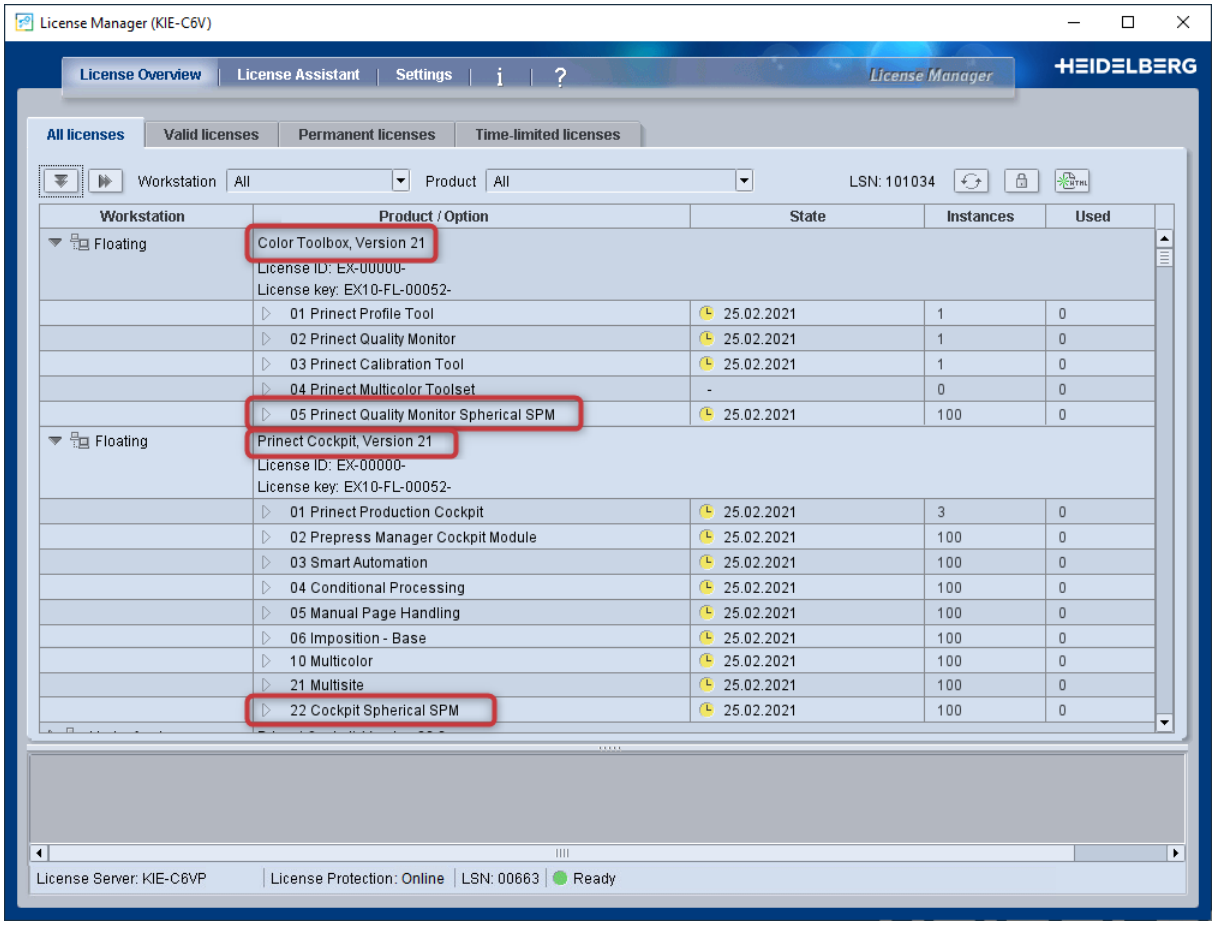
With the additional license option "Prinect Quality Monitor Spherical SPM" or "Cockpit Spherical SPM", you can measure data using the portable Konica Minolta CM-26d spherical spectrophotometer with the Prinect Color Toolbox and the Prinect Cockpit as of version 2021.

Glossy colors (e.g. gold varnish) or foil printing are areas of application.

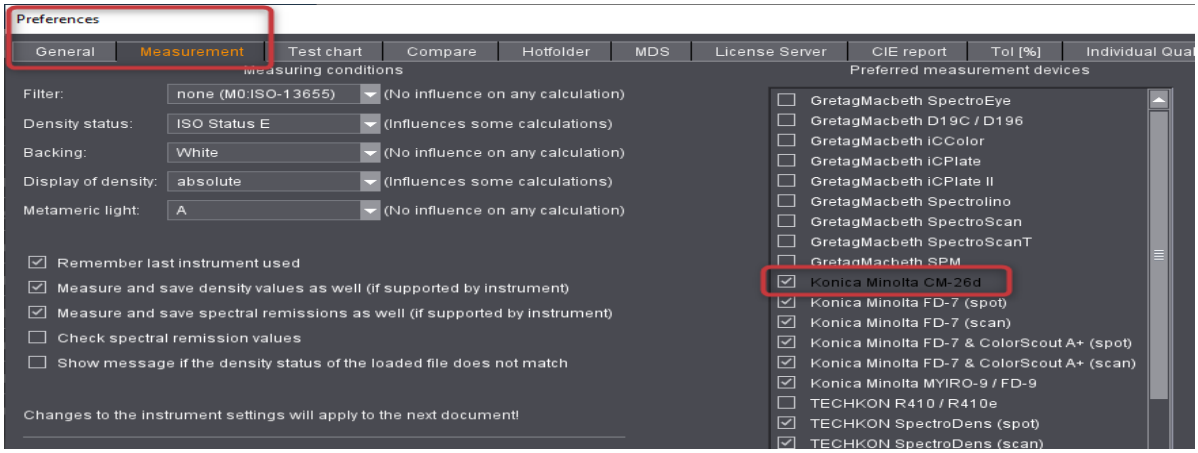
License(s)

The additional license option is available for both the Prinect Color Toolbox and the Prinect Cockpit.

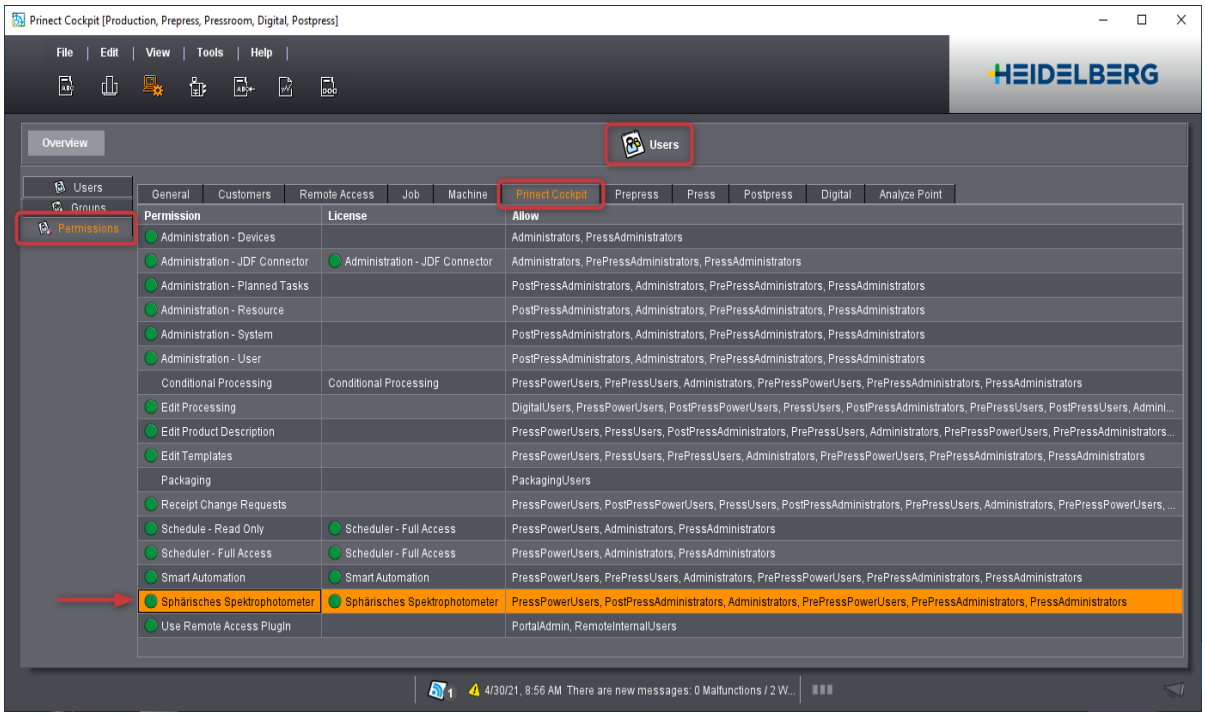
In the Prinect License Manager, you can check whether one of the licenses is available and enabled:



If the license for the Prinect Color Toolbox is activated, you can enable the Konica Minolta CM-26d in the list of available measuring devices ("Preferences" > "Measurement" tab). Without an active license, it is not listed.



In the Prinect Cockpit, in "Administration > Users" you can see in "Permissions" in the "Prinect Cockpit" tab whether you can measure with the Konica Minolta CM-26d:



Brief Overview of the Konica Minolta CM-26d Measuring Device

The horizontal design makes it easy to measure flat or large patterns with the portable Konica Minolta CM-26d spherical spectrophotometer. Measurements are possible including gloss coating (SCI) and excluding gloss coating (SCE).

The measurement geometry that is the best for you to use depends on the target statement of the measurement result.

SCE: Measurement is to meet the visual impression, i.e. the measurement result depends on the surface and gloss to reflect the overall impression.

SCI: Regardless of the surface, color changes are to be assessed; that is why the overall reflection of the material must be captured, regardless of gloss or texture.

Overview of the Main Controls

(1) Display

(2) OK button

(3) On/Off button

(4) USB connection to the computer

(5) Tile for fluorescence measurement with measuring surfaces 1 and 2

(6) Holder

(7) Tile for white calibration

(8) Measure button (on both sides)

(9) Viewfinder for easier positioning on the color area to be measured

Start the Measuring Device

1. Switch on the connected measuring device with the on/off button.
2. Confirm the message that may display with the OK button.

You will be prompted to run white calibration. You can choose between white calibration with or without zero calibration. If the measuring device was not used for a long period of time, we recommend also running zero calibration to avoid influence from scattered light.

Note: You can also skip the calibration process by pressing the Esc button on the measuring device. You can individually set the intervals at which white calibration must run in the menu of the measuring device. If necessary, you will also receive a message in the software concerned, prompting you to calibrate the measuring device.

3. Use the arrow buttons to select one of the two options and press the OK button on the measuring device.

4. Zero calibration: For zero calibration, simply hold the measuring device under the table and press one of the two measure buttons.

Note: Alternatively, you can use the zero calibration holder available from Konica Minolta.

5.White calibration: Remove the cover from the white tile of the holder and place the measuring device on the holder.

6. Press one of the two measure buttons.

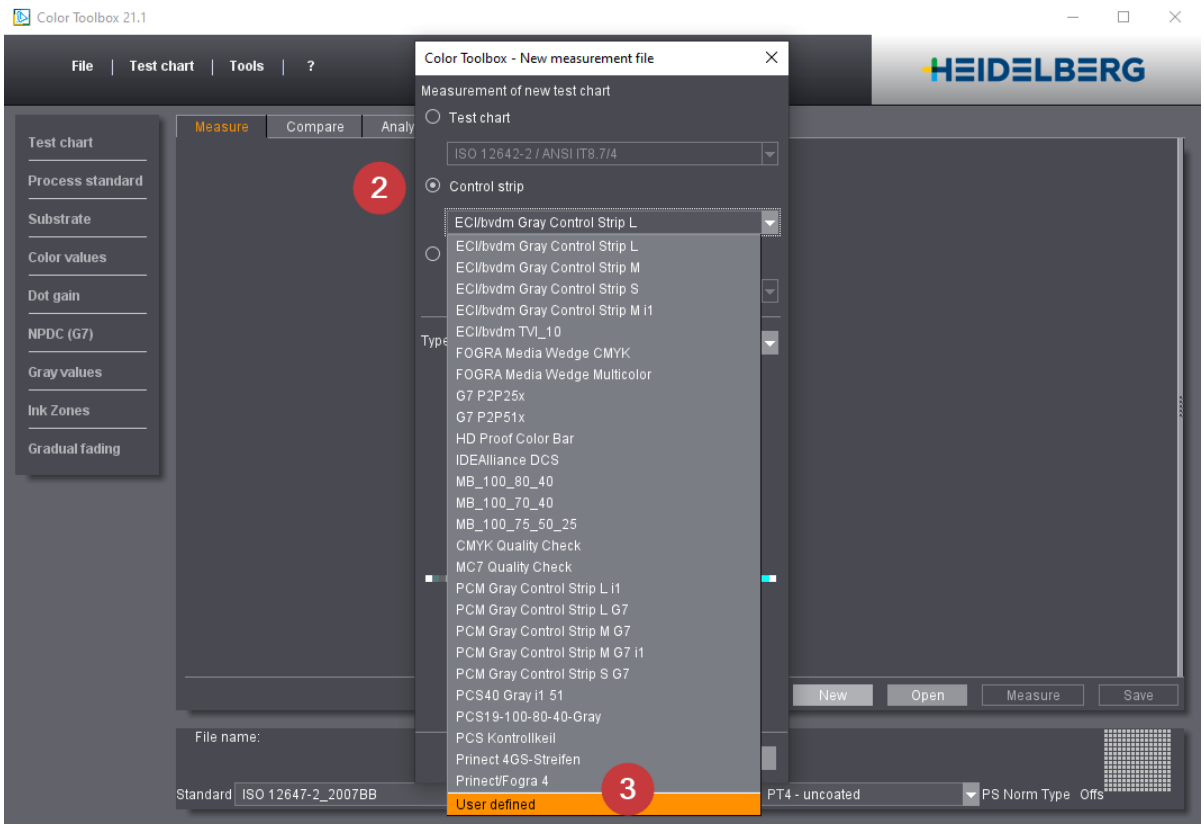
The measuring device is then ready for measurements.

