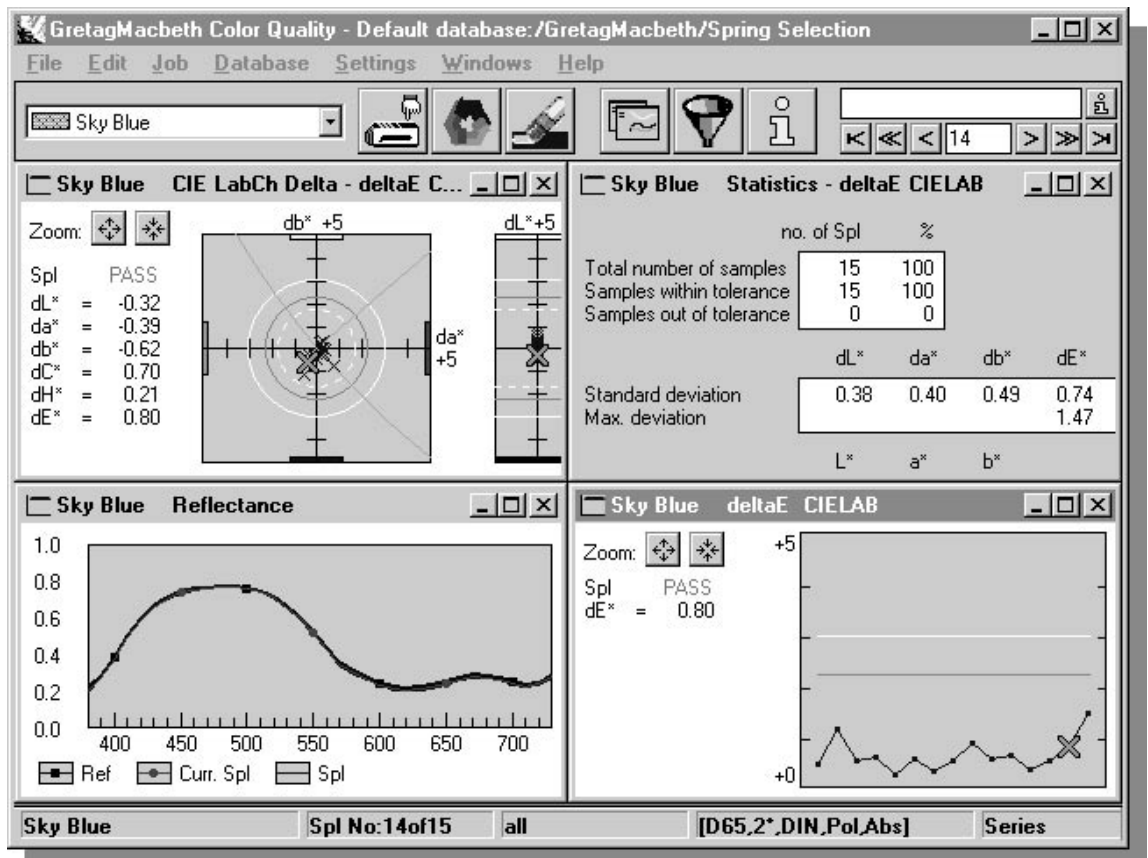


# Color Quality V3.0



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# 1 General

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## 1.1 Introduction

GretagMacbeth Color Quality™ makes color quality verifiable and quality control measurable. Proof of your quality standards is provided by glancing at the printout of our clearly-configured protocol.

By connecting to any GretagMacbeth™ measuring device you open up unlimited control possibilities within a closed quality circle. Colors, paper, specimens and final products remain under secure control from receipt of your first or repeated job to delivery.

By networking with other software solutions - such as GretagMacbeth Ink Formulation™, GretagMacbeth CMYK Conversion™ and GretagMacbeth ColorNet™ - you secure the interfaces of tomorrow today.

Color Quality is a multi-layer, flexible and network-supporting program. With it you can work simply and quickly owing to its practice-oriented structure. Using Color Quality requires a basic knowledge of WINDOWS.

---

## 1.2 Registration

When you return your registration card, you will receive:

- Information about software products of GretagMacbeth™
- Announcements of new program versions
- Announcements concerning new update possibilities
- Support for problems with this software.

Please send the completed registration card to

GretagMacbeth  
Althardstrasse 70  
**CH-8105 Regensdorf**  
Switzerland

or register online at [www.gretagmacbeth.com](http://www.gretagmacbeth.com).

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## 1.3 Software licensing contract

### 1. Licensing

1.1 GretagMacbeth™ hereby licenses you to use the user, demonstration and operating software found in the package, including all associated updates and associated documentation.

1.2 GretagMacbeth™ retains all rights to the software.

1.3 You may not sell the software to a third party or otherwise pass it on unless the third party obligates him/herself to abide by the conditions of this licensing agreement with GretagMacbeth™. This also holds for backup copies.

1.4 You may not use this software for any purposes other than those specifically allowed by this license.

### 2. License limitations

2.1 The know-how of this software is to be protected in that you are not allowed to decompile, reverse engineer, disassemble or in any other way make it perceptible to persons.

2.2 You may not modify, adapt, translate sell or permit use of the software by others in any way, either gratuitously or for payment, or prepare derivations of this software either completely or partially.

2.3 You are not allowed to transfer the software to another computer by electronic means.

### **3. License termination**

3.1 This license expires if you commit a breach against any provision of this contract.

3.2 You can terminate this license agreement at any time by destroying the software and all copies of it.

---

## **1.4 Contact address of GretagMacbeth™**

If you have questions or comments, please contact us at:

GretagMacbeth  
Althardstrasse 70  
**CH-8105 Regensdorf**  
Switzerland

Telephone: +41-1-842 2400  
Fax: +41-1-842 2222  
e-mail: support@gretagmacbeth.ch  
Internet: <http://www.gretagmacbeth.com>

If you experience problems with this program, please contact your GretagMacbeth™ representative or us directly at the above address.

Please inform us immediately if you discover any errors in our program. We will, of course, eliminate them as soon as we can.

### **Suggestions for improvement**

We welcome all comments and suggestions for improvement with regard to our programs. Please detail all items as thoroughly as possible so that we can support you in the best possible way.

---

## 1.5 Safety directives

In order to avoid improper operation, only trained personnel should use Color Quality.

Please observe all notes provided in chapter 18, 'Installing Color Quality'.

Also observe the safety regulations in the operating manual for the measuring device.

---

## 1.6 Notes on using this handbook

These operating instructions provide an introduction to Color Quality and explain the various functions and operational sequences.

The most important information is located in the following chapters:

- |                |   |
|----------------|---|
| Chapter 3      | Terminology<br>Basic sequence of a quality control job. |
| Chapter 4 - 13 | Detailed sequence of a quality control job, operation.  |
| Chapter 14     | Important settings, parameters                          |
| Chapter 18     | Installation  |

## 2 ColorNet

---

### 2.1 General

GretagMacbeth ColorNet™ completes the circle of complete color data processing in the graphics industry. In the sense of Total Quality Management and the ISO quality standards, colorant data can be checked and controlled all the way from order receipt and color specimen measurement, on up to the adjustment of the printing press and job delivery. The programs grouped under ColorNet software – usable on WINDOWS and Mac – allow direct access to a central colorant database.

This allows the exact same data to be checked and statistically evaluated with Color Quality software. In the preliminary printing stage, you accomplish this by setting the CMYK Conversion program to special colors on CMYK raster percent values. You can mix transparent and opaque inks in the color recipe using Ink Formulation software.

With one single, reliable, exact measurement, you can now cover various steps in the job sequence. ColorNet supports networks: Once-detected, original colors are stored on a server, where they can be called up at anytime by different users. This new software solution guarantees decentralized access to colorant data with various measuring devices.

## 3 Structure and function

---

### 3.1 General

Color Quality can provide you with proof of perfect color control quality.

Upon opening a job you first assign a customer. You then define reference colors and simultaneously stipulate tolerances.

You measure reference colors and samples and then, in a simple way, present, compare and evaluate on the screen using Color Quality. Trend data, CIELab-charts, spectra and statistics can be printed in the form of graphics and tables.

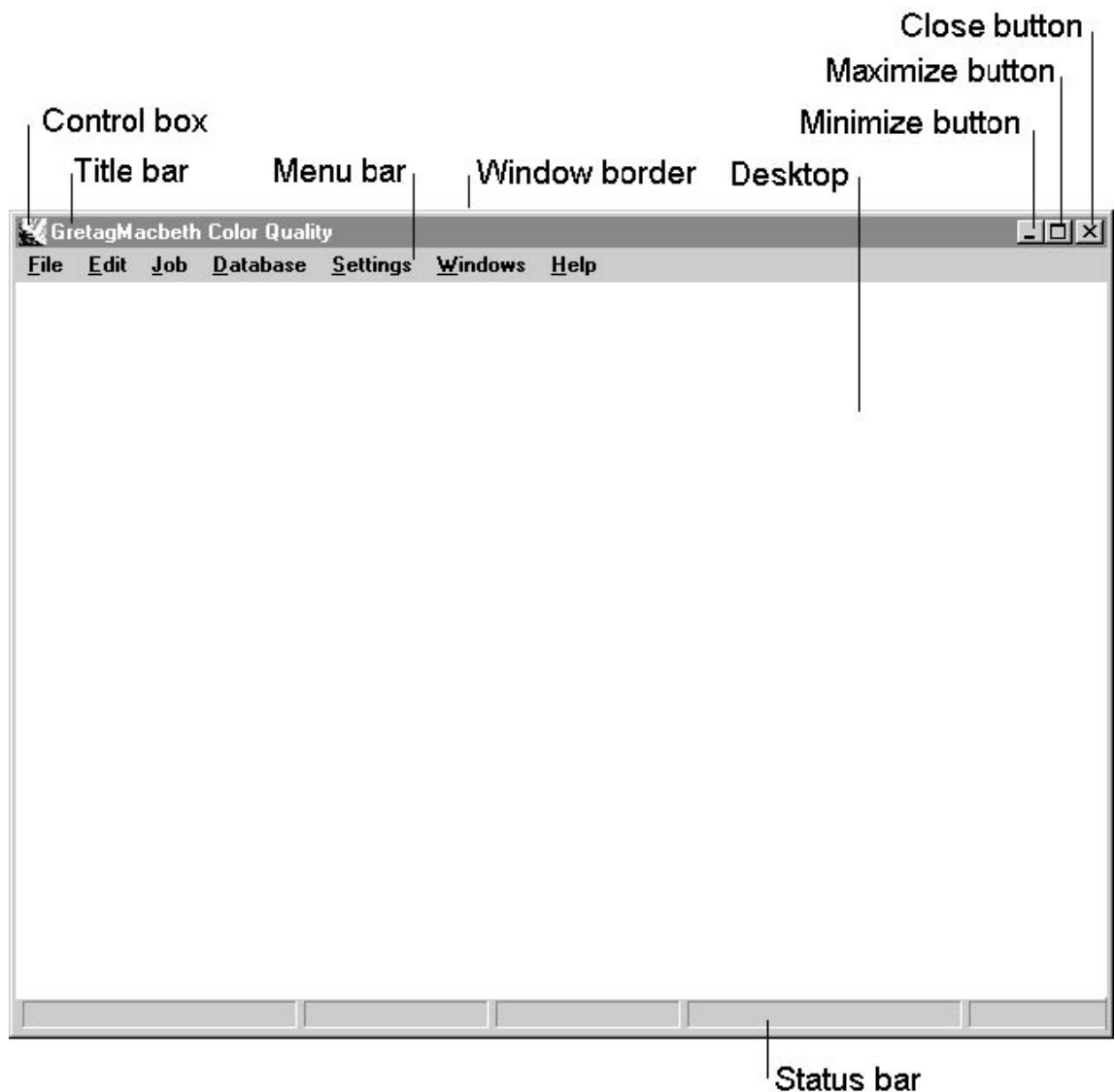
The user desktop is clear. You are led through logical operations step by step. Simple mouse clicks allow you to arbitrarily present, compare and evaluate your data on the screen. You should become familiar with the basic makeup of the Color Quality program so that you can use it efficiently. Thus please study this chapter attentively.

---

### 3.2 Desktop

The desktop of Color Quality is based on a graphical user interface.

The main window appears after you have started Color Quality appears as follows:



### 3.2.1 Menu bar

Individual menu titles are displayed in the menu bar. Clicking on an item brings up a list of additional functions.



You can execute the following functions in the different menus:

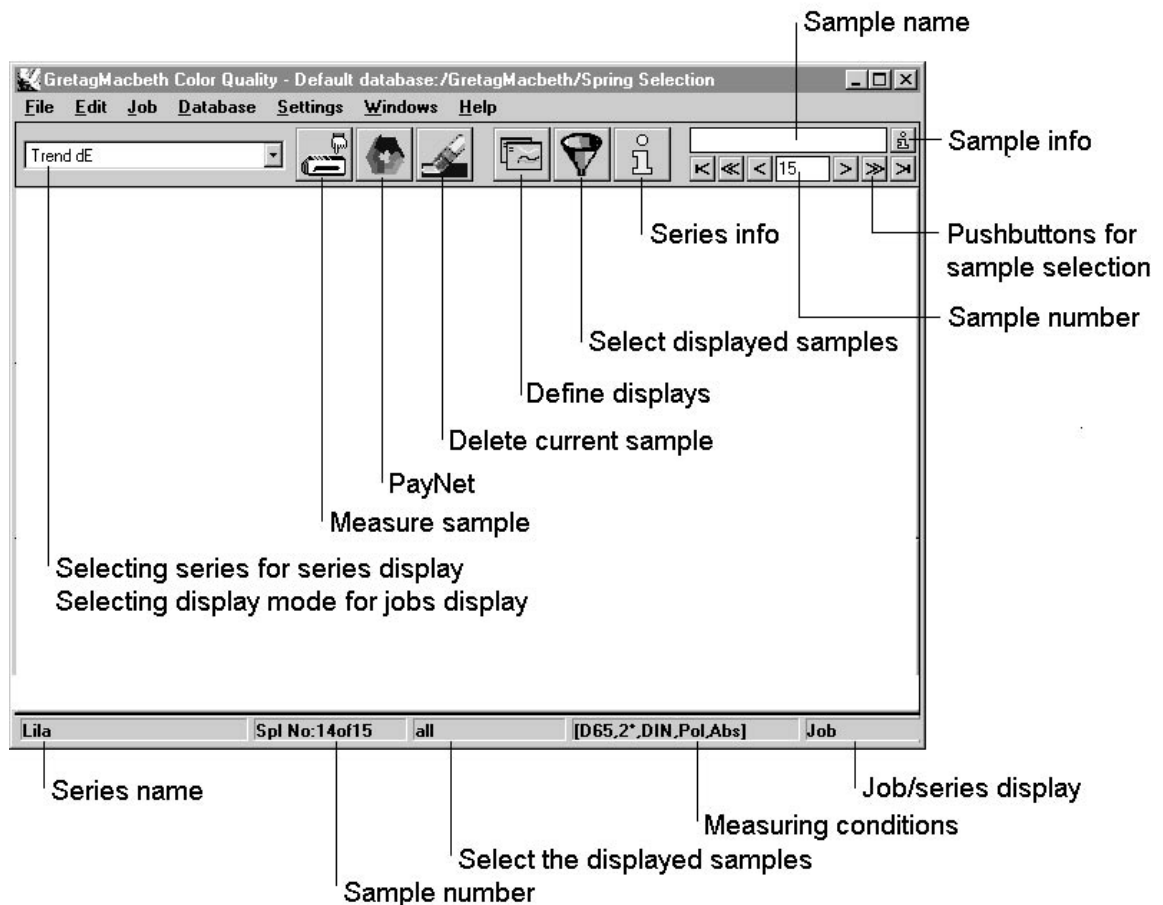
- File:
  - Set up printer
  - Save/restore database
  - Quit
- Edit
  - Copy reference
  - Copy current sample
  - Copy all
  - (refer to section 3.7.4 "Edit" menu')

- Job: Open and process job  
Display functions of the job window  
Printing
- Database: Set up database  
Process data relating to customers, jobs and standards
- Settings: System and program settings
- Window: Arrange window
- Help: Call up subjects in the Color Quality help function  
Information window with program version, serial numbers and licenses

### 3.2.2 Control panel

The symbols bar provides a overview of all operating elements required for measuring samples and displaying sample values.

The current settings are displayed in the status bar.



---

## 3.3 White calibration of the measuring device

The white calibration is the basis for exact measuring results. You have to regularly calibrate the measuring device to the white reference to obtain the greatest precision.

Depending on the adjustments you have chosen, Color Quality may request that you carry out a white calibration in the course of your work with the measuring device (refer to section 14.1 'General settings').

Please also observe the instructions for using your measuring device.

---

## 3.4 Basic sequence of a quality control job

### 3.4.1 Check settings

- Please ensure that the required settings (e.g. default measuring conditions) are properly selected before you define a new quality control job. Measurements made with incorrectly-set parameters can lead to incorrect results. Refer to section 3.6 'Settings' and chapter 14 'Settings to make'.

### 3.4.2 Defining the job

You have to define a new job or open an existing one before you can measure samples (refer to chapter 5 'Defining a new quality control job' and chapter 6 'Processing an existing quality control job').

A complete job definition consists of:

- a customer name
- a job designation
- one or more series (corresponding to the number of measuring fields to be checked) each with a reference color and tolerance value.

#### a. Customer name

Since jobs are assigned to individual customers, you first have to enter in the database the customer's name and, if required, additional customer data (refer to chapter 11 'Modifying customers and entering new customers').

## **b. Job designation**

The entry of a job designation is not a must. It is nevertheless a prerequisite for locating a specific job again in the database. All jobs which do not have a job designation are stored in the database as 'nameless'.

## **c. Series**

For each color of a print job to be monitored you must define a series. If a print job is to be monitored with four colors, this quality control job then contains four series. All series of a quality control job are stored in the database under a common job designation. This allows complete jobs to be selected from the database very simply and quickly and then loaded for further processing.

A complete definition a series consists of:

- a reference color and
- a tolerance entry.

## **d. Reference color**

The reference color is the target color. The samples measured later are compared with it. You have to determine a reference color for each series of your quality control job. The reference color can be defined in different ways (refer to section 5.5 'Defining a new series'):

- by measuring target colors (e.g., from the OK bow)
- by loading standards or reference colors from ColorNet.
- by numerical entries via the keyboard (e.g., in form of  $L^*a^*b^*$  or remission values)

## **e. Tolerance value**

The tolerance value determines the maximum acceptable color distance between the reference color and the samples of a series.

If you do not make any changes in the tolerances, Color Quality automatically chooses the value selected in the program settings (refer to section 14.2 'Settings program' in chapter 14 'Settings to make'). Since Color Quality takes the tolerance you chose for following series, the simplest approach is to select the required tolerance as the first step when defining the first series.

**f. Closing the job definition**

When you have defined all the series needed for your job and have defined the associated tolerance values, Color Quality automatically generates a new job in the database. You are then ready to measure the samples of the individual series.

**g. Modifying current job**

During job processing, you have the possibility at any time of measuring additional reference colors, deleting surplus reference colors or changing the reference colors, the tolerance value and auxiliary information.

**h. Saving the job**

Color Quality automatically saves all objects in the database, whether they be jobs, customers, standards or samples. As a result, you can process a new job or quit Color Quality at any time without consciously saving the current job.

**i. Open existing jobs**

Existing jobs can be reopened anytime for further processing. With a job, Color Quality stores in the database not only all measuring values, but also the entire program configuration. Upon re-opening a job, your screen again shows the exact configuration you had when you previously quit the job.

**j. Opening a repeated job**

If you intend to carry out a quality control job identical to an already processed job, you have the possibility of loading an existing job as a repeated job. Color Quality copies, from that existing job, all reference colors, tolerances and the entire program configuration in a repeated job, without, however, copying the measured samples. The present job designation has 'R\_J' placed before it to mark it as a repeated job. As soon as you have prepared a repeated job, you are in the position of being able to immediately measure new samples, without having to concern yourself about the job configuration.

**3.4.3 Measuring samples**

After a job has been newly defined or an existing job has been opened, samples can be measured. After measuring, Color Quality automatically assigns a sample as the last sample of the active series and provides it with a sample number and a date/time stamp. The last sample measured in each series thus receives the highest sample number and the most recent date.

### **a. Assigning the samples to the individual series**

If the measuring fields to be monitored differ from one another, Color Quality can automatically undertake the assignment of the samples. Automatic assignment is the simplest and most convenient type of assignment. In special cases you can, however, also select to make a manual assignment (refer to section 14.1 'General settings').

### **b. Individual measurements or multiple measurements with average value calculation**

You can choose between individual measurements and multiple measurements with average value calculations for not only sample measurements, but also for reference colors and standards (refer to section 14.1 'General settings').

### **c. Sample names and notices**

Each measured sample is unambiguously characterized through its association with a series and by a sample number. To better distinguish the samples from one another, each sample can also be labeled with a sample name. Additional information can be entered via the keyboard.

## **3.4.4 Displaying samples**

Numerical information in the display always refers to the active sample. This is symbolized on the screen with large green, yellow or red cross. The sample number of the active sample is shown on the status bar.

Color Quality normally displays all samples of a job. For very large series this can result in complex, excessively-detailed displays. To avoid this, Color Quality allows you to limit the number of displayed samples for large series in various different ways (refer to section 7.3 'and selecting samples').

## **3.4.5 Display functions**

With Color Quality you have the possibility of completely configuring two different display modes:

- The job display: displays a specific type of display for all (or selected) series of a job.
- The series display: displays different types of display for the selected series.

You can quickly change between these two display modes. In this way you can present an overview in the job display, or specific details about your measurements in the series display, as you wish.

You can change the display in different ways, so that the required information is presented as completely and as meaningfully as possible (refer to chapter 8 'Adapting and changing the display').

#### **a. Jobs display**

A specific type of display is presented in the job display for all series of your quality control job. Even on a monitor with a standard resolution, all the series of a job can be jointly displayed and monitored on the same display page e.g. with the aid of a trend graphic. You can freely select the display type to be common for all series.

#### **b. Series display**

For an individual series, you can stipulate that different display types be simultaneously presented on a screen page in the series display. Depending on the resolution of your monitor and on the type of parameters selected, there can be between two and six recommended displays. You thus have the possibility to jointly display a series, e.g., a trend graphic, correction notes, statistics and remission spectra. You can also quickly change from one series to another.

#### **c. Configuring display changes**

You can change the display in different ways so that the required information is presented as completely and meaningfully as possible:

- Zoom for trend presentation
- Change the assignment via a menu window
- Select the displayed samples

---

## **3.5 Data administration**

Color Quality can be simultaneously linked to a number of active databases. New jobs are still stored in the same database as the selected customer.

A database can be opened at the same time by a number of Color Quality programs running on different computers or on the same computer. Color Quality inhibits simultaneous access to the same database object.

All data relating to jobs, customers, standards and samples is stored in the database. You can process this data in a variety of ways:

In the 'Customer' database you can:

- Enter new customers and additional information
- Modify customer data
- Print customer data
- Forward customer data by e-mail
- Import and export customer data
- Delete customers.

In the 'Job' database you can:

- Print job data
- Forward job data by e-mail
- Import and export job data
- Delete jobs.

In the 'Standards' database you can:

- Define new standards
- Modify standard designations and additional information
- Print standard data
- Forward standards data by e-mail
- Import and export standards
- Delete standards
- Define settings for standard registration.

---

## 3.6 Settings

A broad spectrum of possibilities means that Color Quality can be tailored to your job-related requirements.

In the menu settings you determine the settings for the default measuring conditions (illuminant, observer, filter, density standard), the color system, the types of light for metamerism, the standard tolerances and the dye strength calculation (colorant, calculation

method, substrate) (refer to sections 14.1 ‘General settings’ and 14.2 ‘Settings program’).

Ensure that you have correctly selected all settings before you define a new quality control job. The default measuring conditions are permanently assigned to the job and cannot be changed later.

Further, you can display information associated with your measuring device (refer to section 14.3 ‘Settings measuring device’), you can select activable display types (refer to section 14.4 ‘Settings displays’) and you can stipulate the extent of your check areas (refer to section 14.5 ‘Settings check area’).

---

## 3.7 General operating information

While you work with Color Quality, information windows will be displayed during various sequences. These will point out certain processes or possibilities. Please read these notes thoroughly and carefully before you either acknowledge by clicking on **OK** or **Yes**, or interrupt the sequence with **No** or **Cancel**.

### 3.7.1 Standard buttons

Buttons are displayed for standard functions in different windows. These are not completely explained in the operational sequences:



You quit the window. Any entries or changes you have made are not saved.



You can select all entries in a list in order to process them (e.g., print them) and then deselect them when you wish to select an individual entry.



If you click on **Info** or **i**, another window appears with information and notes about the current object. Click **OK** to close the window.



You have to tag data before you can delete it. After you click on **Delete**, an information window appears. Here you must click on a **Yes** or **OK** button in order to verify the delete. Click on **No** or **Cancel** to cancel the delete action.



The entries made are saved and the window is closed.



**Search criteria** window is opened. You can search for database entries (customers, jobs, standards) according to date, designation and additional descriptions.

### 3.7.2 Drag & Drop

In the database dialog windows, one or more standards, customers or jobs can be dragged to an Explorer window. The data is stored in ASCII format. This file then be imported into Color Quality at a later stage by clicking on **Import**.

In the same way, if an ASCII file is dragged to the Color Quality main window or if an ASCII file is opened by double-clicking in Explorer, it is imported. A screen prompt will ask you which database the objects are to be dragged to (entire database, customer database) or the customer to which the data is to be added (jobs, standards).

Drag & Drop can be used to copy measuring values from one series to another.

If Color Quality has been started a number of times, it is possible to exchange samples and standards between the individual entities. If a measuring value is dragged onto the main window, it is automatically assigned to a series. If a measuring value is dragged onto the window of a series, it is assigned to that series.

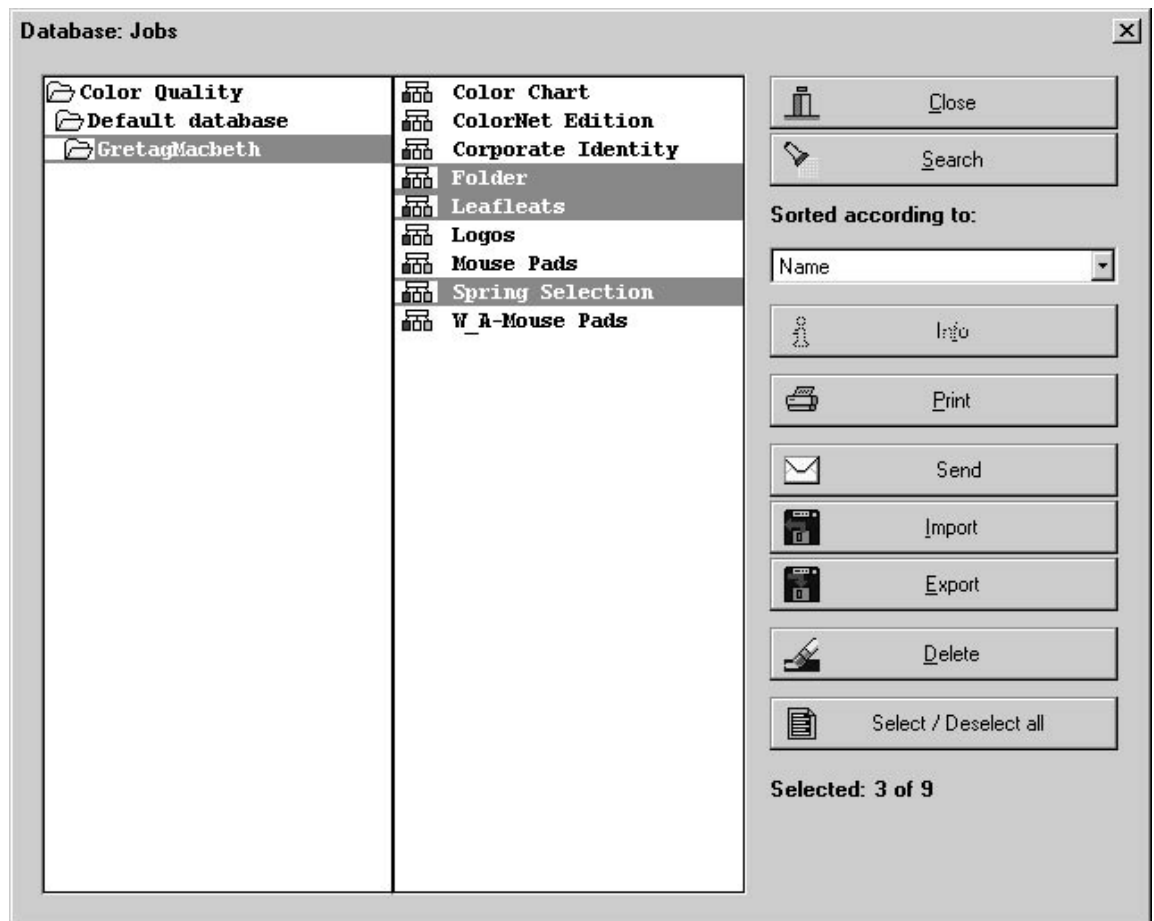
Entire series can exchanged between two open **Modify current job** windows.