Run New Measurement

Prerequisites:
- Prinect Color Toolbox as of version 2021
- "Prinect Quality Monitor Spherical SPM" license option enabled
- The measuring device is connected to the computer via a USB cable and switched on (see "Start the Measuring Device", page 10).

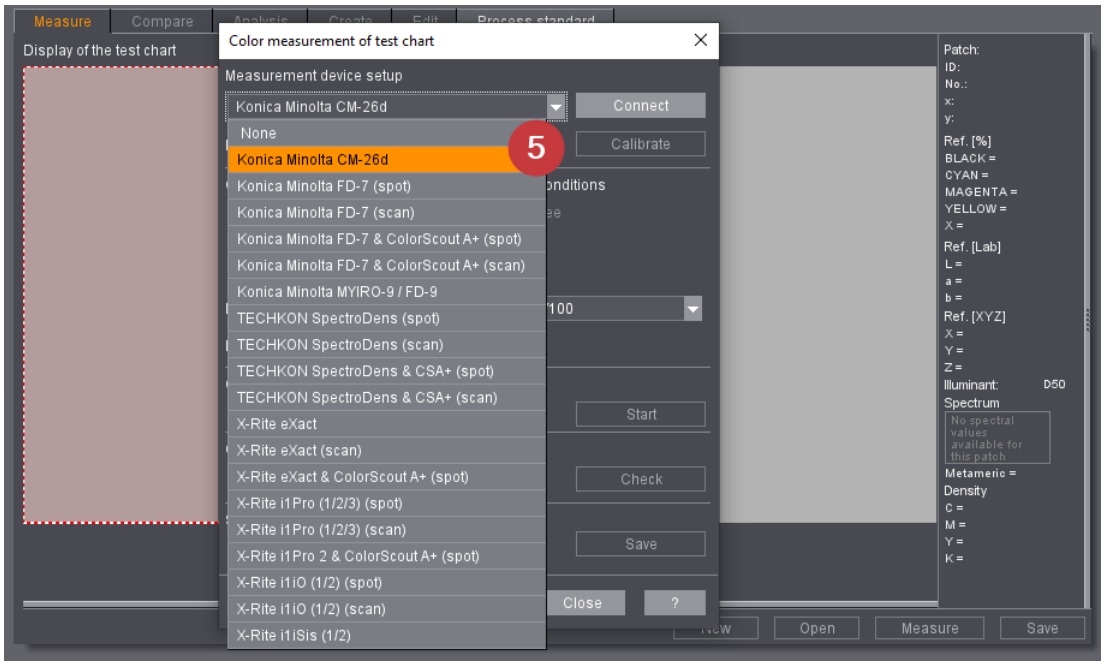
During the startup, the Prinect Color Toolbox checks to see whether there is a license for it (if not, the measuring device will not display in the list of measuring devices). The measuring device must be enabled in the Preferences in "Measurement > Preferred measurement devices" before it is first used.

1. Select "New" in the "Measure" tab.
2. Enable "Control strip" in the "New measurement file" dialog.

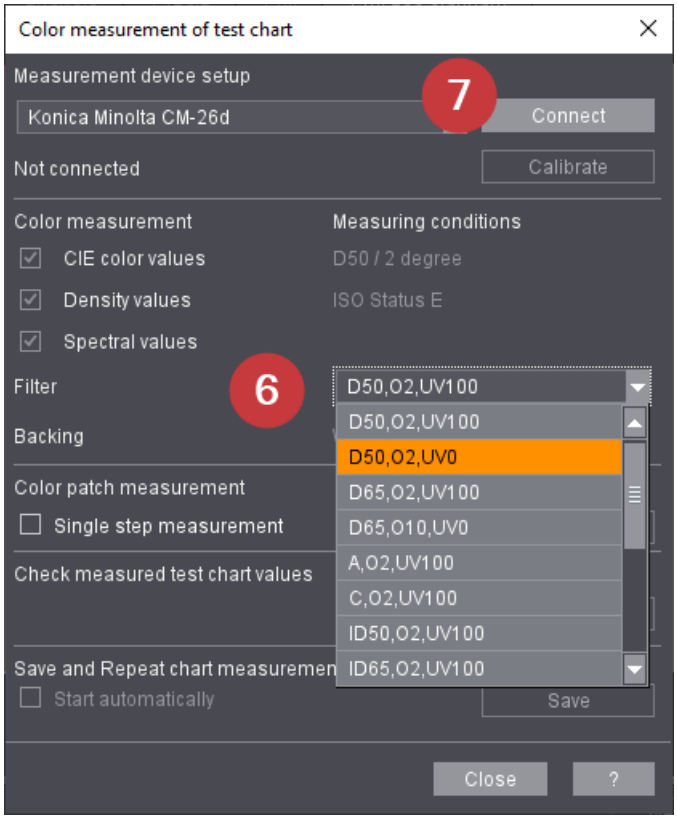


3. Select "User defined" from the list and then open the reference file you want.
4. Close the dialog with "OK" and click "Measure".

5. Select Konica Minolta CM-26d from the list of measuring devices.



6. Select the measurement condition you want from the list (for more information about the measurement conditions, see "Customize Measurement Conditions", page 18).



7. Click "Connect".

- Status = "Ready": You can start measuring.

  If the measuring device was already calibrated when you switch it on, you can begin measuring the color patches as soon as the "Ready" status displays. White calibration is necessary only if this step was skipped when the measuring device was switched on or if the measuring device needs to be recalibrated.

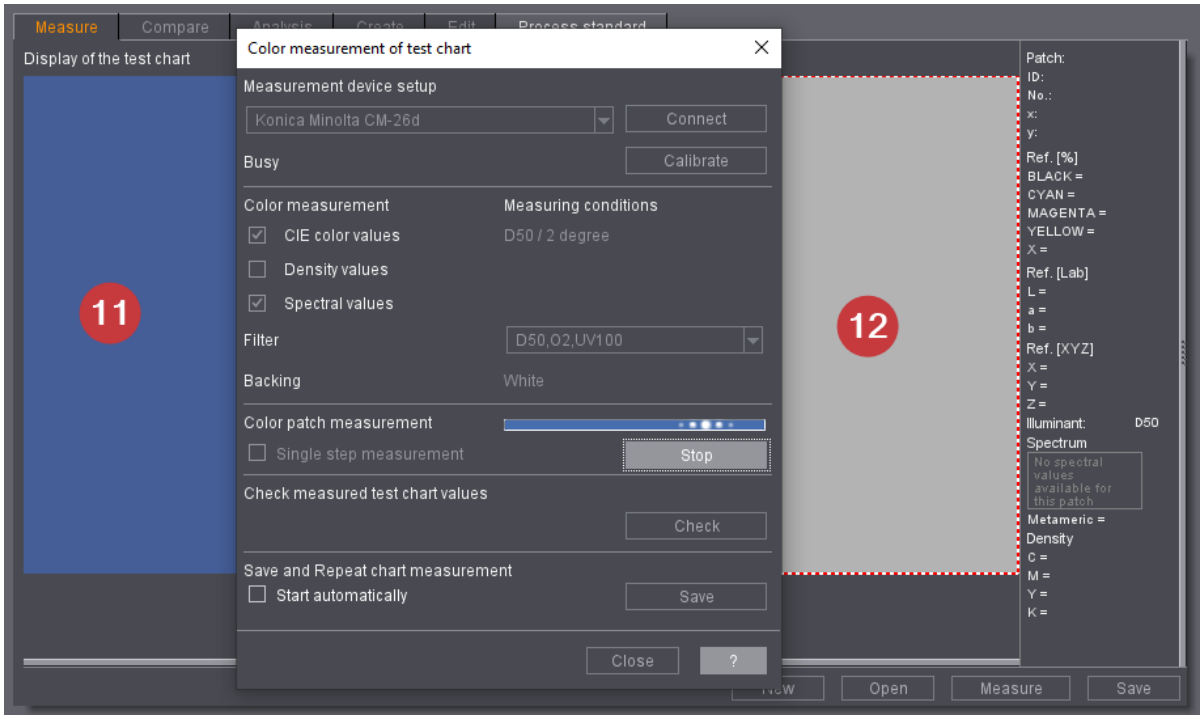
- Status = "Not calibrated": You will need to run white calibration and you may need to also run zero calibration. Click "Calibrate". How to handle the measuring device is described in: "Start the Measuring Device", page 10, from step 4 on.

Note: For the Konica Minolta CM-26d, a fluorescence check must be run at regular intervals. You will receive a message after connection, telling you that this check is pending. You can postpone doing this by clicking "Cancel" in the message. We recommend that you run the fluorescence check at least every 7 days. More details can be found in "Fluorescence Measurement", page 21.

8. Click "Start".
9. Position the measuring cell on the color patch. If necessary, you can pull the shutter over the measuring cell for positioning. However, during measurement, the shutter must be closed.