### 3.7.3 E-mail

For this function, a MAPI-compatible e-mail program, such as Microsoft Exchange, must be installed. One or more standards, customers or jobs can be selected in the database windows and then forwarded by e-mail by clicking on **Send**.

Procedure:

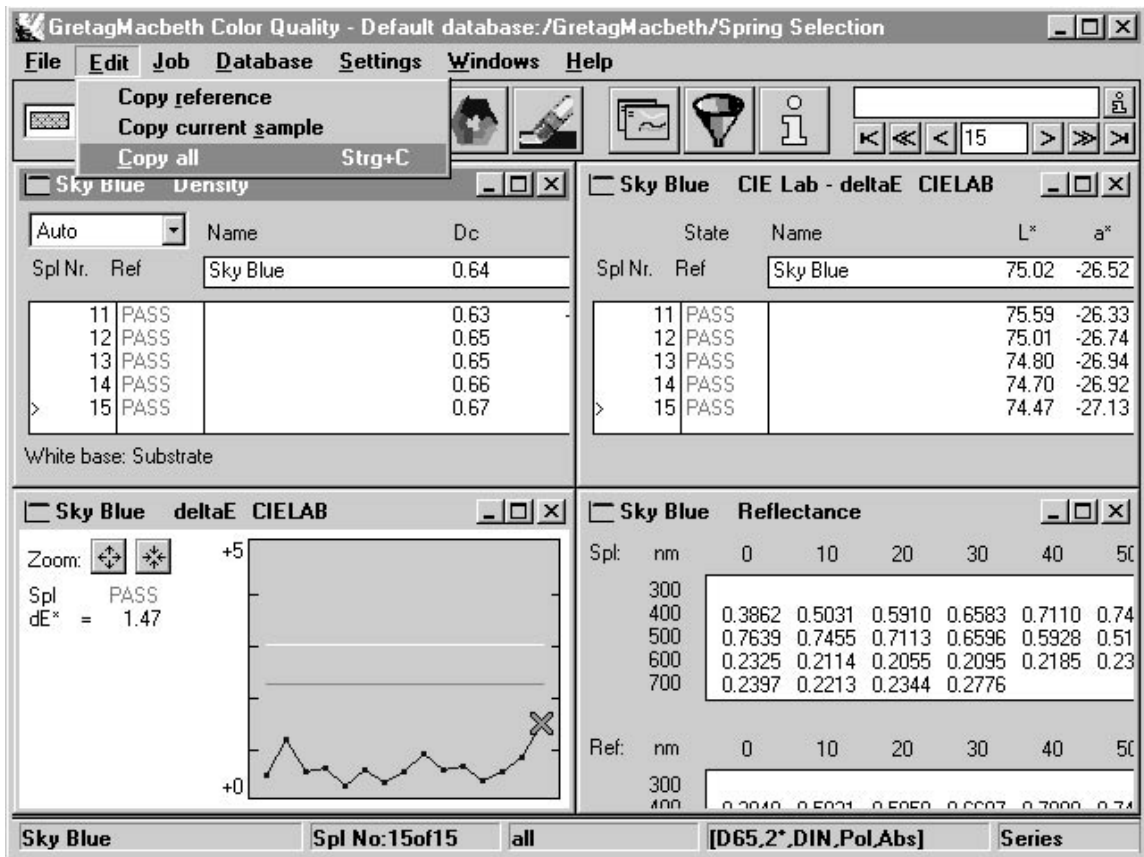
1. In the database window, select the jobs, standards or customers which are to be forwarded.



2. In the database window, click on **Send**.  
Your standard e-mail program is started and an ASCII file is generated from the objects. This file is attached to the e-mail.
3. Before transmitting, complete the message to include the address and the required text.

The recipient can open the attached file in his own e-mail program. Color Quality is automatically started and the object can be imported.

### 3.7.4 'Edit' menu



The **Edit** menu incorporates the three commands **Copy reference**, **Copy current sample** and **Copy all**.

If the active window contains a table, all the menu items can be accessed. The reference, only the current sample or the reference and all samples are copied as text onto the clipboard. The values can be pasted into another application, such as Microsoft Excel for example. It is therefore a straightforward matter to transfer values from Color Quality into other applications.

If the active window is displaying a graphic, only the **Copy all** command is accessible. This command is used to copy the graphic onto the clipboard, from where it can be pasted into another application, such as Microsoft Word. The size of the copied graphic is equivalent to the size of the graphic in Color Quality.

## 4 Starting Color Quality

---

### 4.1 Starting Color Quality

The program must first be installed in accordance with the instructions given in chapter 18 'Installing Color Quality'.

The measuring device need not be connected when Color Quality is started up. For off-line measurement use, you can even disconnect the measuring device when the program is running and later reconnect it to the computer. Color Quality automatically recognizes the interface you selected.

Procedure:

1. Start Color Quality.

---

**Note:** If you have started Color Quality without a measuring device connected, a **Searching for SPM** window appears after the start screen. The program searches for all the interfaces with different baud rates. Of course, you can also suspend the search.

---

After startup, the main window displays the last processed job:

---

**Note:** When the program is started for the first time, the main window is blank.

---

---

## 4.2 Perform a white calibration of the measuring device

White calibration is the basis for exact measuring results (refer to section 3.3 'White calibration of the measuring device'). After you have selected the appropriate option (refer to section 14.1 'General settings'), you will be requested to carry out a white calibration at various points during your work with Color Quality.

---

**Note:** With the GretagMacbeth SpectroEye measuring device, the white calibration is always performed automatically without a prompt.

---

If you have never calibrated your measuring device, or if it has been a long time since the last calibration, then you should carry one out without fail. If you do not wish a white calibration, you can skip the procedure by clicking **No**.

Procedure:

Refer to the operating manual for the measuring device and follow the instructions on the screen.

# 5 Defining a new quality control job

---

## 5.1 General

A complete job definition consists of:

- a customer name
- a job designation
- one or more series (corresponds to the number of measuring fields to be checked) each with a reference color and tolerance information.

Before opening a new quality control job, pay careful attention to the correct settings for the measuring conditions (refer to section 14.1 'General settings'). These are permanently related to the job and cannot be changed later.

---

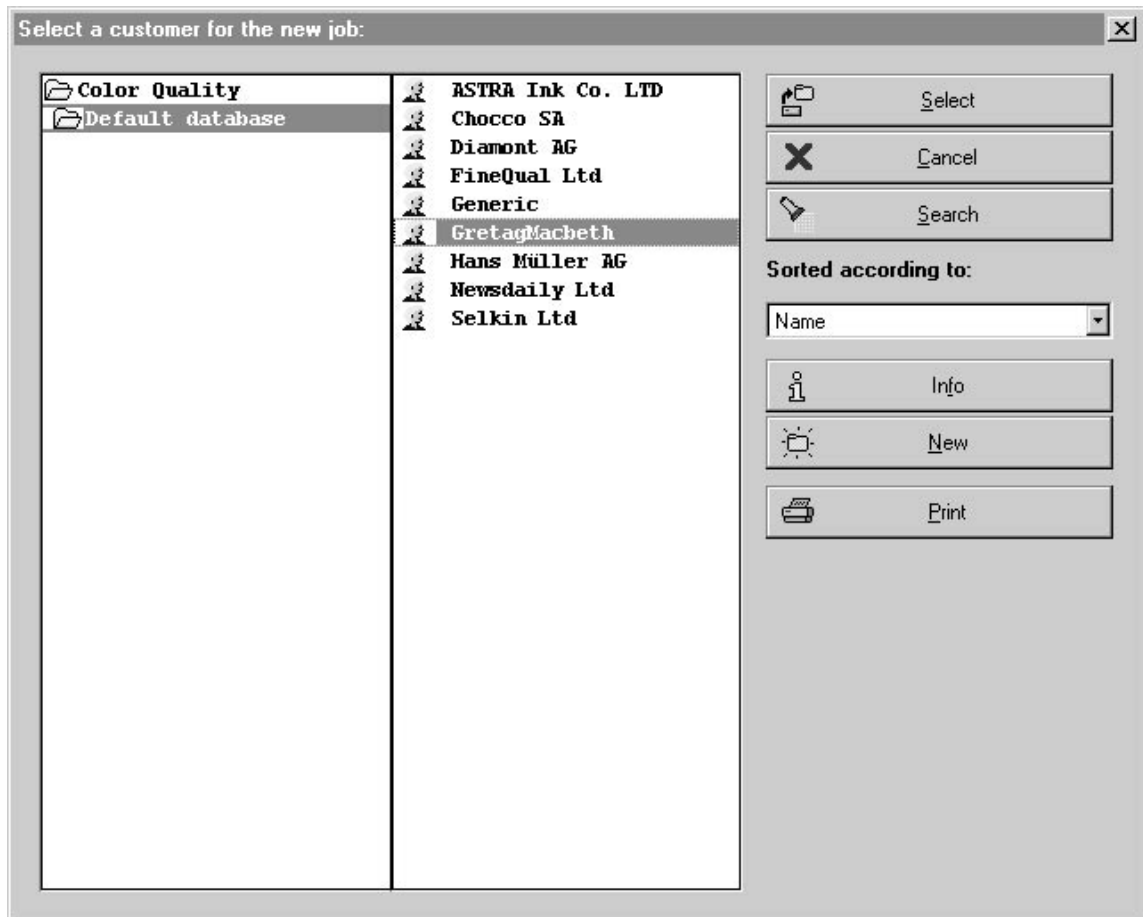
## 5.2 Opening a new quality control job

Procedure:

1. Connect up the measuring device.
2. In the **Job** menu, click on **New**. The **Select a customer for the new job** window appears.

If necessary, carry out a white calibration (refer to section 4.2 'Perform a white calibration of the measuring device').

## 5.3 Assigning a job to a customer



A list of all the customers (existing customers) is shown to the left side of the window.

Double-click on **Color Quality** in the left side of the window to display the list of associated databases. In the middle of the window, double-click on the name of the database you require to display a list of all the customers of the selected database.

Procedure for existing customers:

1. Select the database you require.
2. Click on the name of the customer to whom the new job should be assigned.
3. Click on **Select**. The window **Job: New** opens.

Procedure for new customers

1. Select the database you require.
2. Click on **New**. The **New Customer** window appears.

**New Customer**

**Designation:**

Created: 23.03.00 16:14:02

**Additional description:**

**Address:**

OK

Cancel

3. Click in the **Designation** field. Use the keyboard to enter the required designation.
4. If required, click in the **Additional description** or **Address** fields and enter text using the keyboard.
5. Click on **OK** after you have made your entry. The **Select a customer for the new job:** window reappears. The designation you entered appears in the list of customers in the middle of the window.
6. Now click on the customer name to be associated with the new job.
7. Click on **Select**. The **Job: New** window opens.

## 5.4 Entering job designation / job information

Job: New [D65,2°,DIN,Pol,Abs]

Job: nameless

Customer: GretagMacbeth .....

Series

Series	L*	a*	b*	Tolerance
Substrate not defined				

Substrate New ColorNet

Modify Delete

OK Cancel Save to SPM

**Note:** the **Save to SPM** button is only displayed when the GretagMacbeth SPM measuring device is connected.

Procedure:

1. in the field **Job** mark the previously-determined job designation 'nameless' and overwrite the entry using the keyboard.
2. You can enter additional information associated with the job using the **i** button (refer to section 3.7 'General operating information').

## 5.5 Defining a new series

A complete definition of a series consists of

- a reference color and
- a tolerance value.

The selected measuring conditions are displayed in the title line of the **Job: New** window. Check these before you continue with the series definitions (refer to section 14.1 'General settings').

Procedure:

1. In the **Job: New** window, click on **New**. The **New Series** window opens.

**New Series**


**Designation:**  
ORANGE

**Created:** 23.03.00 16:42:05

**Additional description:**

**Tolerance:**  
CIELAB dE\*  
dE\*  
3.00

**Measuring Value**

 L= 67.3  
a= 22.4  
b= 73.2  
[D65.2\*]

X: 1165  
Y: 945

Buttons: OK, Cancel, Measure, ColorNet, Enter values, Calculate reference, Calculate tolerance, Position

**Note:** The **Calculate reference** and **Calculate tolerance** buttons are only activated when samples have been measured (refer to section 5.5.4 'Reference and tolerance calculation').

The **Position** button is only displayed if a GretagMacbeth SpectroMat or GretagMacbeth SpectroScan device is connected. In this case, you will be asked for the position of the measuring field (refer to section 5.5.5 'Enter position').

2. Click on the **Tolerance** field. This opens the tolerance range list.
3. Click on the required tolerance range. Also refer to section 14.2 'Settings program'.
4. Enter the maximum acceptable color distance in the fields beneath the color coordinates.
5. Define the reference color (refer to following sections and section 3.4.2 'Defining the job').
6. Click on OK in order to return to the **Job: New** window.

This series is now defined and is entered in the **Series** list of the **Job: New** window. There you will also find the L\*a\*b\* values of the measured reference color and the tolerance value.

In order, for example, to define three additional series with the series names of Magenta, Yellow and Black for four-color printing, repeat

the procedure described above with the corresponding reference colors.

To define paper white, click on **Substrate** and, in the displayed **Substrate** window, define the paper white. This is only necessary if you wish to enter paper-based values such as density or color intensity (also refer to section 14.2 'Settings program').

---

**Note:** To ensure that the substrate is used to calculate the density and color intensity, **Substrate** must be set as the white reference (refer to section 14.2.2 'Density calculation').

---

### 5.5.1 Measuring the reference colors

---

**Note:** Only measure the reference colors directly in the **New series** window if you wish to use them singly for a quality control job. Reference colors that you wish to use for several jobs should be entered in the database as standards and loaded from there (refer to section 5.5.2 'Loading reference colors from ColorNet').

---

Procedure:

1. Place your measuring device on the pattern to be measured which has the required target color.
2. In the **New series** window, click on **Measure**. The measurement is started.

---

**Note:** By measuring the relevant reference color, Color Quality gives the generated series a designation derived from the hue of the reference color (e.g., 'cyan'). You can expand this or overwrite it and enter further information in an additional field.

---

### 5.5.2 Loading reference colors from ColorNet

Using ColorNet you can copy measuring values from arbitrary ColorNet applications (CMYK Conversion, Ink Formulation, GretagMacbeth™ measuring devices, Color Quality) to use as reference colors for a new series.

Procedure:

1. Click in the **Job: New** or **New series** windows on **ColorNet**.
2. In the left area of the **ColorNet** window, click on the required directory.

---

**Note:** If there are sub-directories, open these by double clicking. A list of the standard or reference colors appears in the center of the window.

---

3. In the list, click on the standards or measuring values that you wish to load.

---

**Note:** If you started with the **Job: New** window, you can select several colors and load them together. On the other hand, if you started with the **New series** window, you can load one reference color only.

---

4. Click on **Select** in order to load your selected reference colors and to return to the **Job: New** or **New series** window.

---

**Note:** The **Favorites** button is displayed in the ColorNet window. The **Favorites** window is opened by clicking on this button. Here you can add the current path to the list or delete an entry. By clicking on **Select**, the selected entry becomes the current path.

---

### 5.5.3 Entering reference colors using the keyboard

Procedure:

1. In the **New series** window, click on **Enter values**. The **Enter values** window appears
2. Select the required entry type in the color space list.
3. Enter the required reference color value. In order to enter your reference color as a numerical remission spectrum, change the **Value** field to the required remission value in the range from 0 to 0.70. The < and > buttons are used to change the wavelength. Enter the associated value for the wavelengths between 380 nm and 730 nm.
4. Click on OK to return to the **New series** window.

### 5.5.4 Reference and tolerance calculation

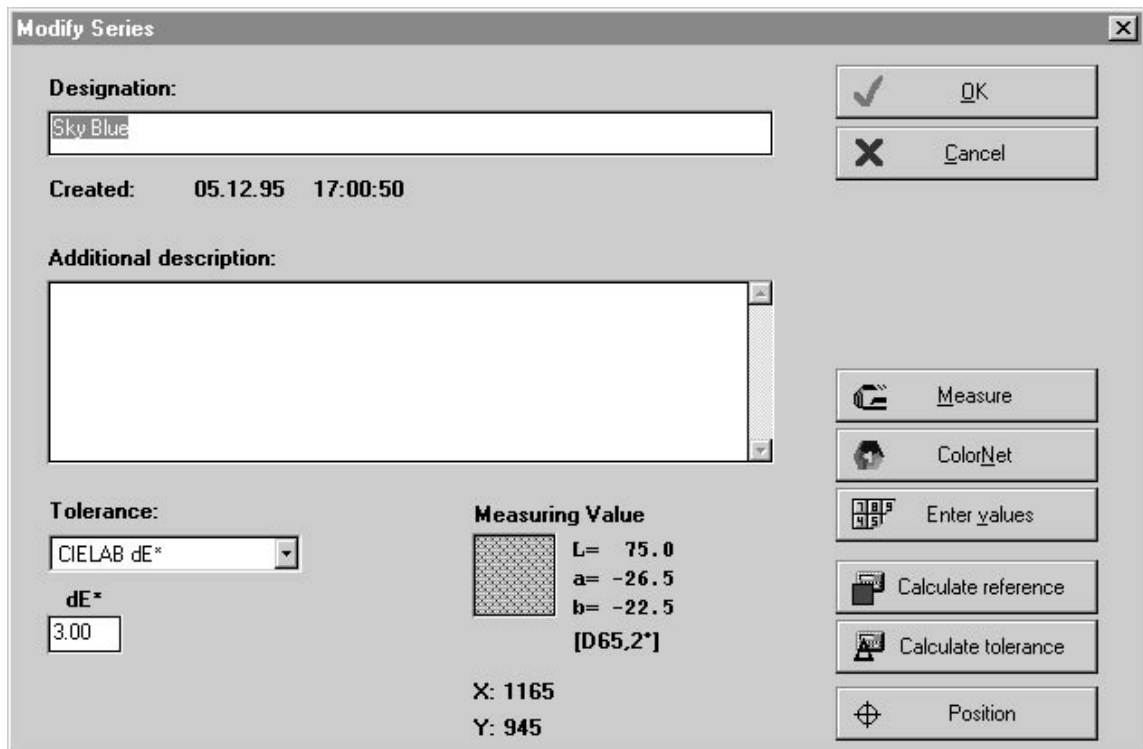
When you have measured samples, you can automatically calculate the reference and the tolerance of the series with the aid of the measuring values.

Begin by measuring all the samples with the deviations which are acceptable to your customer. Then calculate the reference and the optimal tolerance.

Procedure:

1. Define a new series and measure the samples (refer to section 5.5 'Define new series').
2. In the **Job** menu, click on **Modify current job**.

3. In the **Modify current job** menu, click on the series from which you wish to calculate the reference or the tolerance.
4. Click on **Modify**. The **Modify series** window appears.



5. Click on **Calculate reference** or **Calculate tolerance**.

The **Calculate reference** function determines the spectra of all the samples. This gives the new reference.

The current reference is used as the basis for the **Calculate tolerance** function. The tolerance is set in such a way that all the measured samples fall within the tolerance. The calculated tolerances are dependent on the settings selected for the range of tolerances (refer to section 14.2.1 'Default tolerance').

Naturally, these two functions should be used independently of each other.

### 5.5.5 Enter position

If a GretagMacbeth SpectroMat or GretagMacbeth SpectroScan device is connected, Color Quality saves and X/Y position to each series.

In this case, the **Position** button is displayed in the **New series** or **Modify series** window. When you define a new series (refer to section 5.5 'Defining a new series'), you will be asked to specify the position of the measuring field. Use the buttons on the measuring device to move to the measuring field.

The position of the measuring field can be redefined at any time in the **Modify series** window.

If a measurement is initiated in the main window or on the GretagMacbeth Spectrolino, all the measuring fields are accessed in sequence and measured. It is important to ensure that the bow is in exactly the same location as when the position was defined.

---

## 5.6 Saving the job data in the measuring device

### 5.6.1 Saving the job reference colors in the SPM spectrophotometer

As soon as you have saved your defined reference colors in the SPM spectrophotometer, you can make off-line sample measurements. Then, in order to carry out your evaluations, you can use ColorNet to upload your measured samples into Color Quality.

Procedure:

1. When you have defined your series, in the **Job: New** window click on **Save to SPM**. The **Save all series to SPM** window appears.
2. Select the required options (please refer to the operating instructions for the SPM spectrophotometer).
3. Click on **OK**.
4. Acknowledge the displayed information window by clicking on **OK**. The series is saved in the SPM spectrophotometer.

### 5.6.2 Save job to SpectroEye

You can export entire jobs from Color Quality to GretagMacbeth SpectroEye and then re-import them from there. Refer to section 9.5 'Export job data to SpectroEye / import job data from SpectroEye'.

---

## 5.7 Quitting the job definition

In the **Job: New** window, click on **OK** when you have defined all the series and associated tolerance values required for your job. Color Quality then generates a new job in the database. You are now ready to measure the samples of the individual series.

## 6 Processing an existing quality control job

---

### 6.1 General

You can open an existing quality control job, display data and evaluate without having a measuring device connected. However, you must connect the measuring device and click on **Automatic search** in the **Settings SPM** menu before you make changes to the current job or commence sample measurements.

---

### 6.2 Opening a job

Procedure:

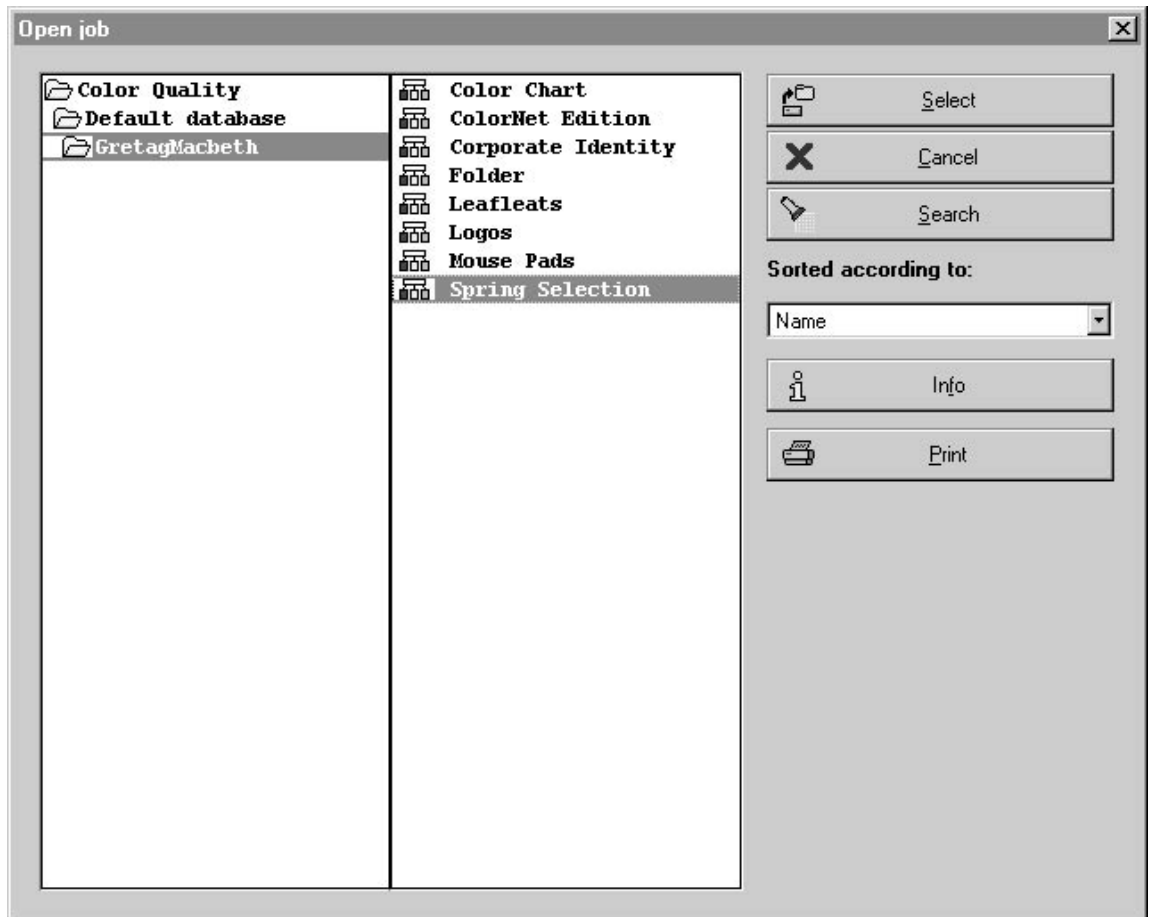
1. In the **Job** menu, click on **Open**. A list of options is displayed.
2. In the list of options, click on **Job**. The name of the database and the customers it contains are displayed in the left side of the **Open job** window.

---

**Note:** The last 10 jobs are also displayed in the list of options. Click on these jobs to open them.

---

3. Select the database you require.
4. Double-click on the name of the customer whose jobs are to be displayed. The jobs are displayed in the middle of the window.



5. In the list, click on the job to be opened.
6. Click on **Select**. The job is loaded from the database.

## 6.3 Opening repeat job

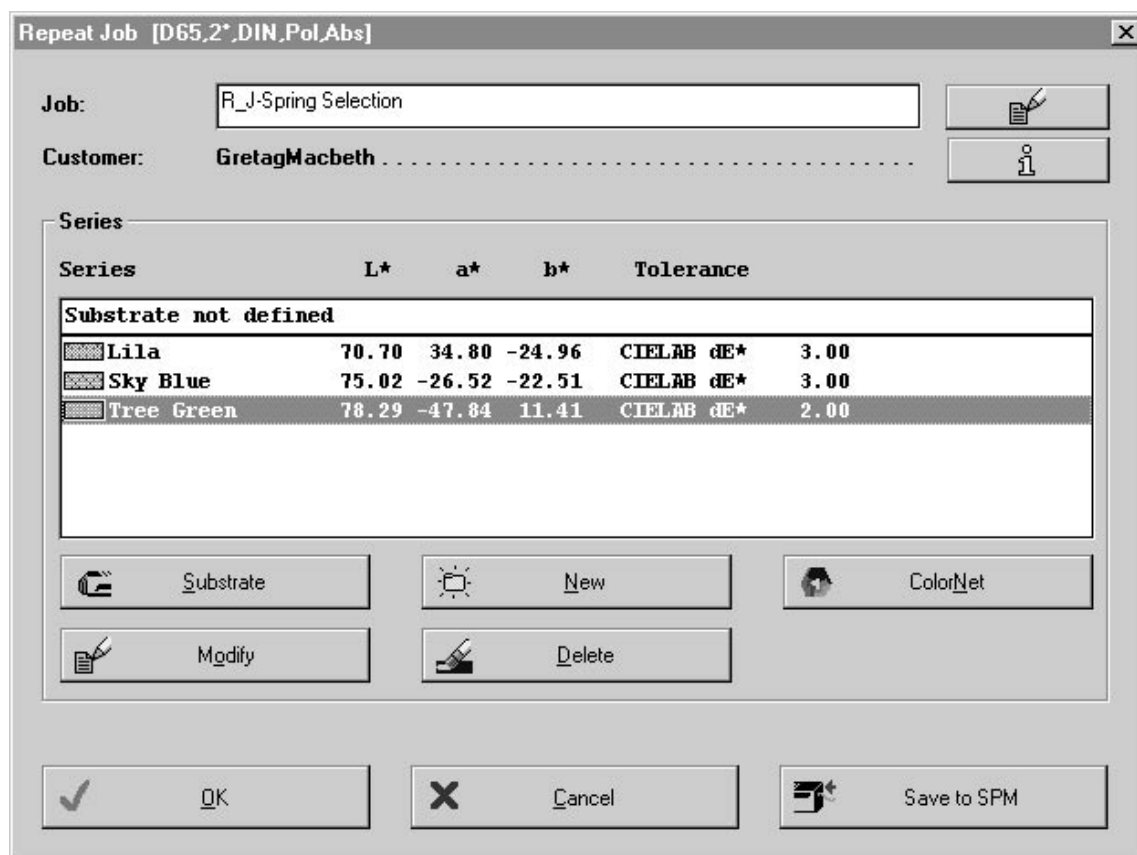
Procedure:

1. In the **Job** menu, click on **Repeat job**. The name of the database and the customers it contains are displayed in the left side of the **Select repeat job** window.
2. Select the database you require.
3. Double click on the customer name whose jobs are to be displayed. The jobs appear in the center area.
4. Click in the list on the job to be opened.
5. Click on **Select** in order to open the job from the database.