10. Press the measure button on the measuring device.

11. The measured color displays in the preview.

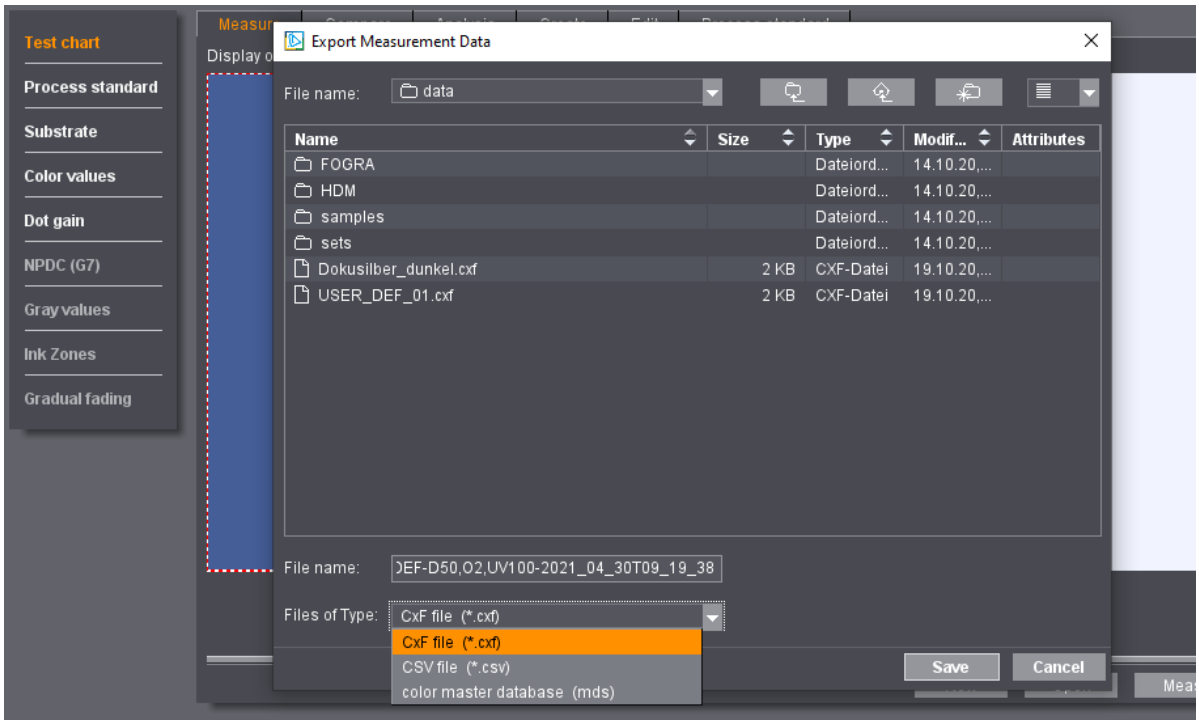


12. Now measure all the other color patches, if necessary.
13. Click "Stop" and save the color data file.

Data Export

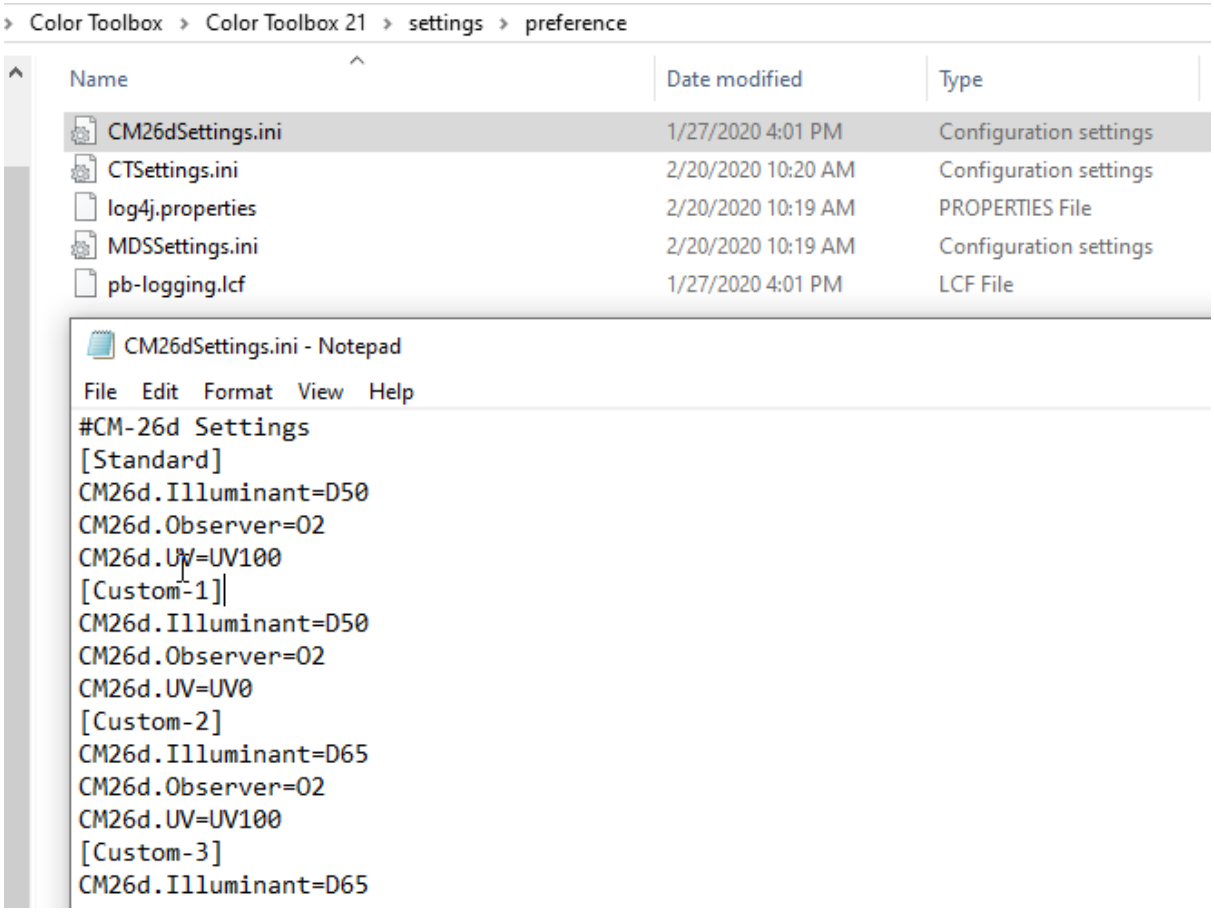
If necessary, you can also transfer the measured color values to the Cockpit:

- Click "File > Export Measurement Data" and select "CxF file" as the file type. You can then import the colors into the color table with Cockpit or into the Color Library in Portal (depending on how the your system manages the color master data).



Customize Measurement Conditions

You can customize the settings for the measurement conditions to your needs via a special configuration file: "…/Color Toolbox/Color Toolbox 2x/settings/preference/CM26dSettings.ini"



This is where you can define various user-specific combinations of illuminant, viewing angle and UV content (0% or 100%). The program does not need to be restarted to make the changes visible in the Color Toolbox after saving the configuration file. It is enough to close the "Color measurement of test chart" dialog and open it again. You can then select all the measurement conditions stored in the configuration file from the list.

Important: Be sure to only create combinations of measurement conditions that are supported by the measuring device as per device specification.

Possible parameters for the Color Toolbox CM26dSettings.ini:

	Item	**Permitted data**	
Illuminant	CM26d.Illuminant=	A, C, D50, D65, F2, F6, F7, F8, F10, F11, F12, ID50, ID65	
Viewing angle	CM26d.Observer=	02, 010	Observer angle 2 or observer angle 10
UV content	CM26d.UV=	UV0, UV100	0% UV or 100% UV

Fluorescence Reference Values

Note: The following description is relevant only when working with the Prinect Color Toolbox.

When using the Konica Minolta CM-26d for the first time, a measurement must be run to determine the fluorescence standard. For this purpose, a suitable fluorescence plate is included in the shipment, on which the reference values are determined during the first measurement.

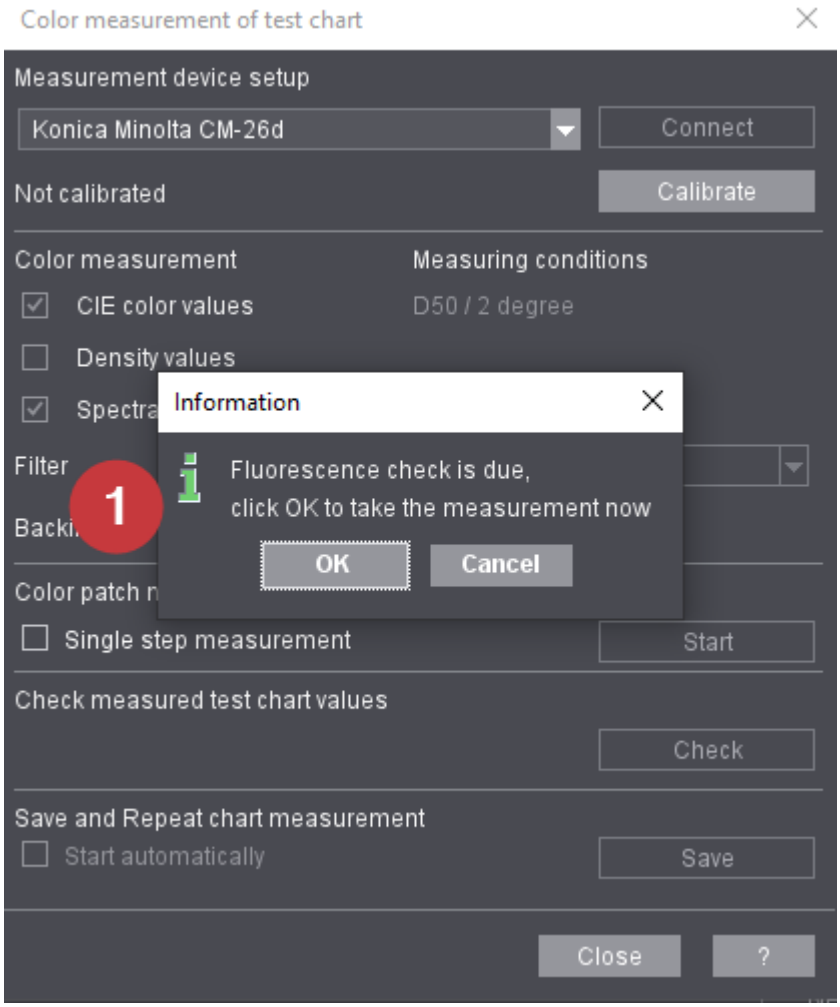
These reference values are saved on the computer in a separate file that is generated during the first measurement.

The fluorescence measurement must be repeated at regular intervals. It is common to run this measurement once a week. The software then prompts you to run the control measurement, the values of which are matched to the reference and also saved in the file.

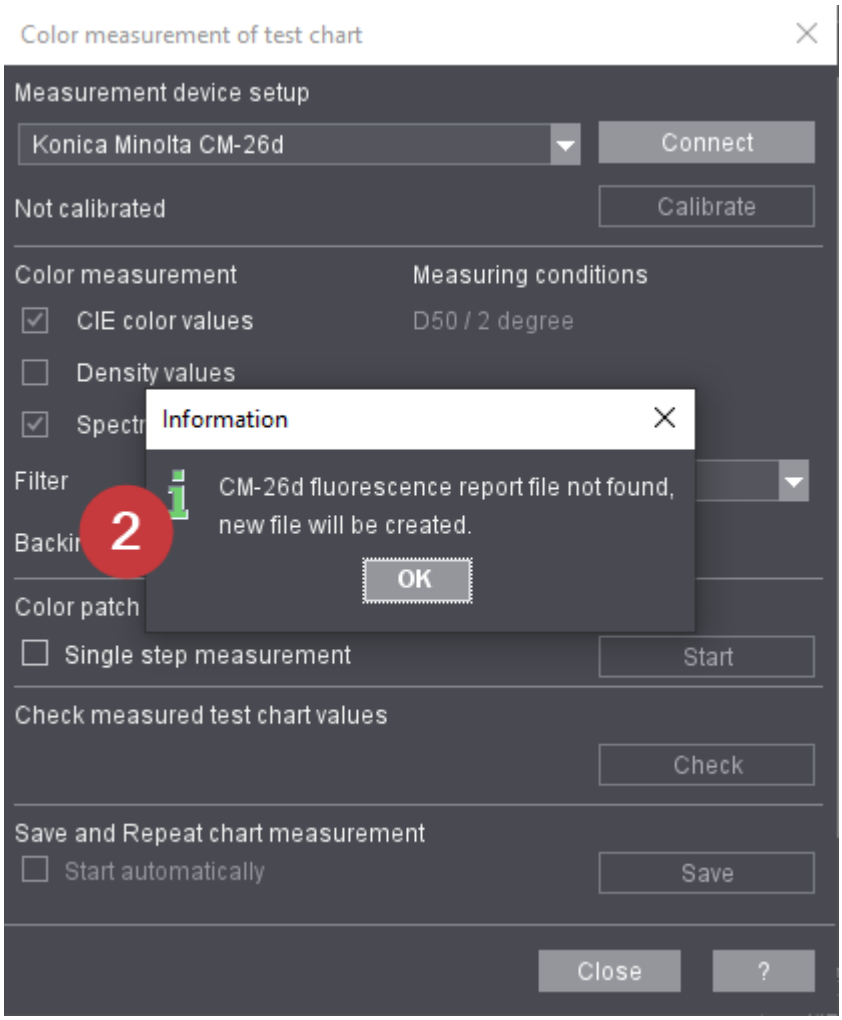
If the file with the reference values is deleted or the measuring device is used on another computer, the first reference measurement must be run again.

Run Measurement on the Fluorescence Plate

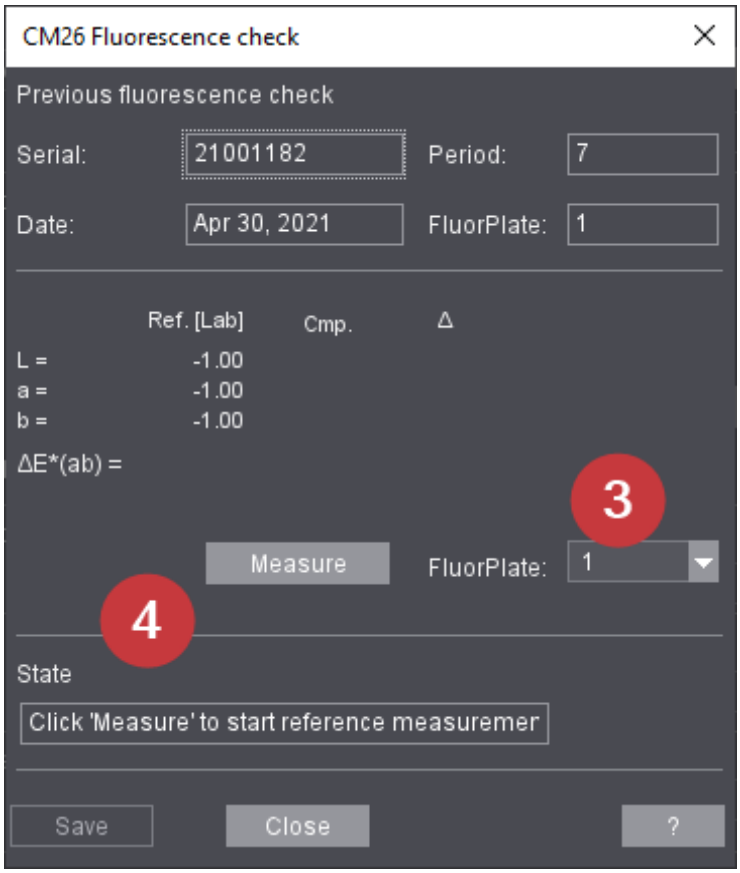
1. You receive a message, saying that a fluorescence check must be run. Confirm this message.



2. The reference file must be created the first time the measuring device is used on this computer. In this case, you will again receive a suitable message that you must confirm.



In the "CM26 Fluorescence check" dialog, the upper area shows the data saved in the reference file, e.g. the fluorescence plate used ("FluorPlate") and the interval at which the fluorescence check is to be repeated ("Period").