**Note:** Color Quality adds an 'R\_J' label in front of the previous job designation to flag it as a repeat job.

6. Enter a new job designation in the **Repeat job** window and, if necessary, make changes in the definitions of the series (refer to section 5.5 'Defining a new series').

**Note:** For each series, the name, color values of the target color corresponding to the selected color system, the selected tolerance formula and the tolerance values are displayed on the **Series** field.



## 6.4 Modifying current job

If you wish to modify a current job, open it (refer to section 6.2 'Opening a job'). Then you can make the changes you require:

Procedure:

1. In the **Job** menu, click on **Modify current job**. The **Modify current job** window appears.

Series	L*	a*	b*	Tolerance
Substrate not defined				
Lila	70.70	34.80	-24.96	CIELAB $\Delta E^*$ 3.00
Sky Blue	75.02	-26.52	-22.51	CIELAB $\Delta E^*$ 3.00
Tree Green	78.29	-47.84	11.41	CIELAB $\Delta E^*$ 2.00

2. Make the required entries in the **Modify current job** window. Proceed exactly as for defining a new job (refer to sections 5.4 'Entering job designation / job information' and 5.5 'Defining a new series').

**Note:** For each series, the name, color values of the target color corresponding to the selected color system, the selected tolerance formula and the tolerance values are displayed on the **Series** field.

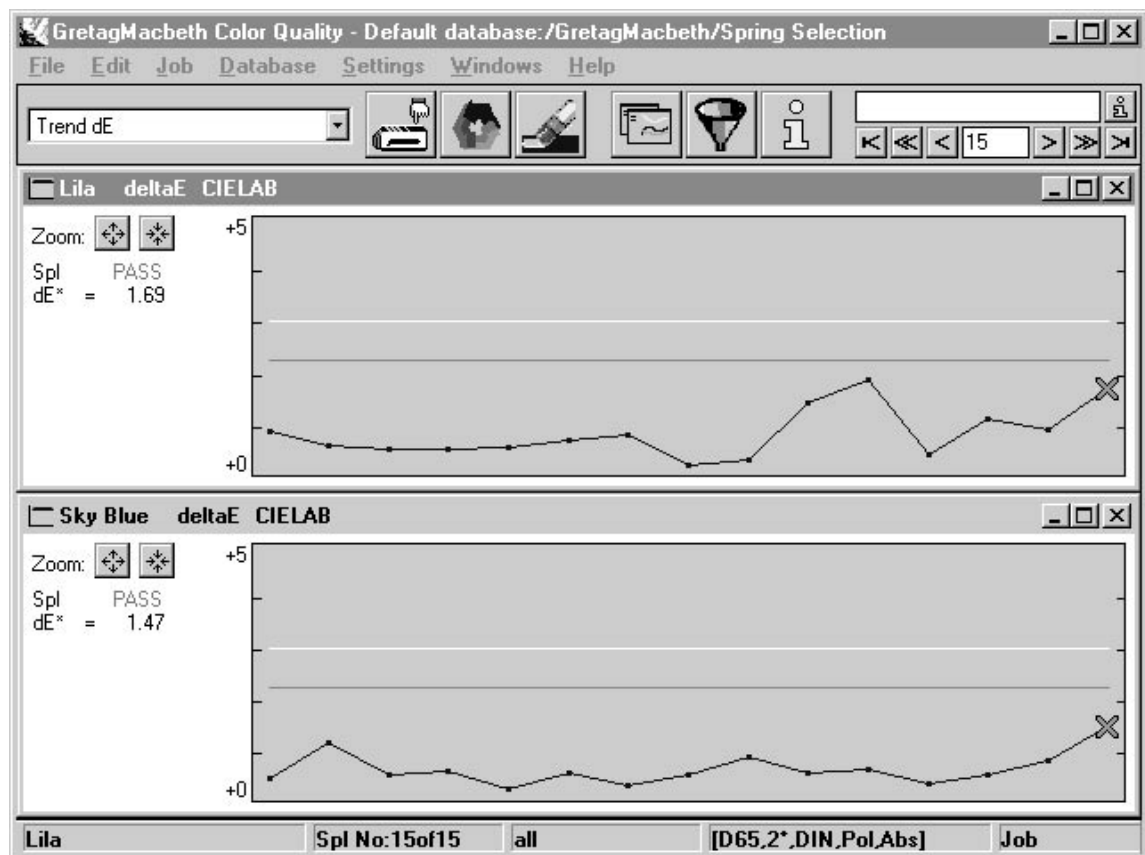
3. Click on **OK**. You are returned to the job window.

# 7 Measuring and processing samples

## 7.1 General

If you define a new quality control job (refer to chapter 5 'Defining a new quality control job') or open an existing job (refer to section 6.2 'Opening a job') the job window is displayed. You are then ready to measure samples.

In the 'job' display mode, the window of an opened job typically appears as follows for the display of various series:



Deviations can be immediately recognized with this type of display. Because of the tolerance entered, you can immediately see whether the sample is 'Pass' or 'Fail' or whether the process is entering a critical phase ('Check').

---

## 7.2 Measuring samples

### 7.2.1 Assigning samples to an individual series

If you select **Automatic assignment** (refer to section 14.1 'General settings'), the samples then measured are automatically assigned to the series with the smallest color distance.

If, for some reason, you select **Manual assignment**, (refer to section 14.1 'General settings'), the samples then measured are automatically assigned to the active series. Therefore you must begin by selecting the required series before you can measure a sample (refer to step 1 in section 7.3.2 'Selecting the active sample').

### 7.2.2 Carrying out measurements

You can carry out single measurements or multiple measurements using average value calculations (refer to section 14.1 'General settings').

Procedure:

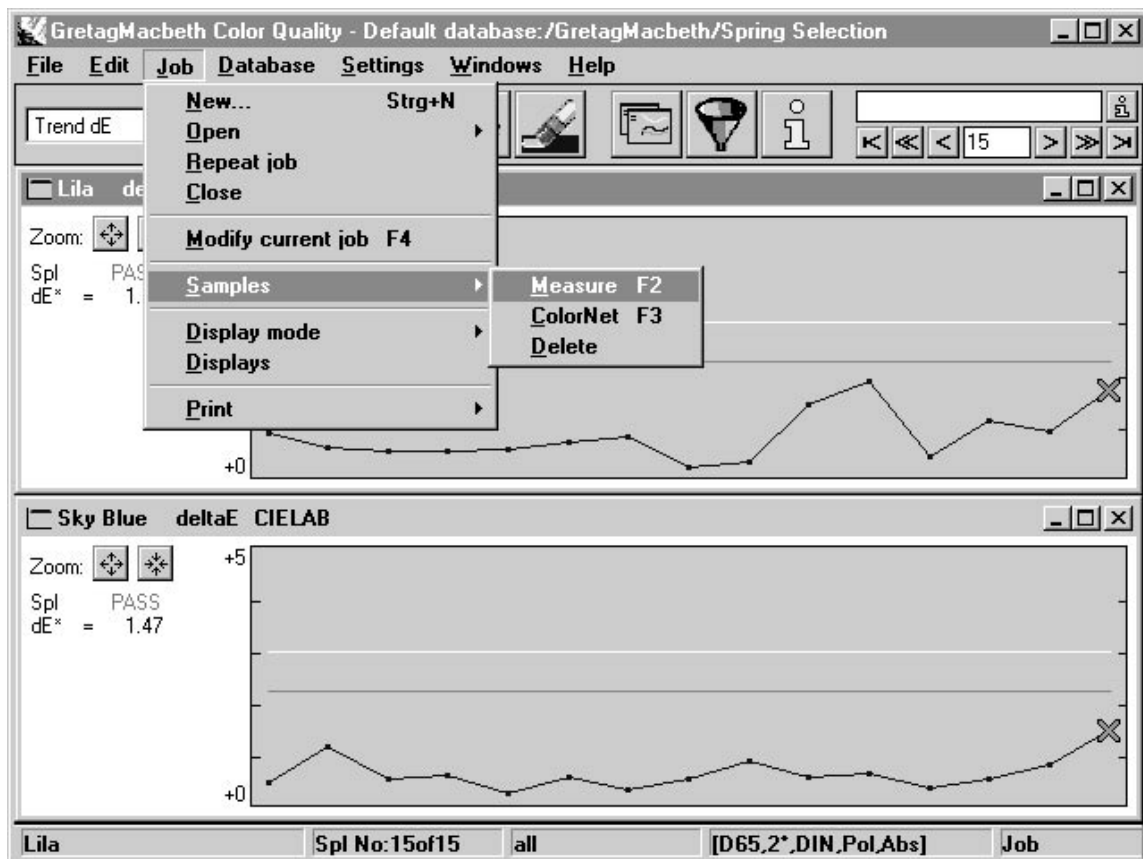
1. Place the measuring device on the measuring field to be measured.
2. In the **Job** menu, click on **Samples**.
3. In the selection field, click on **Measure**. The measurement is carried out.

---

**Note:** If you have selected multiple measurements, the **Averaging** window opens. Click there on **Measure** so that the measurement is started. Repeat this sequence until the set value of the measurements for the average value calculation has been reached. You then automatically return to the job window where the measuring value is displayed.

If you wish to quit the average value calculations before the set number of measurements has been reached, click on **OK**. In this case you will also return to the job window.

---



You can start the measurements even simpler if you click on the **Measure** symbol in the symbols bar.

When you have selected the **Initiate measurement also by SPM** option (refer to section 14.1 'General settings'), you can start the measurement directly on the measuring device.

### 7.2.3 Entering a sample name

During the measurement, the current date and time is automatically displayed in the **Sample name** field. You can extend or overwrite this information.

Procedure:

1. Click in the **Sample name** field.
2. Enter the name of the active sample using the keyboard.

If you wish to enter or change the name of a sample measured earlier, you must first make it active (refer to section 7.3.2 'Selecting the active sample').

---

## 7.3 Displaying and selecting samples

### 7.3.1 Selecting the sample group to be displayed

Procedure:

1. In the symbols bar, click on the **Select displayed samples** symbol to open the window for the selection of a sample group.
2. Select the required option.
3. Click on **OK**. The selected option is displayed in the status bar.

### 7.3.2 Selecting the active sample

The number of the active sample is displayed in the symbols bar in the **Sample number** field. Color Quality automatically makes the last sample measured the active sample.

Procedure to activate another sample:

1. Select the required series using one of the following (also refer to chapter 8 'Adapting and changing the display'):
  - For an active job display: select the required series by clicking on any location within an associated window. If the window does not already contain the required series, click on the **Define displays** symbol and activate the required series in the **Activated series** list.

---

**Note:** You can activate one, several or all series. The series where you wish to activate a sample must be active.

---

- For an active series display: If the window does not contain the required series, in the symbols bar click on the field for the series selection on the required series in the relevant series selection list.
2. Select the required sample using one of the following possibilities:
    - Click on one of the buttons with the arrow symbols next to the **Sample number** field (left arrow for lower sample numbers and right arrow for higher sample numbers).
    - In a graphic or table, click directly on the required sample.
    - In the **Sample number** field, overwrite the displayed sample number with the new number of the sample to be activated.

## 7.4 Deleting samples

Procedure:

1. Activate one of the series from which the sample is to be deleted.
2. Select the sample to be deleted.
3. In the **Job** menu, click on **Samples**.
4. Click on the **Delete** option.
5. Verify the delete by clicking on **Yes**.

An even simpler way to delete a sample is to select it and click on the **Delete** symbol in the symbols bar.

## 8 Adapting and changing the display

---

### 8.1 Switching between job display and series display

Procedure for changing the display mode:

1. In the **Job** menu, click on **Display mode**.
2. In the selection window, select the required display mode, **Job** or **Series**.

or

1. In the symbols bar, click on the **Define displays** symbol. The **Job: Displays** window appears.
2. Select the required **Job** or **Series** display mode in the **Processing** option list.
3. Click on **OK**.

If the job display is active, the designation 'Job' is displayed in the status bar; if the series display is active, 'Series' is displayed in the status bar.

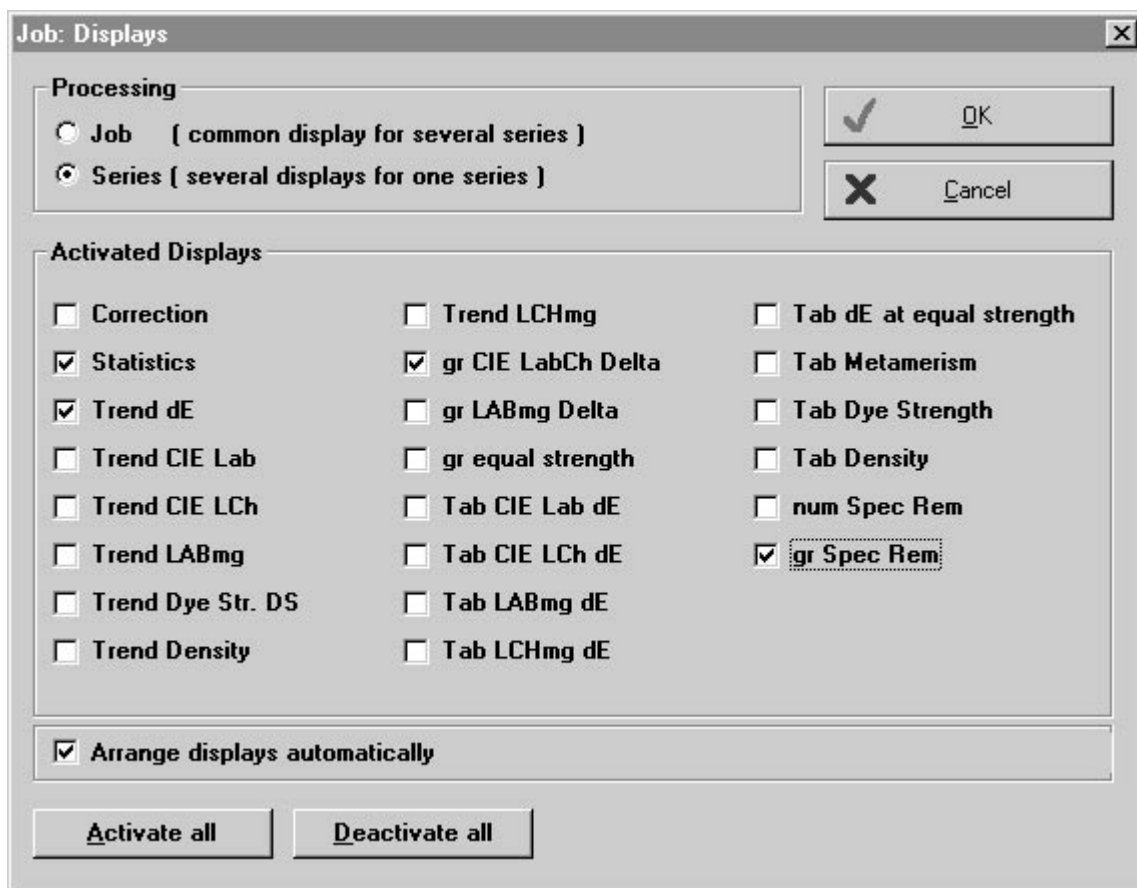
---

### 8.2 Selecting the type of display

#### 8.2.1 Selecting the type of display for an active series display

Procedure:

1. In the **Job** menu, click on **Displays** or, in the symbols bar, click on the **Define displays** symbol. The **Job: Displays** window appears.



2. In the **Activated Displays** list, activate those display types that you wish to display on the screen. Do this by clicking on the square control boxes.
3. If required, activate the **Arrange displays automatically** control box.
4. Click on **OK**. The activated display types are displayed in the job window for the selected series.

### 8.2.2 Selecting the type of display for an active job display

Procedure:

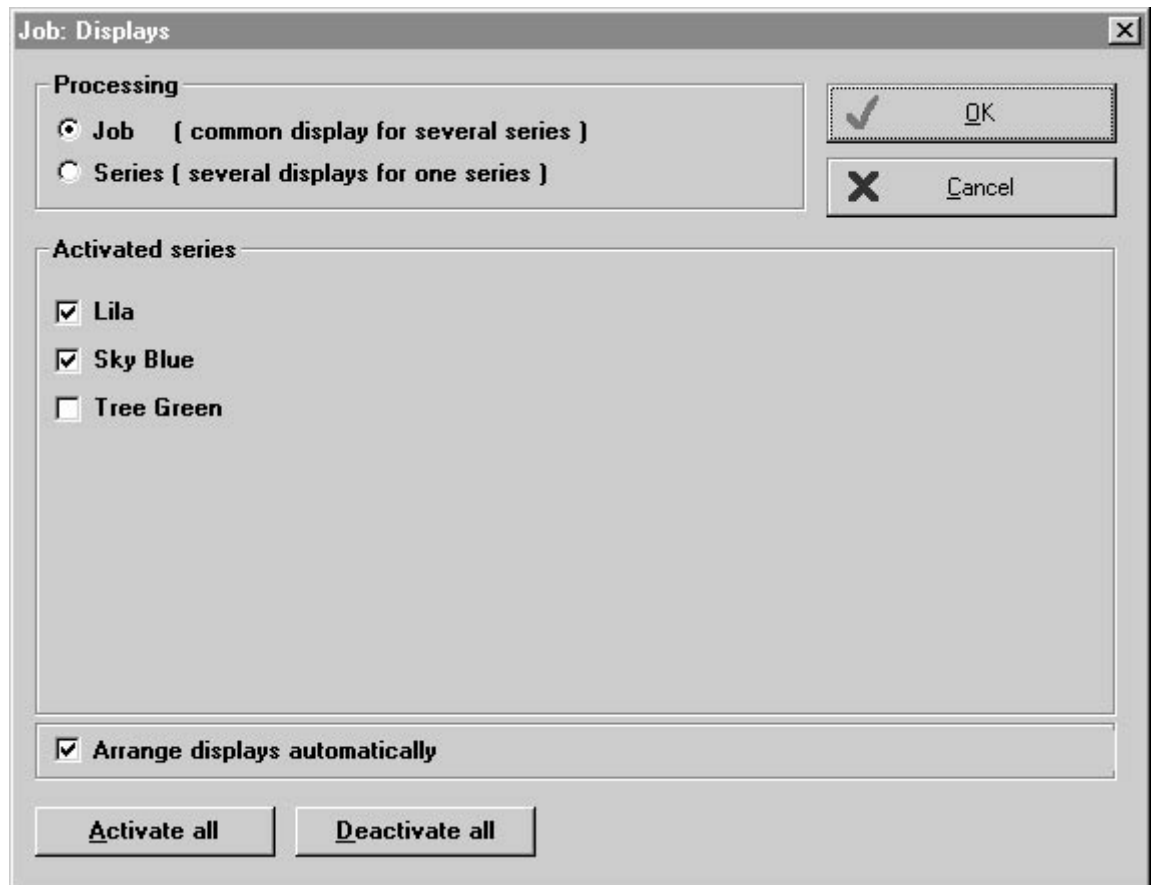
1. In the symbols bar, click in the field for selecting the display types. The selection list of the possible display types appears.
2. Click on the required display type. This will be displayed in the job window for all activated series.

## 8.3 Selecting the series to be displayed

### 8.3.1 Selecting the series for an active job display

Procedure:

1. In the **Job** menu, click on **Displays** or in the control panel on the **Define displays** symbol. The **Job: Displays** window appears.



2. In the **Activated series** list, activate those series that you wish to activate by clicking on the square control boxes. You can activate or deactivate all series by clicking on **Activate all** or **Deactivate all**.
3. If required, activate the **Arrange displays automatically** control box.
4. Click on **OK**. The selected display mode is shown in the job window for all activated series.

### 8.3.2 Selecting the series for an active series display

Procedure:

1. In the symbols bar, click in the field for selecting the series. The series selection list appears.
2. Click on the required series. The activated display types for the selected series are displayed in the job window.

---

## 8.4 Changing the display configuration

### 8.4.1 Zoom

By using the Zoom button in the Trend display, you can change the displayed measuring range step by step.

Procedure for changing the measuring range using Zoom:

1. Select the window containing the required display by clicking anywhere in the window.
2. If you wish a smaller measuring range, click on the left **Zoom** button. Alternatively, click on the right button if you wish to display a larger measuring range. Each click reduces or increases the measuring range by one step. Click as often as necessary until you obtain the required size of measuring range.

### 8.4.2 Arranging the windows

Using the **Windows** menu, you can change the arrangement of the windows to:

- Cascade
- Tile
- Horizontal
- Vertical

Procedure for arranging the window:

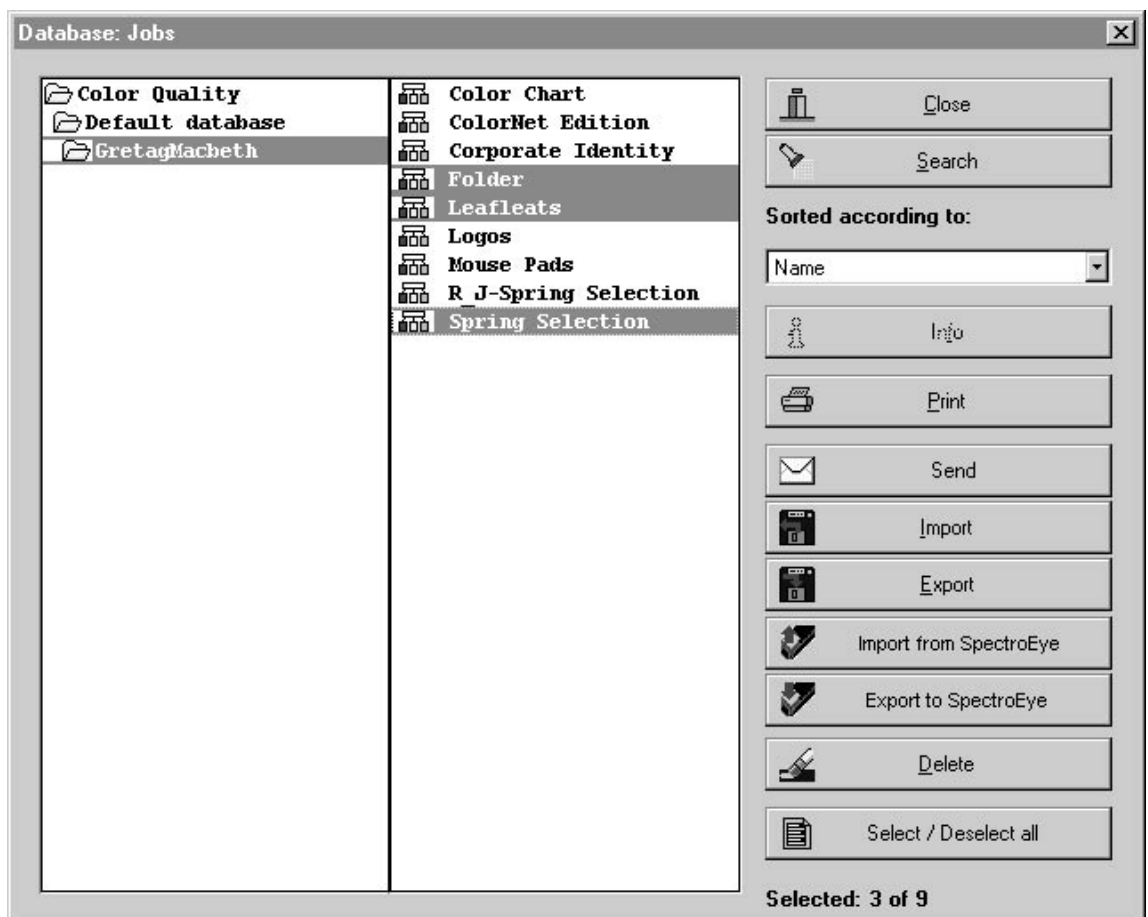
1. In the **Windows** menu, click on the required option.

## 9 Managing jobs

### 9.1 Deleting jobs

Procedure:

1. In the **Database** menu, click on **Jobs**. The **Database: Jobs** window is displayed.



**Note:** The directory structure is displayed in the left side of the window, with the **Color Quality** main directory on the first level, the active database on the second level and the active customer on the third level.

If you double-click on the **Color Quality** main directory, all the associated databases are displayed.

If you double-click on a database, all the customers in the database are

displayed.

If you double-click on a customer, a list of all the jobs for the active customer is displayed in the center of the window.

---

2. Select the customer whose job is to be deleted. The jobs appear in the center area.
  3. Click on the jobs to delete.
  4. Click on **Delete**. The jobs to be deleted appear in the **Confirm deleting** window.
  5. If you wish to delete the jobs, click on **OK**.
- 

## 9.2 Exporting job data by e-mail

In the **Database: Jobs** window, you can select one or more jobs and then click on **Send** to export them by e-mail. Refer to section 3.7.3 'E-mail'.

---

## 9.3 Exporting job data

Procedure:

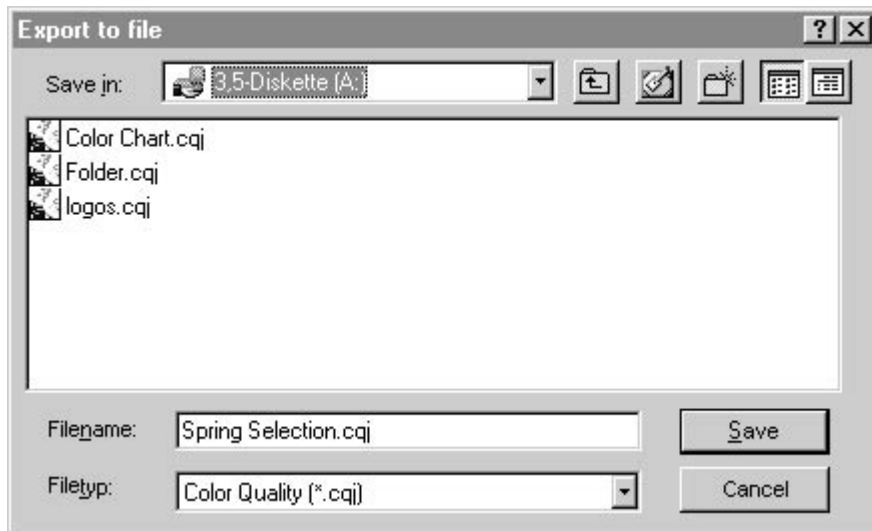
1. In the **Database** menu, click on **Jobs**.
  2. Select the customer from whom you wish to export a job. The job list is displayed in the center of the window.
  3. Click on the job that you wish to export.
- 

**Note:** You can select more than one job at a time. These will be written into the same file when exported. In this case, in the **Export to file** window you must enter a file name under which the data will be exported.