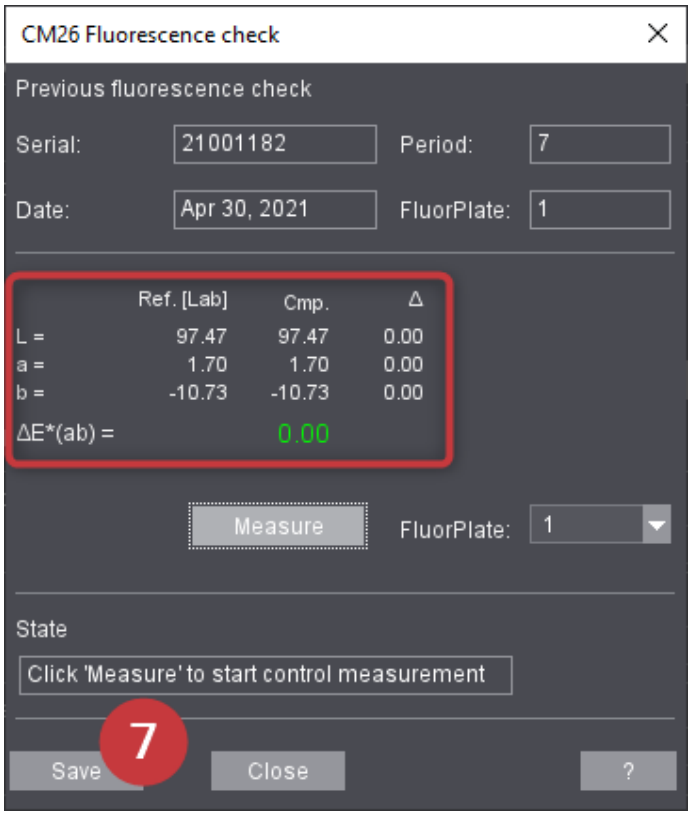


3. If necessary, select the fluorescence plate on which you want to measure.
4. Click "Measure".

5. Position the measuring cell of the measuring device on the selected fluorescence plate.

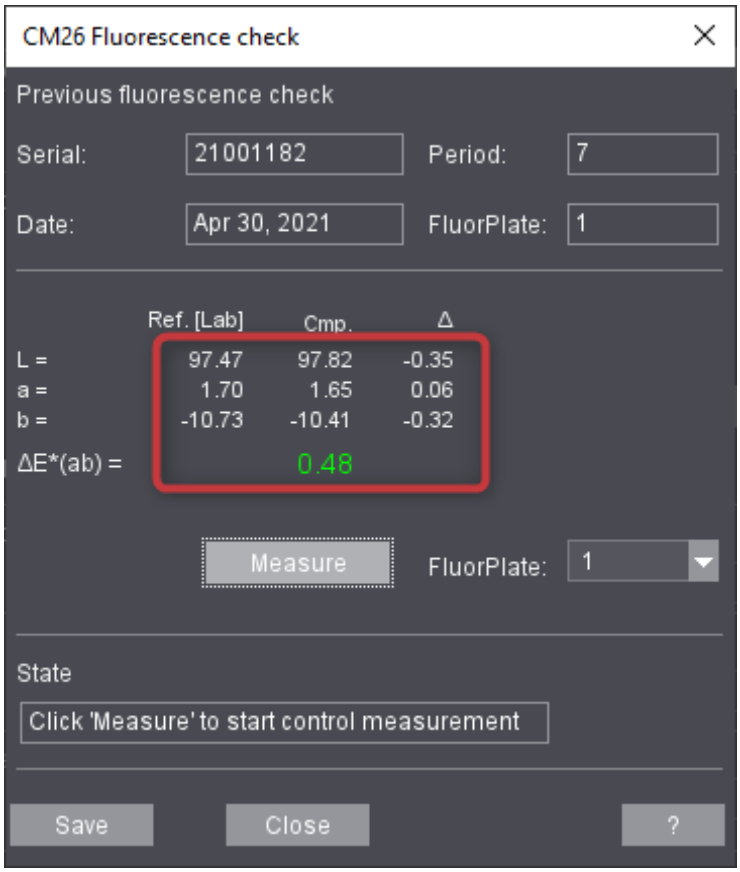
6. Press one of the measure buttons on the measuring device.

The measurement data of the fluorescence check then display in the dialog.

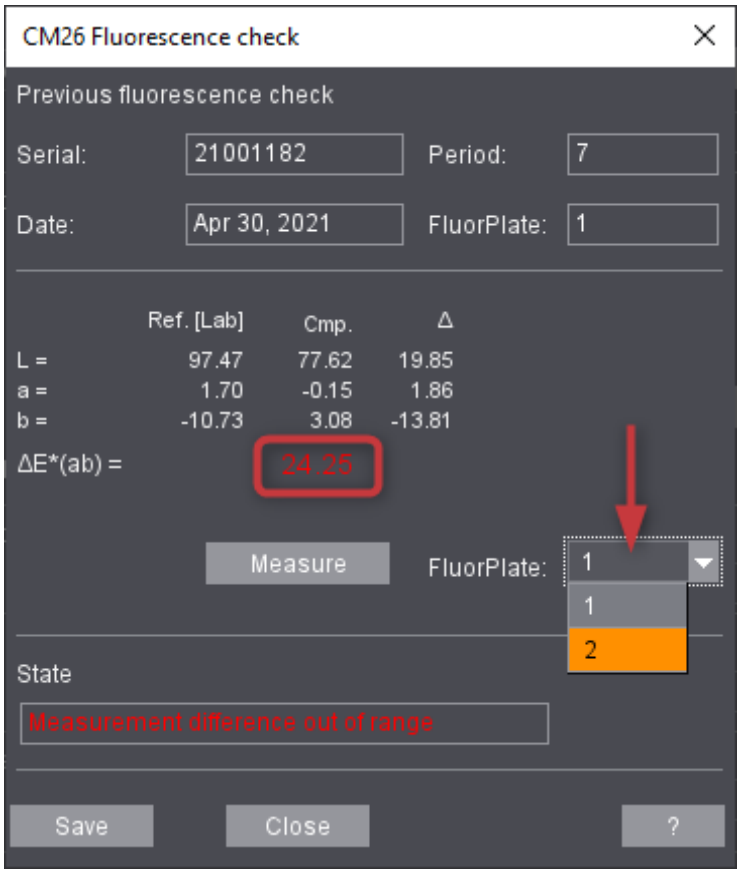


7. Save the file and close the dialog.

In the first measurement, the values displayed for reference ("Ref.") and the comparison values ("Cmp.") are identical. Subsequent fluorescence checks determine the difference between the new fluorescence values and the Lab reference values and display them in the "Δ" column. No further action is required so long as the total deviation ΔE*(ab) displayed is green,



If the measurement deviates too much from the reference (value for "ΔE*(ab)" is red), select plate "2" in "FluorPlate" and repeat measurement on the second plate.



If the measurements of both fluorescence plates show too high a ΔE*(ab) deviation, contact the instrument manufacturer.

Spherical SPM in Cockpit and in Portal

Prerequisites:
- Prinect Production as of version 2021.10
- "Cockpit Spherical SPM" license option enabled

As a rule, you can start a color measurement in two ways:

- **Directly in the "Colors" section of the job in Cockpit** : This is where you can optimize the print results for the color in the current job to the measurement result desired, if necessary in several steps,.

  For example, paper white in the current print job might not correspond to the stored values (different substrate, deviations caused by external influences), making subsequent readjustments necessary in this case.
  Another application would be that the hand-held instrument with which the spot color is measured produces different measurement results from the measuring device with which the ICC profile was generated because of its construction.

  See "Control Color Reproduction Directly in the Job", page 45 for details

- **In the central color management system**: Changes made there will then apply to all future jobs. This can be done for a new color or for a color already found in a user-defined color table. For example, there could be a reference pattern (for example, an original packaging), whose values are to be achieved later during printing and whose measured values will be assigned to the color in the table.

  Important: The type of central color data management system you are using determines which of the following two procedures applies to you:

  - **"Color Library" widget in Portal**
    See "Create and Measure a New Color (Color Library)", page 30 for details
  - **Cockpit with "Administration" section "Colors and Varnishes"**
    See "Create and Measure a New Color (in Cockpit, "Administration")", page 40 for details

Create and Measure a New Color (Color Library)

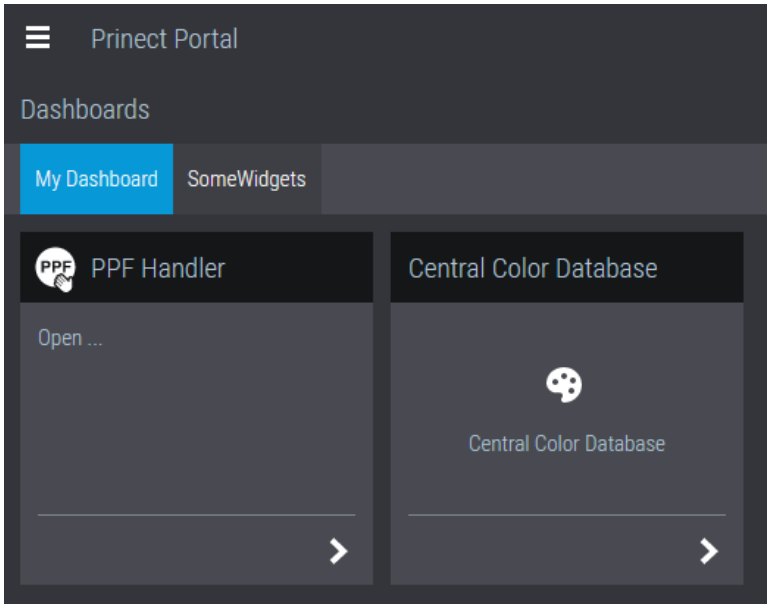
Note: You can create new colors and modify existing ones only in user-defined color tables. If necessary, copy colors from read-only tables to your user-defined color tables.

Editing colors includes the following basic steps:

- Create a new color in the Color Library
- Establish connection to the measuring service and the measuring device
- Measure and save a new color
- Perform iterative measurements or compare with print output

Prerequisites:
- A computer with a connected colorimeter must be accessible in the Prinect network environment.
- Before you start measuring, the colorimeter must be connected to the computer on which you will perform the measurement, and it must be operational.
- The "Prinect Measurement Service" software must be installed on this computer. You can download this software from the Prinect Maintenance Center in the "Product Installations" view and install it on the computer.

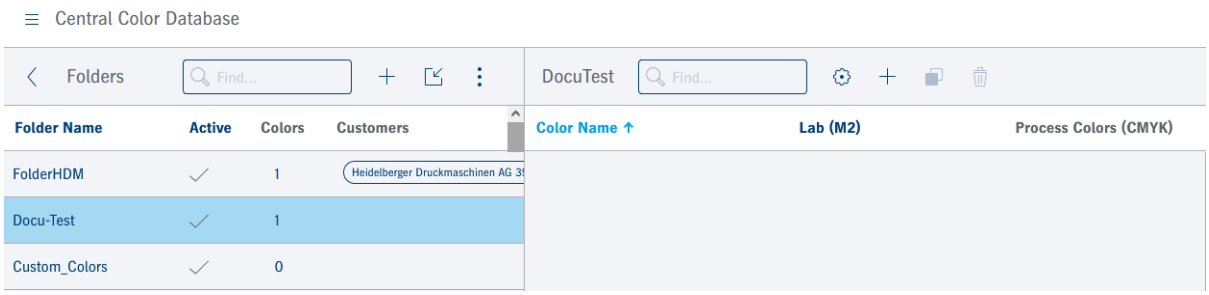
1. In Portal, go to the "Color Library" widget.



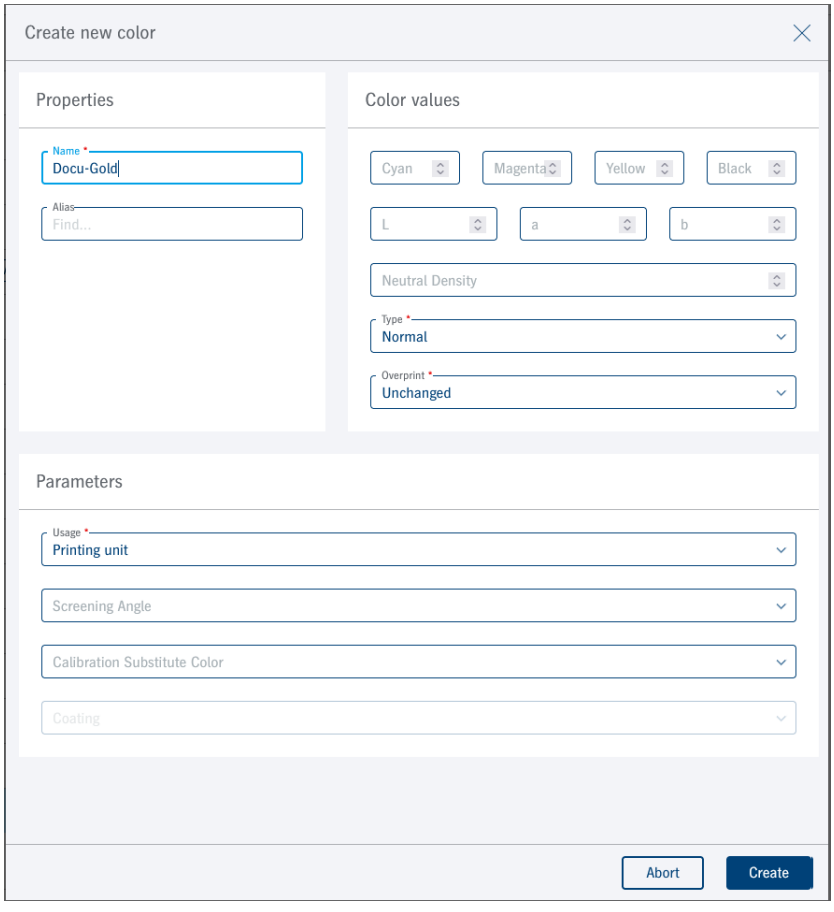
Note: To invoke the "Color Library" from Cockpit, click "Colors" in "Administration" and use the link at the bottom right.