You can use Drag & Drop to drag jobs directly into an Explorer window (also refer to section 3.7.2 'Drag & Drop').

---

4. Click on **Export**. The **Export to file** window appears.



5. Select drive and directory to which the file is to be exported.

---

**Note:** Data can also be exported in Color Quality V2 format. To do this, select the relevant option in the **Filetyp** field.

---

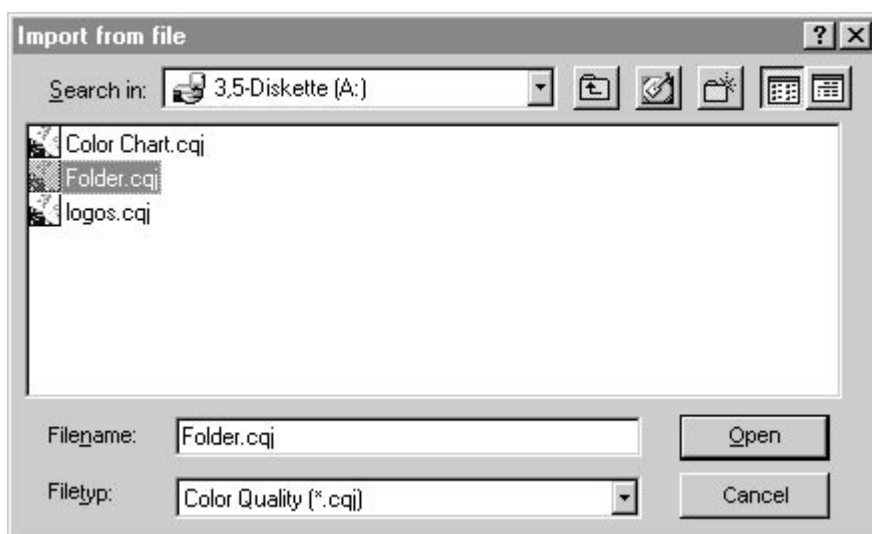
6. Click on **Save**. The file is exported.

---

## 9.4 Importing job data

Procedure:

1. In the **Database** menu, click on **Jobs**. The **Database: Jobs** window is displayed.
2. Select the customer name to which you want to assign the file.
3. Click on **Import**. The **Import from file** window appears.



4. Select the drive from which you wish to import the file.
5. If necessary, select the file format.

---

**Note:** If you wish to import Colibri files (\*.col), ensure that they have been exported in ASCII format. Color Quality assigns a job with a series to this type of data.

---

6. Select the file to be imported.
7. Click on **Open**. The file is imported. The name appears in the list of jobs in the center of the **Database: Jobs** window.

---

## 9.5 Export job data to SpectroEye / import job data from SpectroEye

From Color Quality you can export complete jobs to GretagMacbeth SpectroEye and from there you can import them again.

Procedure for exporting:

1. In the **Database** menu, click on **Jobs**.
2. In the **Database: Jobs** window, select the customer from whom you wish to export a job. The list of jobs is displayed in the center of the window.
3. Click on the job you wish to export to SpectroEye.
4. Click on **Export to SpectroEye** and follow the instructions.

Color Quality assigns unique names to the files to be exported. If a job is to be overwritten in SpectroEye, enter the name of the job to be overwritten. The overwrite must then be confirmed.

Procedure for importing:

1. In the **Database** menu, click on **Jobs**.
2. In the **Database: Jobs** window, select the name of the customer to whom you wish to assign the file.
3. Click on **Import from SpectroEye** and follow the instructions.

# 10 Modifying standards and creating new standards

---

## 10.1 General

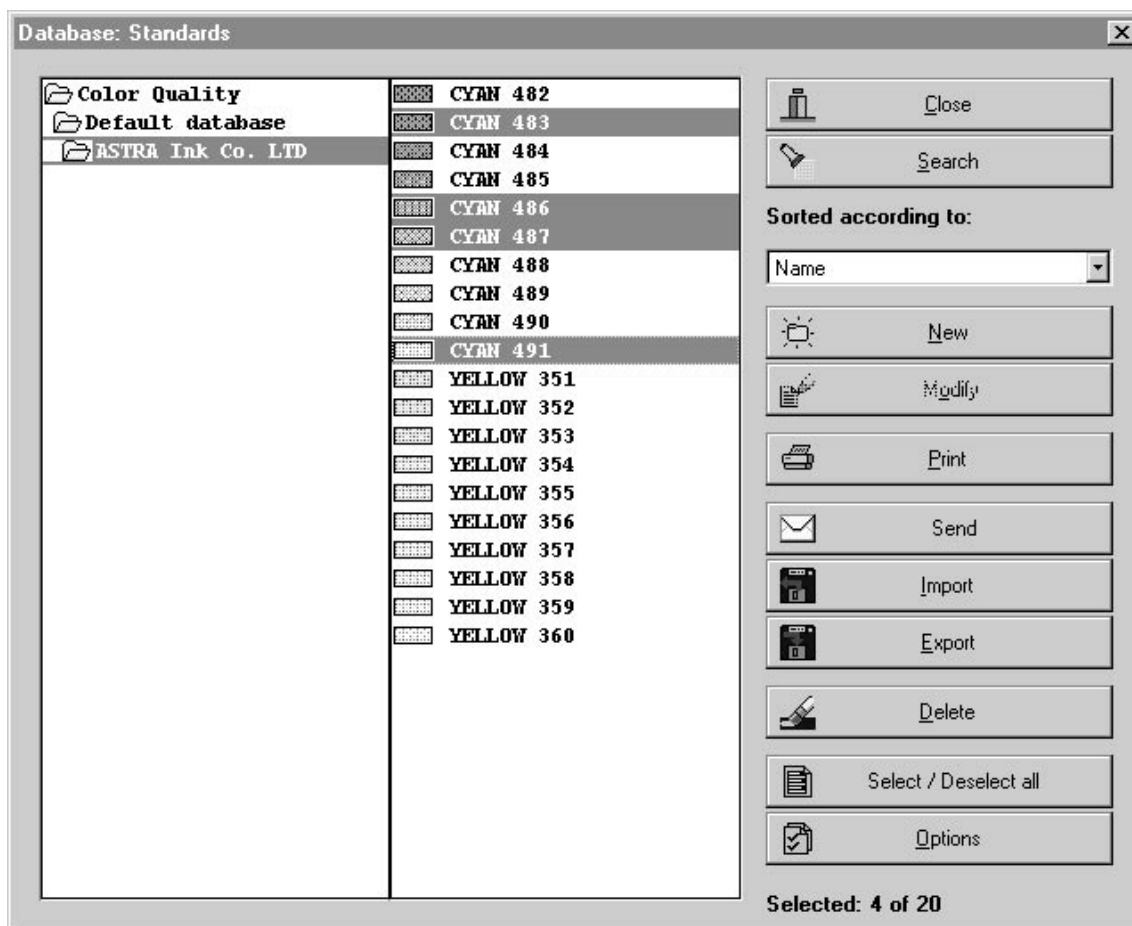
A standard is a target color with its entered tolerance. If you wish to use a target color as a reference color in several jobs, then you should define it in the database standards. A standard is always assigned to a customer so that you can find it more easily.

---

## 10.2 Opening database standards

Procedure:

1. In the **Database** menu, click on **Standards**. If necessary, carry out a white calibration on your measuring device (refer to section 4.2 'Perform a white calibration of the measuring device'). Then you are in the **Database: standards** window.



**Note:** The directory structure is displayed in the left side of the window, with the **Color Quality** main directory on the first level, the active database on the second level and the active customer on the third level.

If you double-click on the **Color Quality** main directory, all the associated databases are displayed.

If you double-click on a database, all the customers in the database are displayed.

If you double-click on a customer, a list of all the jobs for the active customer is displayed in the center of the window.

## 10.3 Defining standards

You can measure standards with the measuring device, load them via ColorNet or enter them as values with the keyboard.

Procedure:

1. In the **Database: Standards** window, select the customer to whom you wish to assign the standard.

**Note:** When you have selected the options for measuring the standards (refer to section 10.4 'Defining the settings for standard registration'), you must also select the standard from which you wish to accept a designation, an additional description or a tolerance.

2. Click on **New**. The **New standard** window appears.
3. Define the tolerances and standard. Proceed as for the definition of a new series (refer to section 5.5 'Defining a new series').
4. If necessary, change the automatically-selected designation and enter a supplementary description.
5. Click on **OK** in order to return to the **Database: standards** window.

---

## 10.4 Defining the settings for standards registration

Procedure:

1. In the **Database: standards** window, click on **Options**. The **Option for Standard Measurement** window appears.
2. Activate the required control boxes:
  - **Copy designation and increase the number:** When you have provided your standards with a permanent name and a run number, this option automatically accepts the name for the new standard and increments the run number by one.
  - **Copy additional description:** Color Quality accepts the once-only entered notice of the selected standards. This saves you having to repeat notice entries.
  - **Copy tolerance:** This allows rapid entry of standards which have the same tolerances. Color Quality accepts the tolerance of the selected standards. The standard tolerance is accepted if this option is disabled (refer to section 14.1 'General settings').

---

**Note:** These options are only executed if you have selected an existing standard before you define a new standard.

---

---

## 10.5 Deleting standards

Procedure:

1. In the **Database: Standards** window, select the customer associated with the standard to be deleted. The list of standards is displayed in the center of the window.
2. Click on the standard that you wish to delete.
3. Click on **Delete**. The **Confirm deleting** window appears.
4. Click on **OK**.

---

## 10.6 Exporting standards data by e-mail

In the **Database: Standards** window you select one or more standards and then export them by e-mail by clicking on **Send**. Refer to section 3.7.3 'E-mail'.

---

## 10.7 Exporting standards data

Procedure:

1. In the **Database** menu, click on **Standards**.
2. Select the customer from whom you wish to export the standards. The list of standards is displayed in the center of the window.
3. Click on the standard that you wish to export.

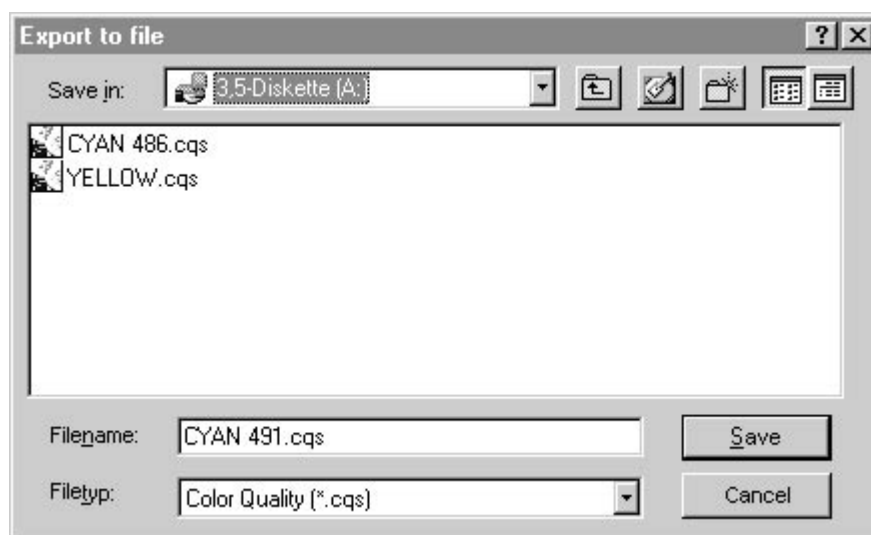
---

**Note:** You can also select several standards at the same time. They will be written into the same file when exporting. In this case, in **Export to file** you must enter a file name under which the data is to be exported.

You can use Drag & Drop to drag standards direct to an Explorer window (also refer to section 3.7.2 'Drag & Drop').

---

4. Click on **Export**. The **Export to file** window appears.



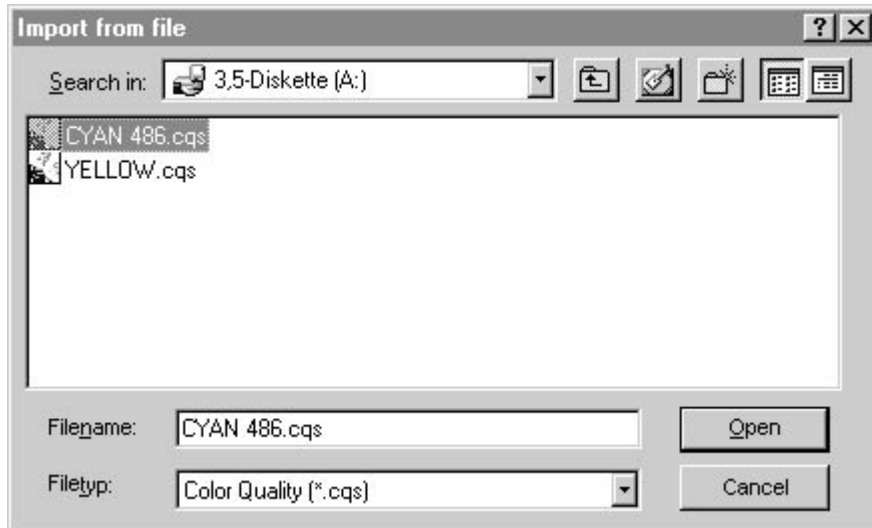
5. Select the drive and the directory to which the file is to be exported.
6. Click on **Save**. The file is exported.

---

## 10.8 Importing standards data

Procedure:

1. In the **Database** menu, click on **Standards**.
2. Select the customer to whom the standard is to be assigned.
3. Click on **Import**. The **Import from file** window appears.



4. Select the drive from which you wish to import the file.
5. If necessary, select the data format.

---

**Note:** If you wish to import Colibri files (\*.col), ensure that they have been exported in ASCII format.

---

6. Select the required file.
7. Click on **Open**. The file is imported. The name appears in the list of standards in the center of the **Database: Standards** window.