Set up color

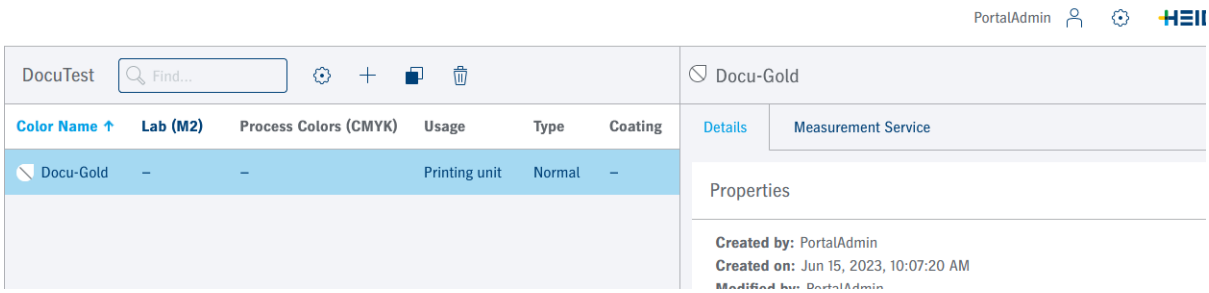
2. Open the folder to which you want to add the color or from which you want to customize existing target colors.
3. Click the plus sign above the color list or choose an existing target color.



4. Assign a name to a new color to be measured.

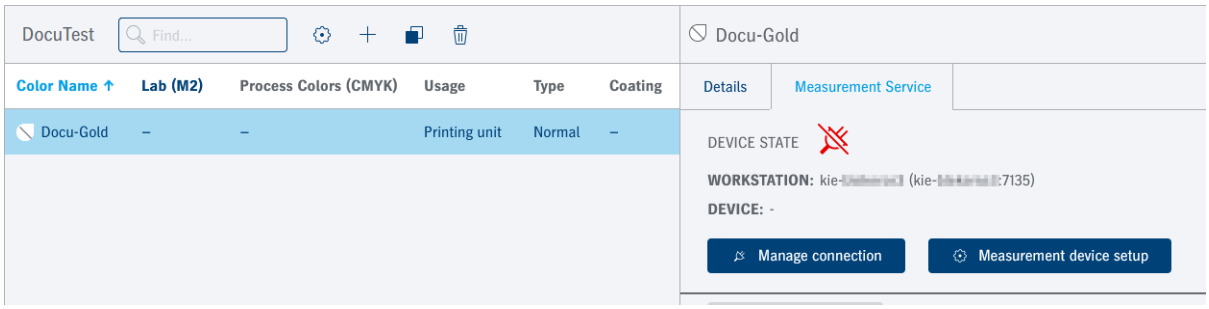


5. Make your settings and click "Create".

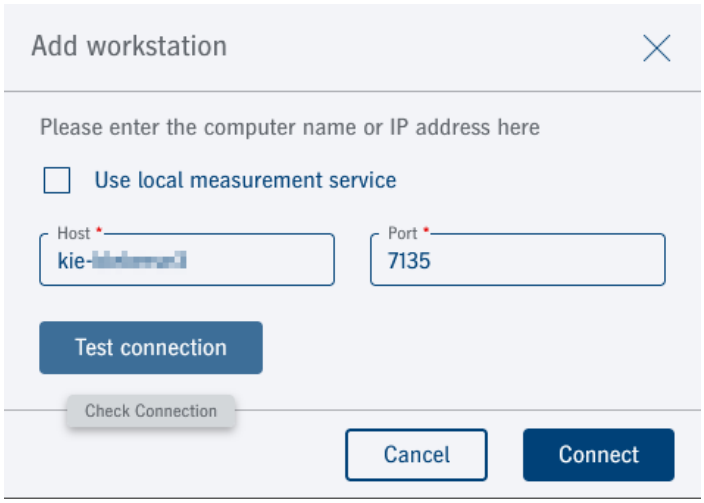


6. Highlight the color to be measured if applicable.
7. Go to the "Measurement Service" tab.

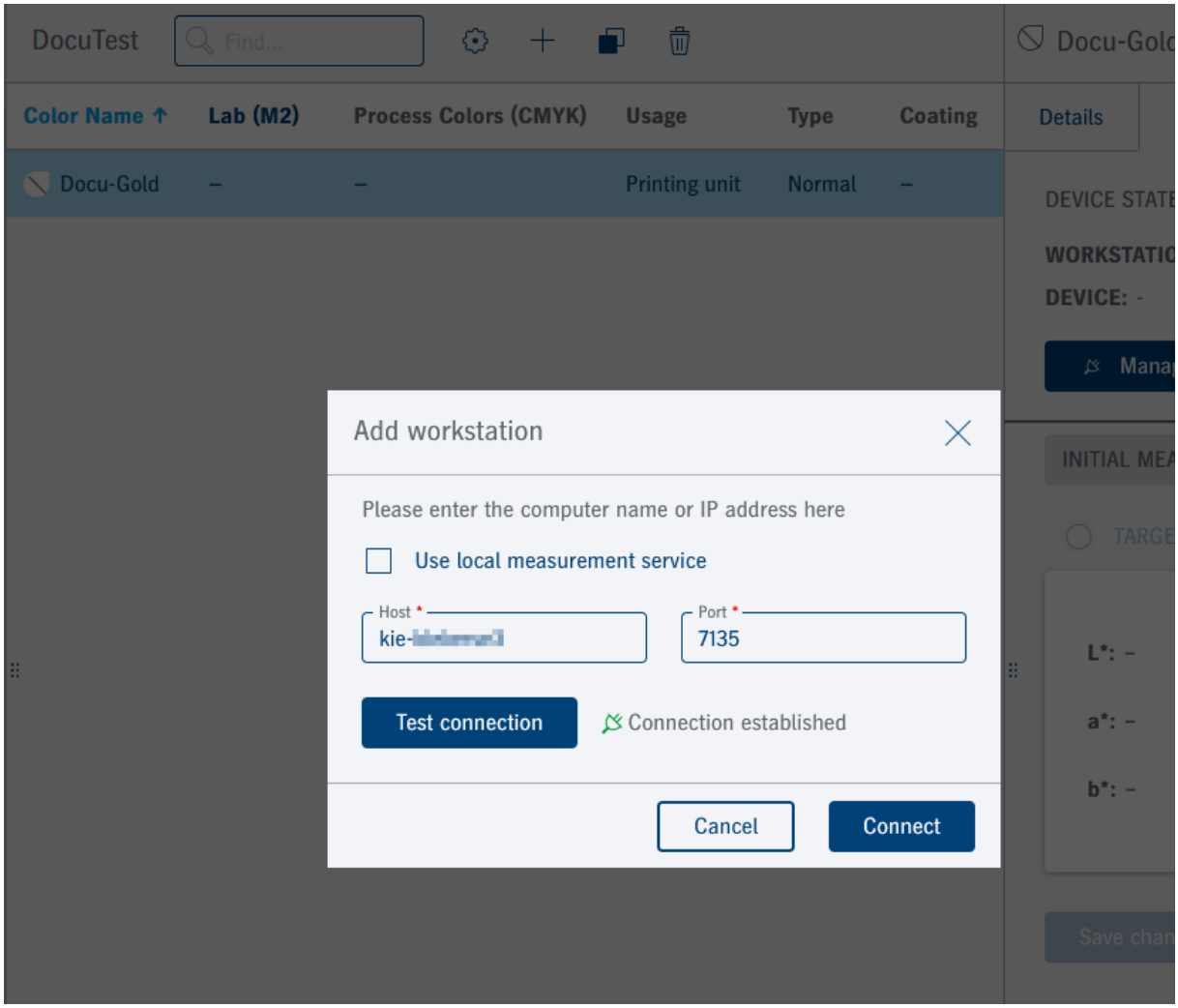
Establish connection to the measuring device



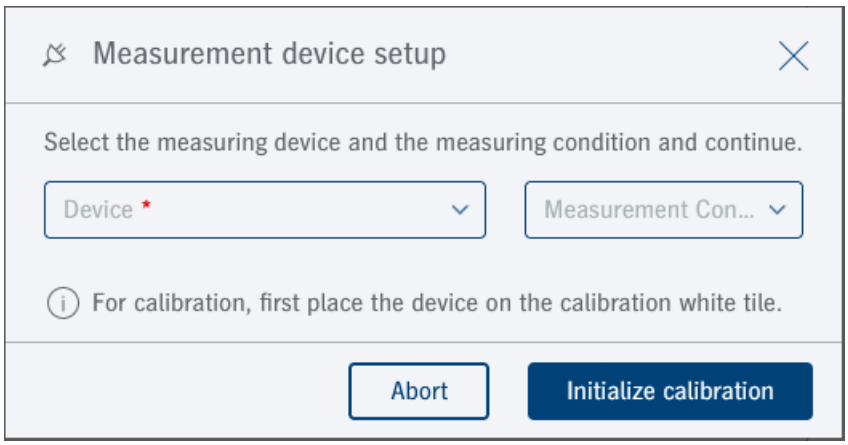
8. Click "Manage connection" to check if the connection to the measuring device functions correctly. The "Add workstation" dialog opens:



9. When you enable the "Use local measuring service" option, a measuring device connected to the local computer (i.e. to the computer on which you operate the Prinect Portal) is set up for the measurement. Otherwise, you can enter the computer name or IP address of the computer to which the measuring device is connected in the "Host" field. Do not edit the port address.

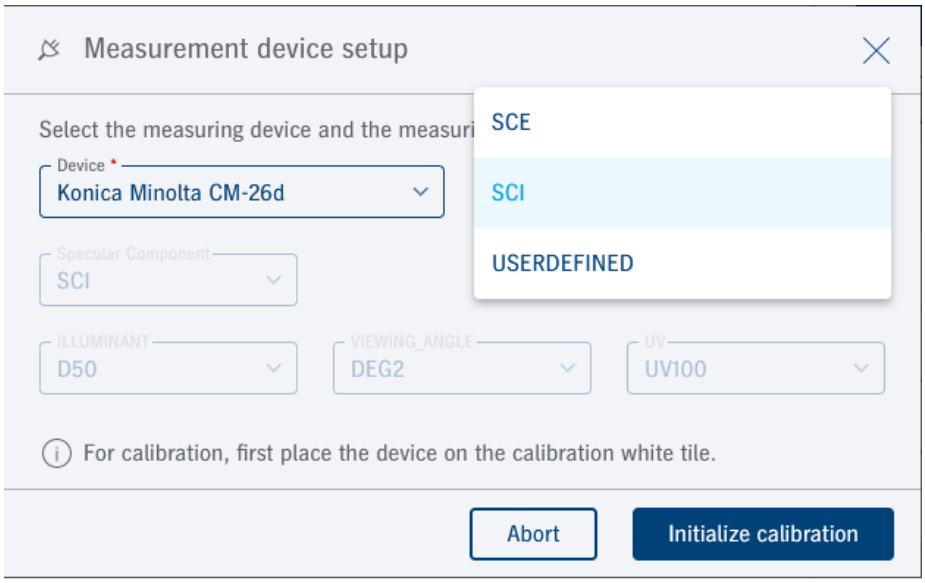


10. Click "Test connection". The connection to the measuring device is tested. Click "Connect" if the test is successful. The connection to the measuring device is set up. The "Add workstation" dialog closes.
11. Then click "Measurement device setup" in "Measurement Service". The "Measurement device setup" dialog opens:



12. In "Device", select "Konica Minolta CM-26d".
13. Select one of the measurement conditions. Normally, you should use one of the two default settings, depending on whether you want to measure including gloss coating (SCI) or excluding gloss coating (SCE). If necessary, you can also customize the settings and select the UV content separately.

Note: Illuminant and viewing angle cannot be changed. For the UV content, you can choose a value between 0 % and 100 % where a UV content of 100 % is close to M1 and a UV content of 0 % close to M2.

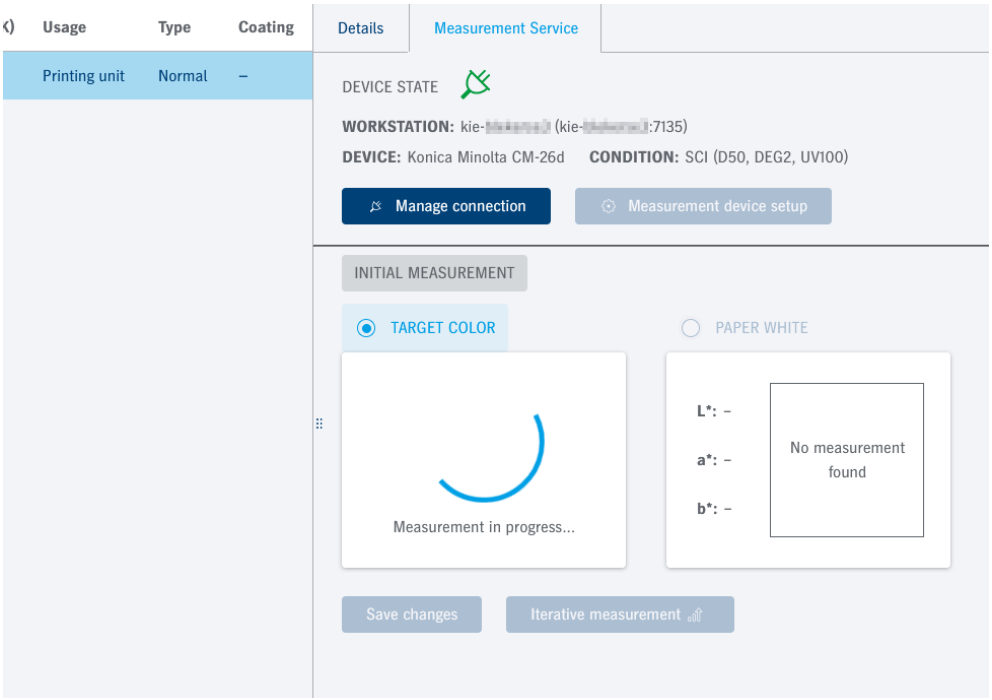


14. Click "Start Calibration". If the measuring device was already calibrated when you switch it on, it is not necessary to run white calibration again. After you click "Start Calibration", the software checks to see whether the measuring device was calibrated. If white calibration is necessary, you will receive a suitable message (white calibration is described in "Start the Measuring Device", page 10).

Color measuring

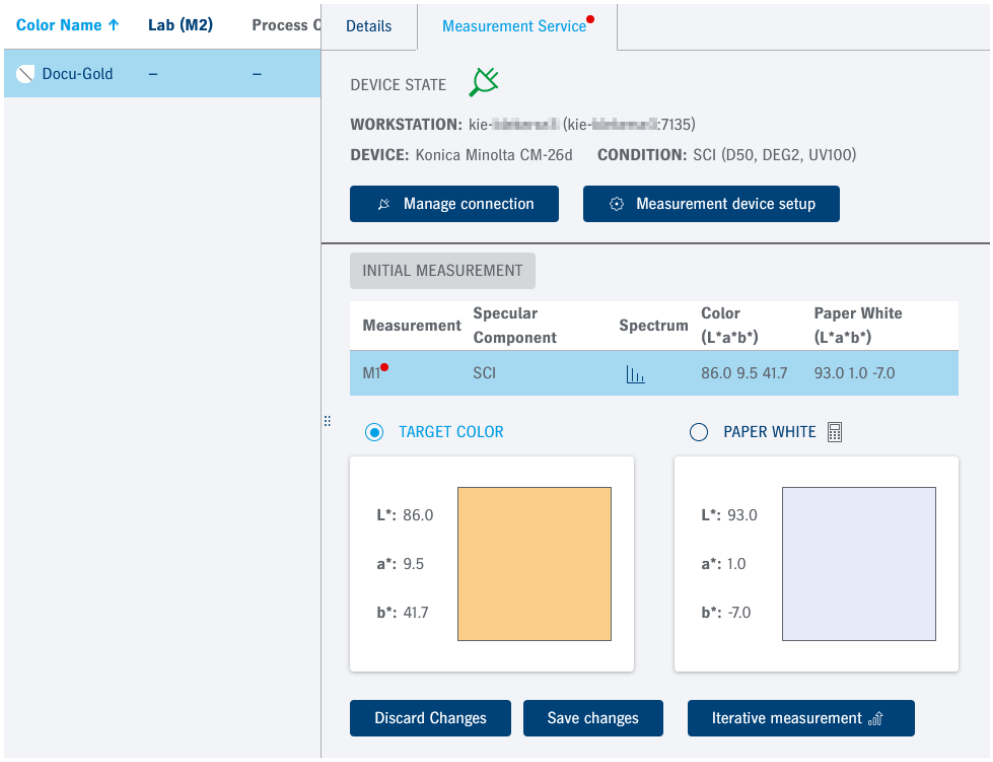
15. After initialization, the "TARGET COLOR" option is enabled. Click "TARGET COLOR" if this is not the case.

16. You can start measuring as soon as the message "Measurement in progress" appears in the "TARGET COLOR" box.

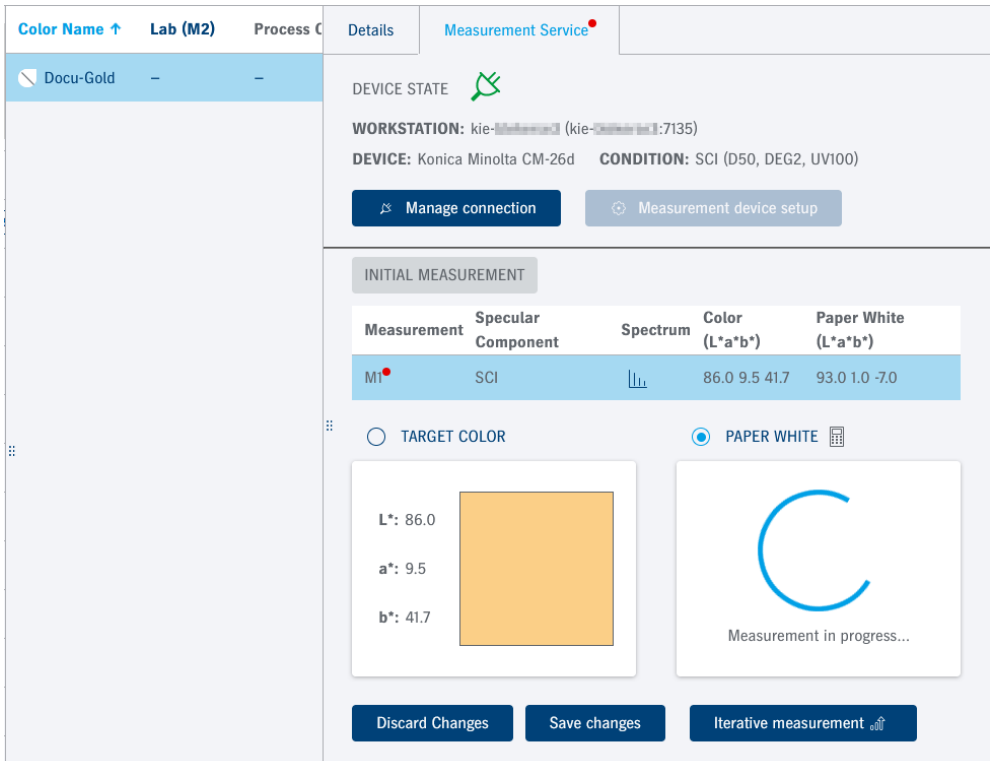


17. Position the measuring cell of the measuring device on the target color to be measured (e.g. original packaging) and press the measure button of the device.

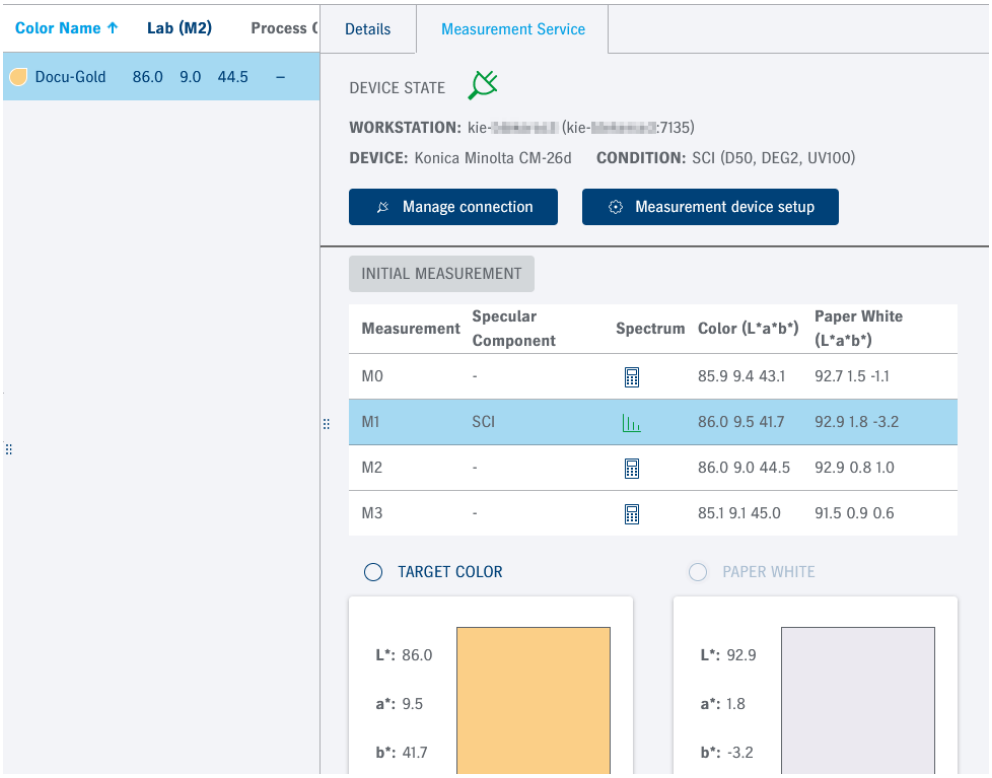
18. Now press the button on the left side of the colorimeter until the measured color displays in the "TARGET COLOR" box, showing its L*a*b* values.



19. Click "PAPER WHITE" and measure the paper white of the color sample.



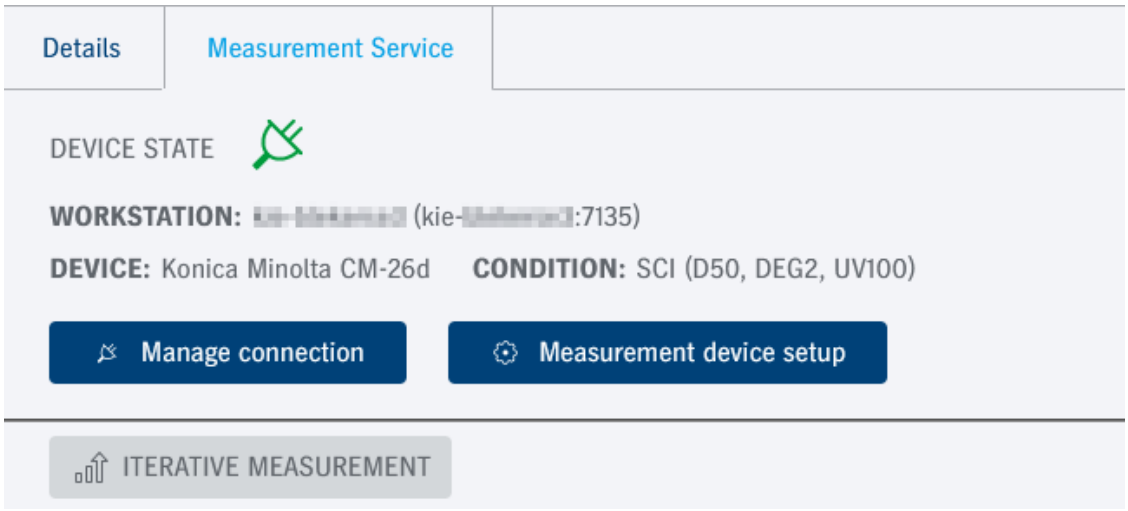
20. Click "Save changes". Thew measured color is saved to the Color Library. The values for the other measuring conditions are determined by calculation and marked with a calculator symbol in the table.



Measure printed color (Iterative measurement)

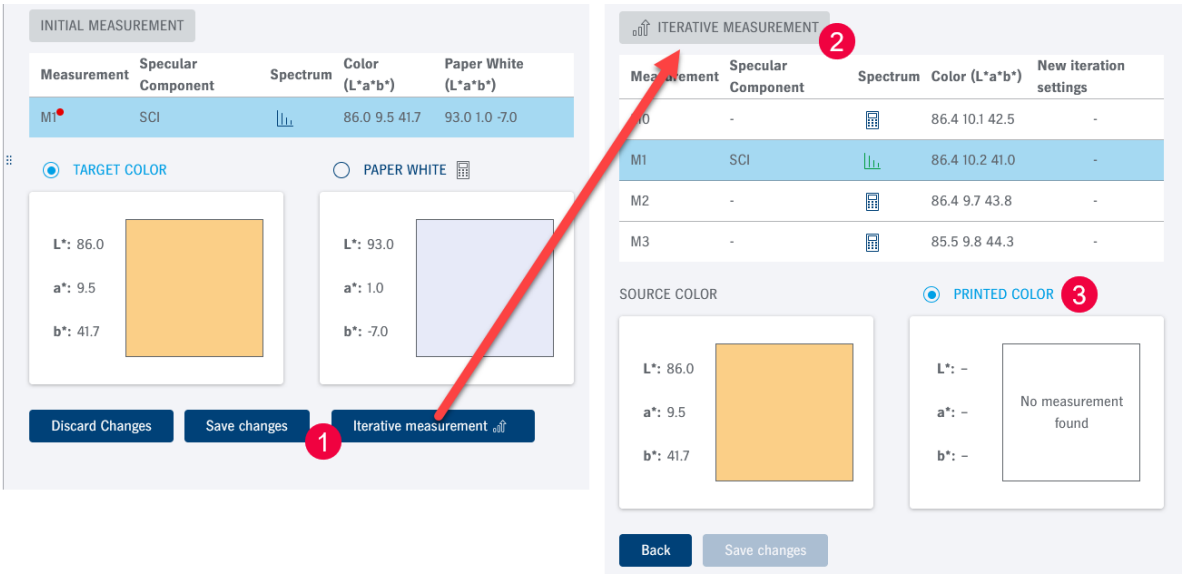
By printing with the new or modified color and measuring the print result, you can further optimize the color reproduction in several steps, if necessary.

21. Mark the color you want and click "Measurement Service".
22. If the CM-26d is still active (DEVICE STATUS green), you can skip the steps to set up the meter:



(23). If the CM-26d is not active (DEVICE STATUS red), establish the connection and set up the meter (see "Establish connection to the measuring device", page 32).

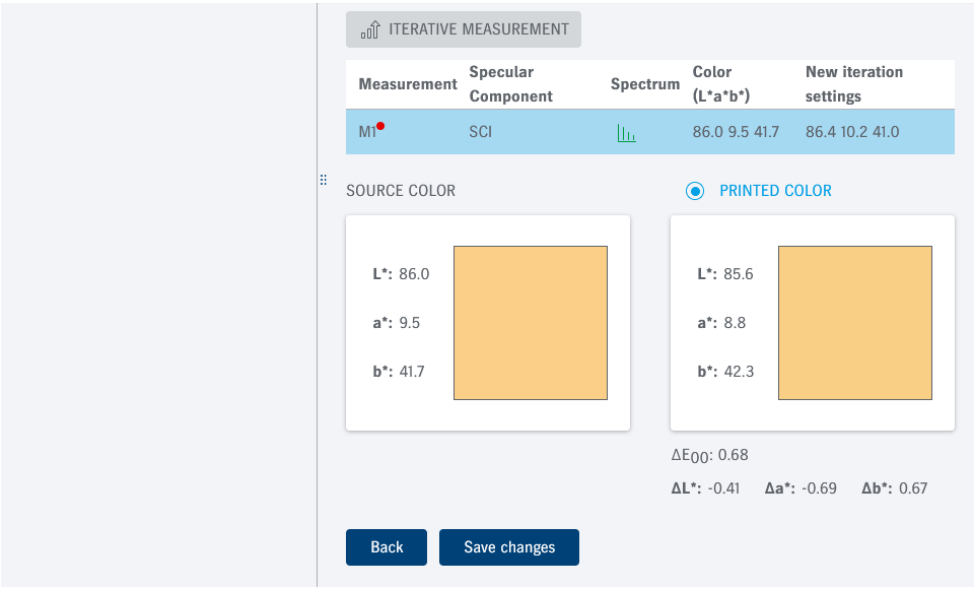
(24). If "ITERATIVE MEASUREMENT" (2) is not already displayed, click the "ITERATIVE MEASUREMENT" button (1) at the bottom.



25. Click "PRINTED COLOR" (3).

26. Position the measuring cell of the measuring device on the comparison color to be measured and press the measuring button of the measuring device as soon as the message "Measurement in progress" appears in the "PRINTED COLOR" field.

The preview and Lab values of the printed color are displayed. Below this, information on the deviations from the source color is listed.



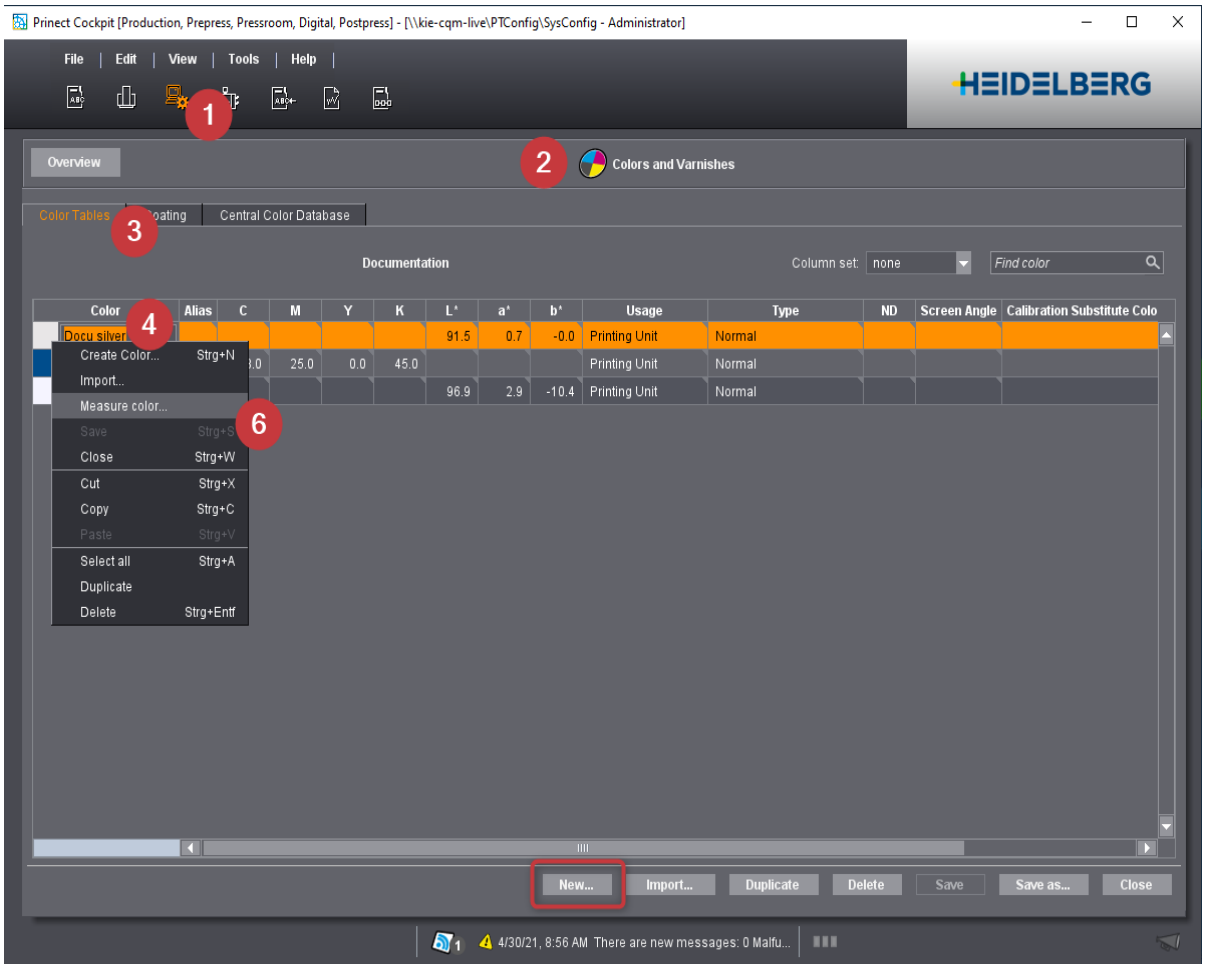
If desired, you can apply the new values by clicking "Save changes".

If you want to measure the target color or the paper white again, switch back to the "INITIAL MEASUREMENT" area with "Back".

Create and Measure a New Color (in Cockpit, "Administration")

Note: You can create new colors and modify existing ones only in user-defined color tables. If necessary, copy colors from read-only tables to your user-defined color tables.

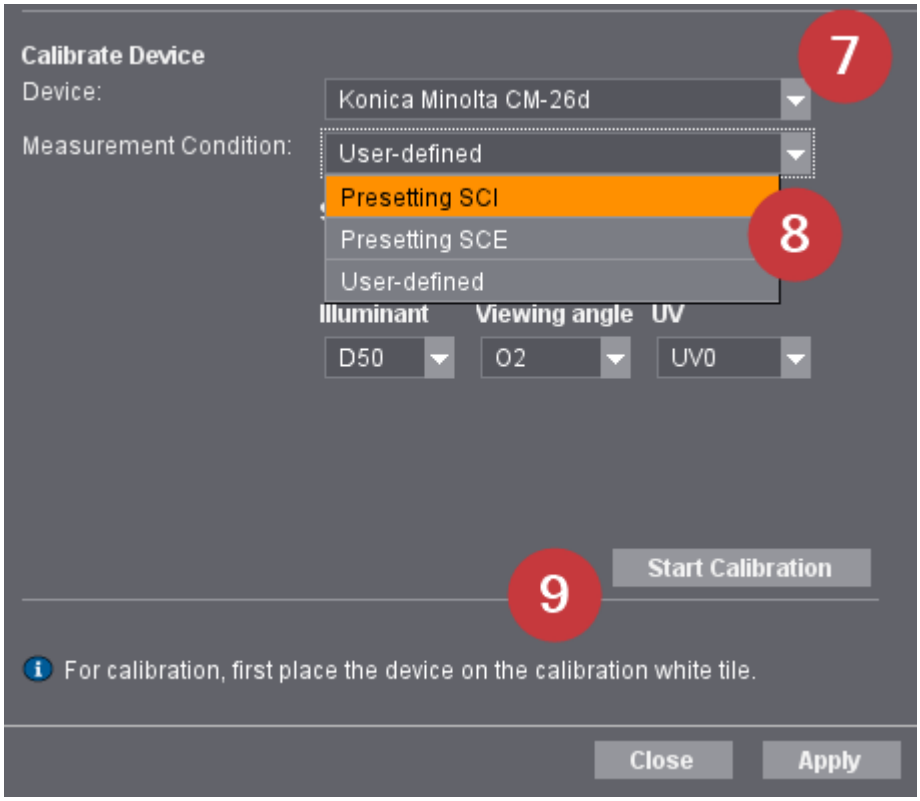
1. Go to "Administration" in the Cockpit.
2. Click "Colors and Varnishes".



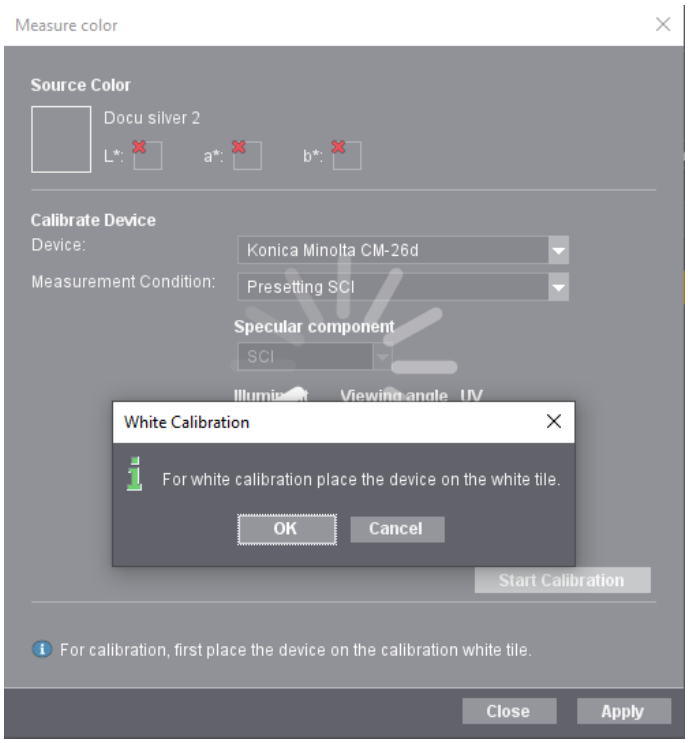
3. Open the color table to which you want to add the color or from which you want to customize existing target colors.
4. In the "Color Tables" tab, click "New" or select a target color that is already created.
5. Assign a name to a new color to be measured.
6. Select "Measure color..." in the context menu.

Note: If no Lab values were specified so far for the color, the boxes in the dialog are tagged red:

7. Select Konica Minolta CM-26d as the "Device".
8. Select one of the measurement conditions. Normally, you should use one of the two default settings, depending on whether you want to measure including gloss coating (SCI) or excluding gloss coating (SCE). If necessary, you can also customize the settings and select the illuminant, viewing angle and UV content separately.



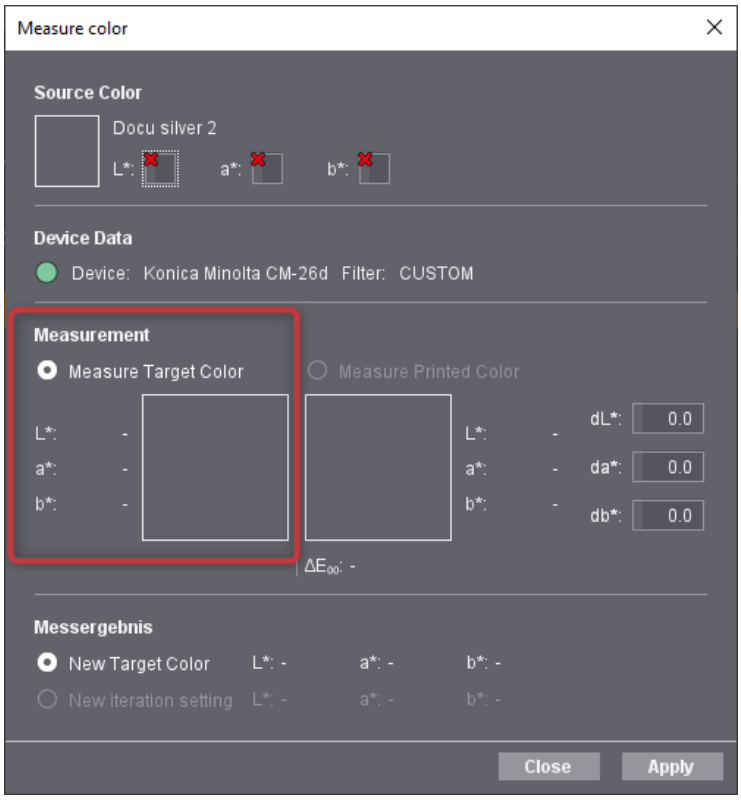
9. Click "Start Calibration". If the measuring device was already calibrated when you switch it on, it is not necessary to run white calibration again. After you click "Start Calibration", the software checks to see whether the measuring device was calibrated.



If white calibration is necessary, you will receive a suitable message. If white calibration is not needed, the "Measure Target Color" option displays in the "Measure color" dialog (continue with step 17).

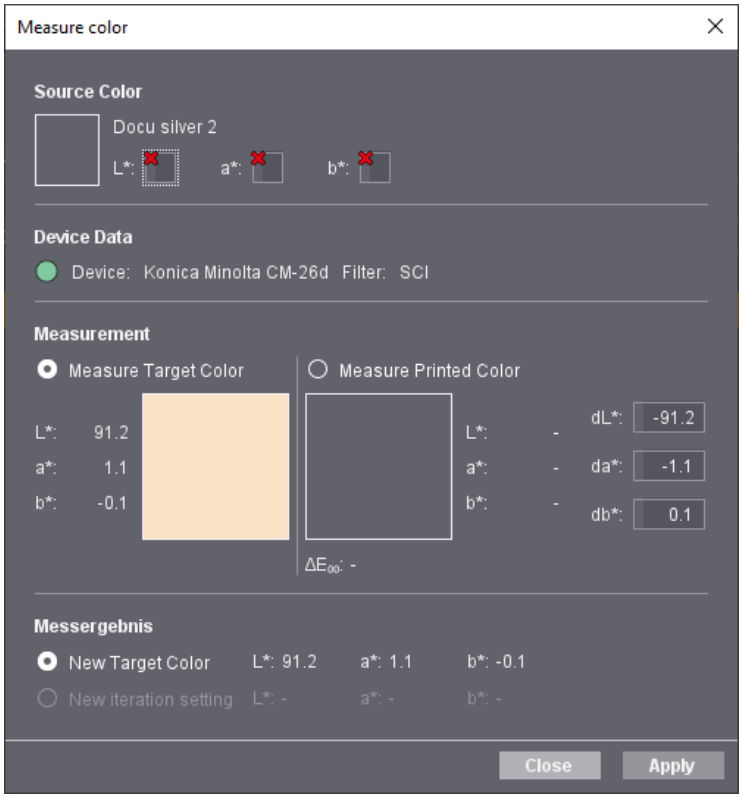
10. Remove the cover from the white tile of the holder and place the measuring device on the holder. Click "OK" in the message.

After calibration, "Measure Target Color" is enabled in the "Measure color" dialog:



11. Position the measuring cell of the measuring device on the target color to be measured (e.g. original packaging) and press the measure button of the device.

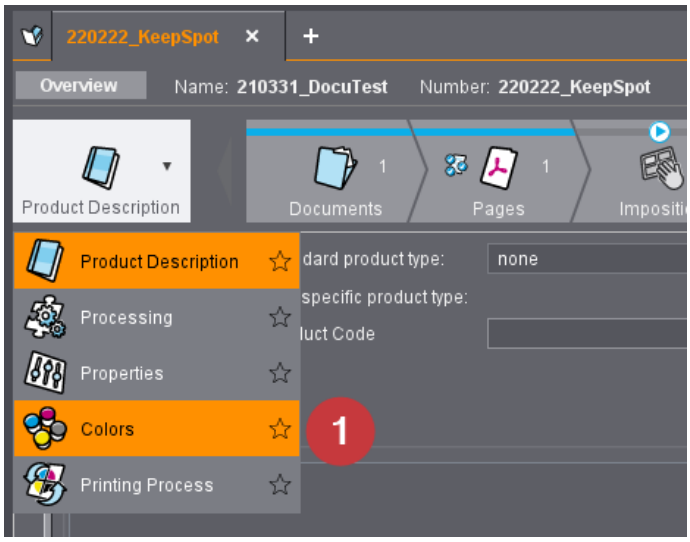
12. The color displays in the preview window and the measured Lab values display. You can now transfer the values to the table by clicking "Apply" and then close the dialog.



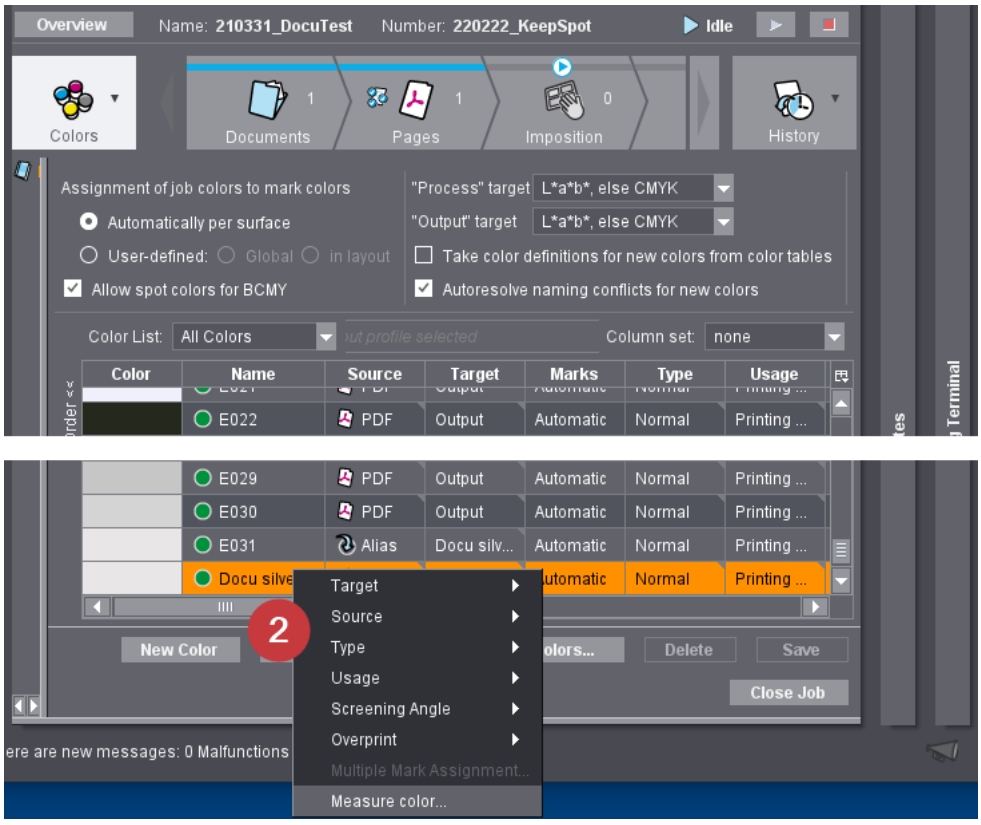
Note: By printing with the new or modified color and measuring the print result, you can further optimize the color reproduction in several steps, if necessary.

Control Color Reproduction Directly in the Job

1. Go to "Colors" in the job.



2. Mark the color you want to edit and select "Measure color..." from the context menu.



3. The "Measure color" dialog displays. If not already set, select Konica Minolta CM-26d as the "Device" and one of the measurement conditions.

4. Click "Start Calibration" in the dialog.

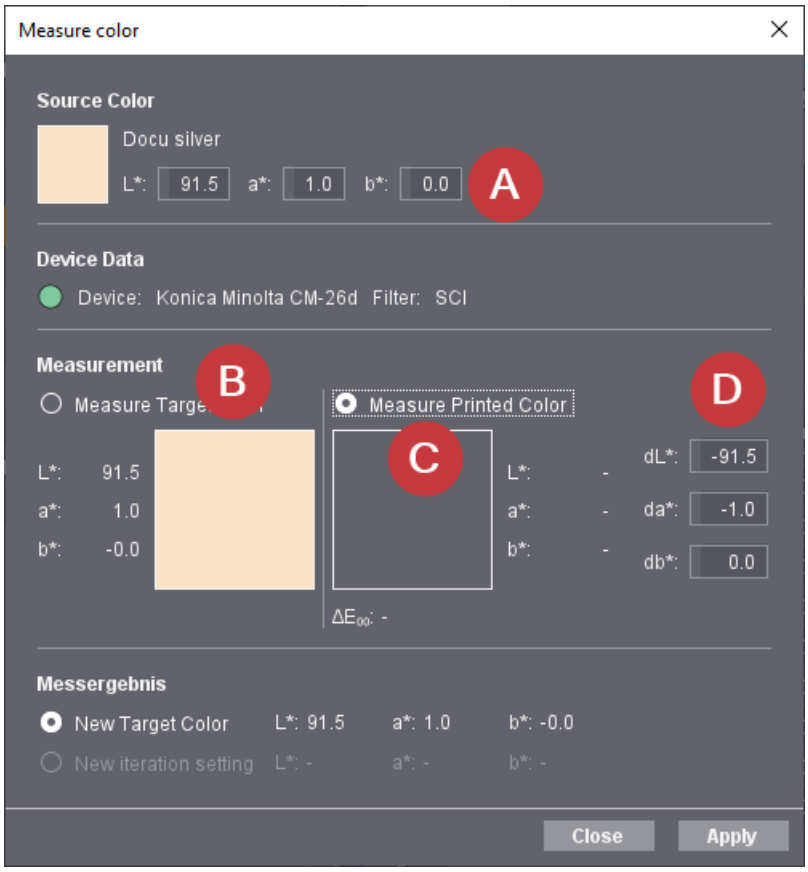
If the measuring device was already calibrated when you switch it on, it is not necessary to run white calibration again. After you click "Start Calibration", the software checks to see whether the measuring device was calibrated.

If white calibration is necessary, you will receive a suitable message. If white calibration is not required, the "Measure color" dialog immediately switches to the measurement mode.

5. Remove the cover from the white tile of the holder and place the measuring device on the holder. Click "OK" in the message.

Overview of the setting options

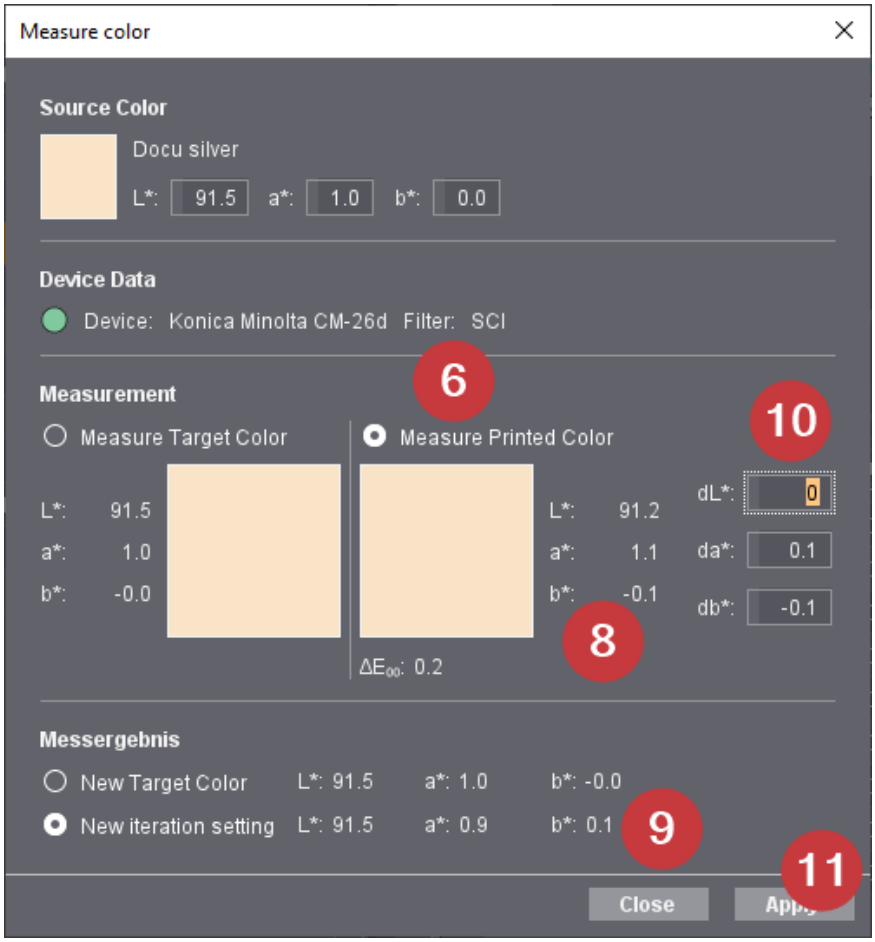
In the "Measure color" dialog, you now have several options:



- "Measure Target Color": If you have a printed reference pattern whose color value you want to have in the job, you can use this to update the target value for the printout. (B)
- Modify "Source Color": By entering Lab values in the upper input boxes of the dialog, you can manually customize the source color to the measurement result you want. Background: Because the stored color values in HKS tables, for example, were not determined with a Konica Minolta CM-26d, deviations are expected in this case. If you have a custom table with target values determined with the Konica Minolta CM-26d for this color, you can take this into account by entering these values for the source color. (A)
- "Measure Printed Color": You print some pages of the job and measure the selected color on the printout. The software calculates new values for printing from the deviation. By repeatedly proof printing and measuring the print result, you can optimize the result until the color deviation in ΔE_{00} is low enough (see description below). (C)
- Manual correction of the values: In the input boxes to the right of the values measured on the print, you can enter correction values that are then applied to the measured result and, in this way, to the new values for printing, for example, to achieve a certain lightness. (D)

Measure Printed Color

6. Enable "Measure Printed Color" in the "Measure color" dialog.
7. Position the measuring cell of the measuring device on the printed color and press the measure button of the measuring device.
8. The right side now shows the measured values of the printed color and below it the color deviation in ΔE_{00}.



9. The software calculates the new iteration setting for the target color.
10. If necessary, enter correction values for lightness, chroma and/or saturation in the input boxes to the right of the measurement results for the printed color, for example, if you do not want to change the lightness and instead put up with a higher color deviation in ΔE_{00}.
11. When you click "Apply", the new calculated values are entered in the color table as the target color for the printing system.
12. Repeat printing and measuring of the printed color until the result is as you want it.

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