# 11 Modifying customers and entering new customers

---

## 11.1 General

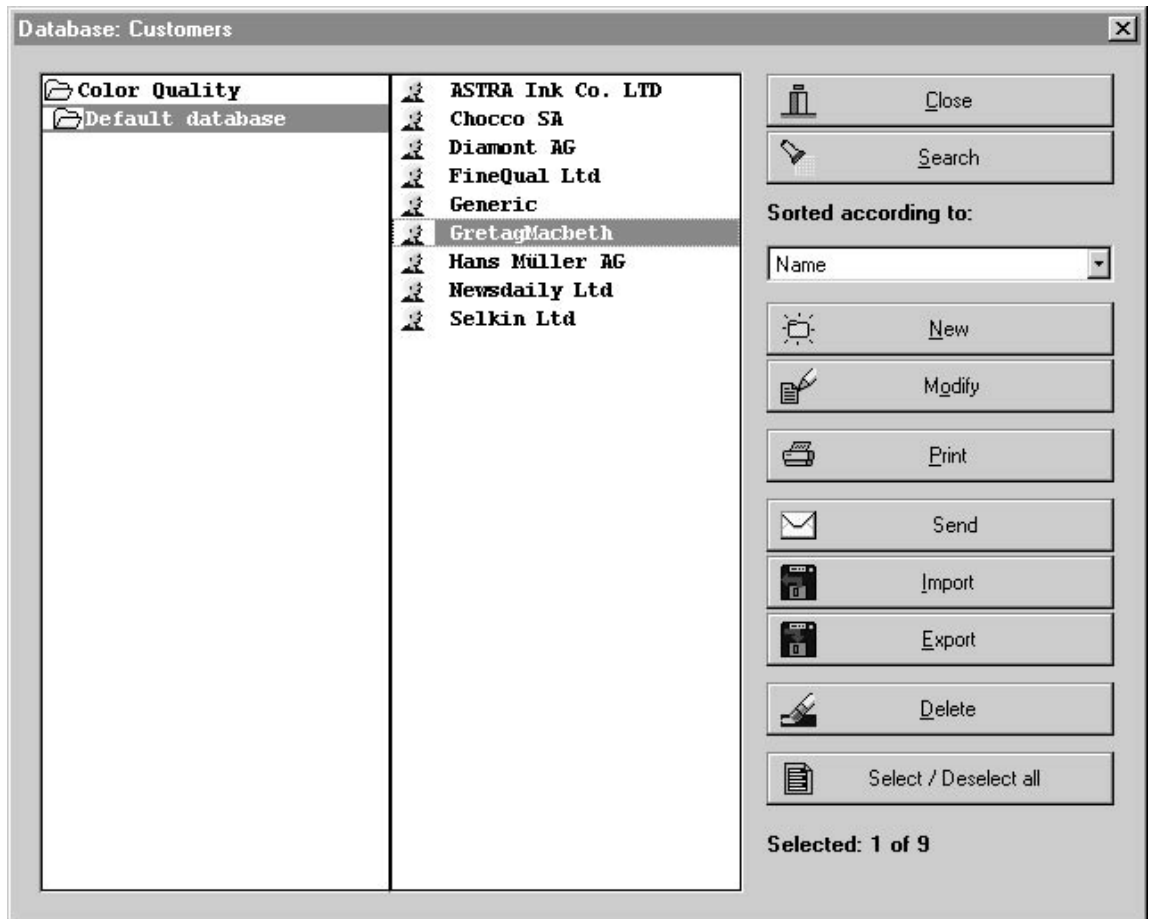
To enable you to arrange your data (jobs, customers, standards) in the database, the jobs are sequenced according to customer. It is therefore necessary to begin by entering the customer name and any additional information in the database before you can assign the data to a job.

---

## 11.2 Entering a customer

Procedure:

1. In the **Database** menu, click on **Customer**. The **Database: Customer** window appears.



**Note:** The directory structure is displayed in the left side of the window, with the **Color Quality** main directory on the first level and the active database on the second level.

If you double-click on the **Color Quality** main directory, all the associated databases are displayed.

If you double-click on a database, all the customers in the database are displayed in the center of the window.

2. Select the database to which the new customer is to be assigned.
3. Click on **New**. The **New customer** window appears.
4. Click in the **Designation** field and enter the customer designation using your keyboard.
5. Click in the **Additional description** field and **Address** and make entries if necessary.
6. Click on **OK** when you have completed your entries.

---

## 11.3 Deleting a customer

If a customer no longer has any open jobs or any jobs that must be processed, the customer can be deleted. Note that if you do this, all associated jobs and standards will also be deleted.

Procedure:

1. In the **Database** menu, click on **Customer**.
2. In the left side of the **Database: Customers** window, select the database which contains the customer to be deleted. The list of customers is displayed in the center of the window.
3. Click on the customer to be deleted.
4. Click on **Delete**. The **Confirm deleting** window appears.
5. Click on **OK**.

---

**Note:** If jobs and standards are still assigned to the customer, a warning appears, informing you that all associated jobs and standards will also be deleted. Acknowledge the delete by clicking on **Yes**.

---

---

## 11.4 Exporting customer data by e-mail

In the **Database: Customers** window you can select one or more customers and then export them by e-mail by clicking on **Send**. Refer to section 3.7.3 'E-mail'.

---

## 11.5 Exporting customer data

Procedure:

1. In the **Database** menu, click on **Customer**.
2. In the **Database: Customers** menu, select the customer that you wish to export.

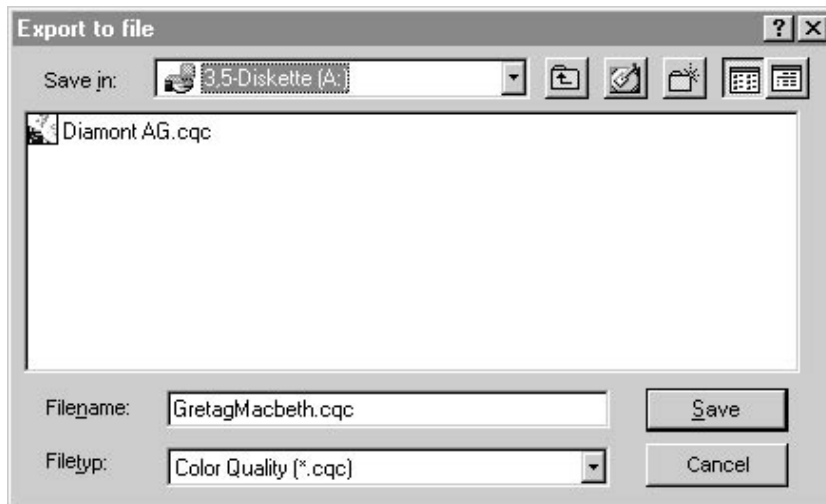
---

**Note:** You can also select several customers at the same time. They will be written into the same file when exporting. In this case, in **Export to file**, you must to enter a file name under which the data should be exported.

You can use Drag & Drop to drag a customer directly into an Explorer window (also refer to section 3.7.2 'Drag & Drop').

---

3. Click on **Export**. The **Export to file** window appears.



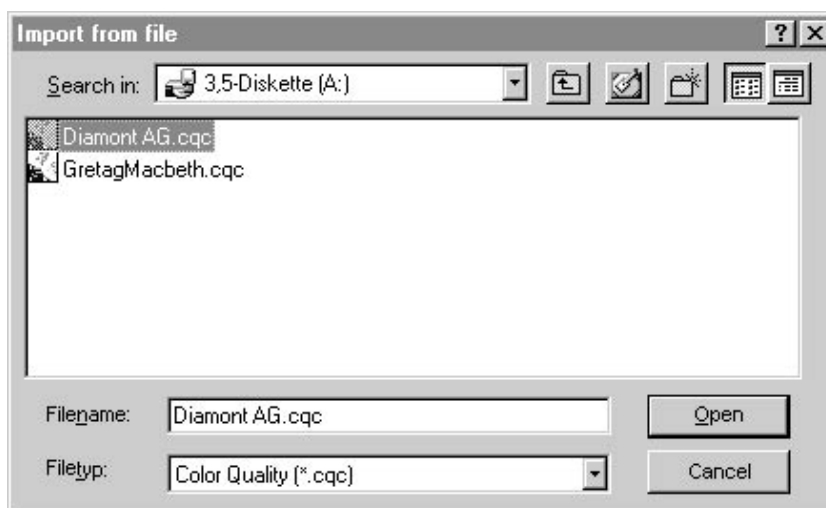
4. Select the drive and the directory to which the customer file is to be exported.
5. Click on **Save**. The file is exported.

---

## 11.6 Importing customer data

Procedure:

1. In the **Database** menu, click on **Customer**.
2. In the **Database: Customers** window, select the database to which the customer is to be assigned.
3. Click on **Import**. The **Import from file** window appears.



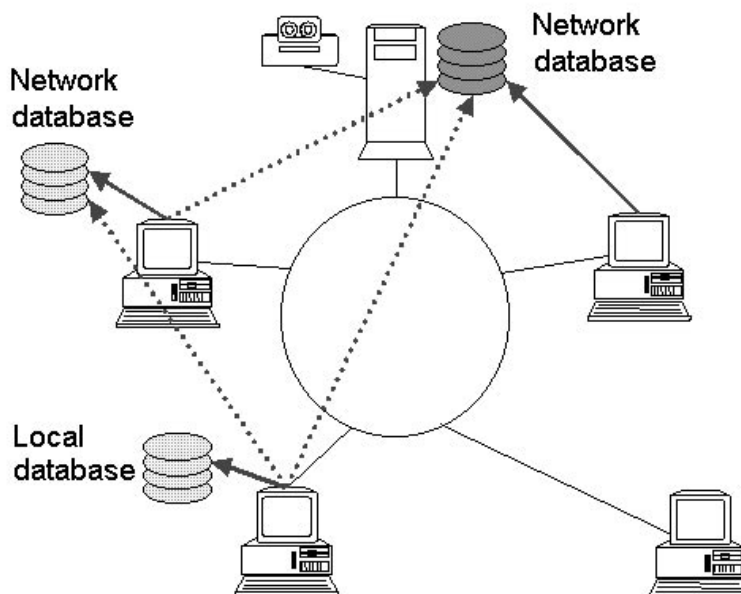
4. Select the drive from which you wish to import the file.
5. Select the required file.
6. Click on **Open**. The **Confirm import** window appears.
7. Click on **OK**. The file is imported. The name appears in the list of customers in the **Database: Customers** window.

# 12 Creating and managing databases

## 12.1 General

Color Quality can be simultaneously linked to a number of active databases. A database can be opened at the same time by a number of Color Quality programs running on different computers or on the same computer. Color Quality inhibits simultaneous access to the same database object.

In a network, a common database can be created on any of the network computers. However, for reasons of data security, it is preferable for the common database to be created on a file server.



When Color Quality is installed, a database with the name **Default database** is automatically generated. Additional databases can also be generated (refer to section 12.2 'Creating a new database').

New jobs are always stored in the same database as the selected customer.

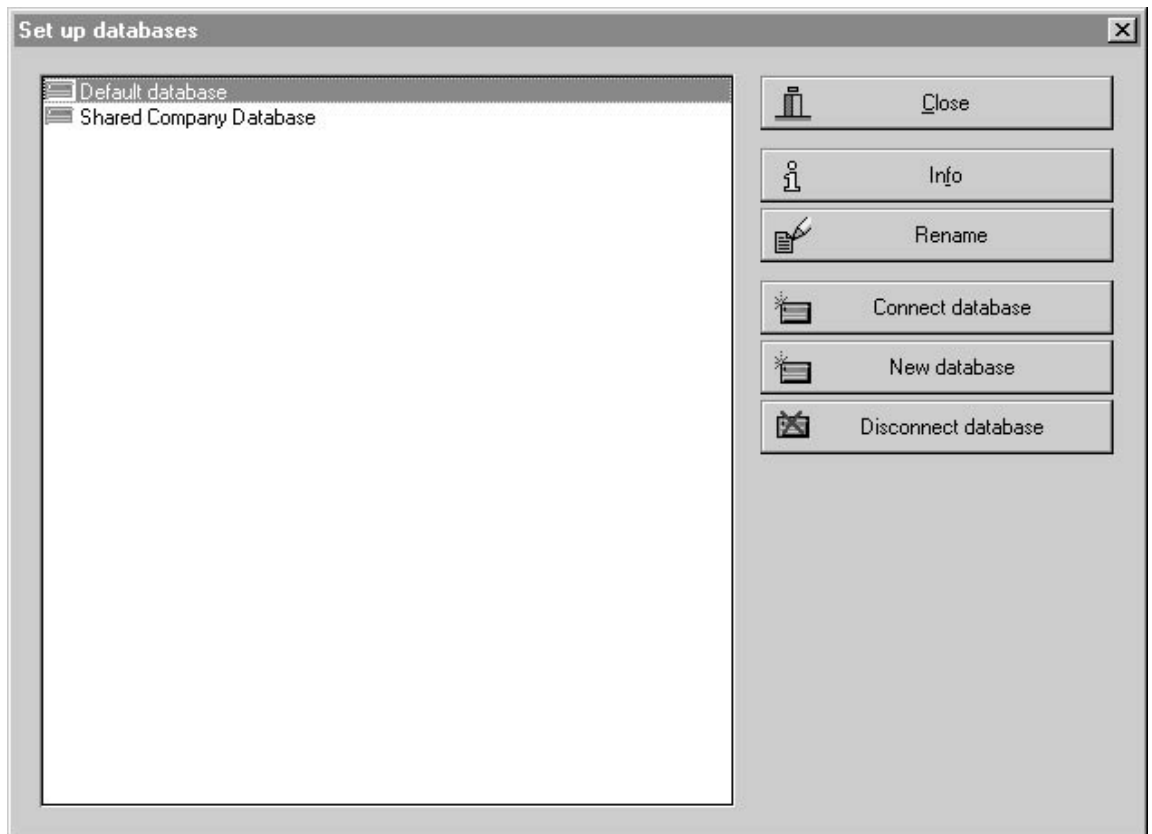
---

## 12.2 Creating a new database

A new database can be generated with the **New database** command in the **Set up databases** window. The directory in which the database is to be generated must already exist. In order to generate a **Test Database** in the **C:\** directory, for example, before selecting **New database** you must create a **C:\Test Database** subdirectory.

Procedure:

1. In the **Database** menu, click on **Set up**. The **Set up databases** window is displayed.

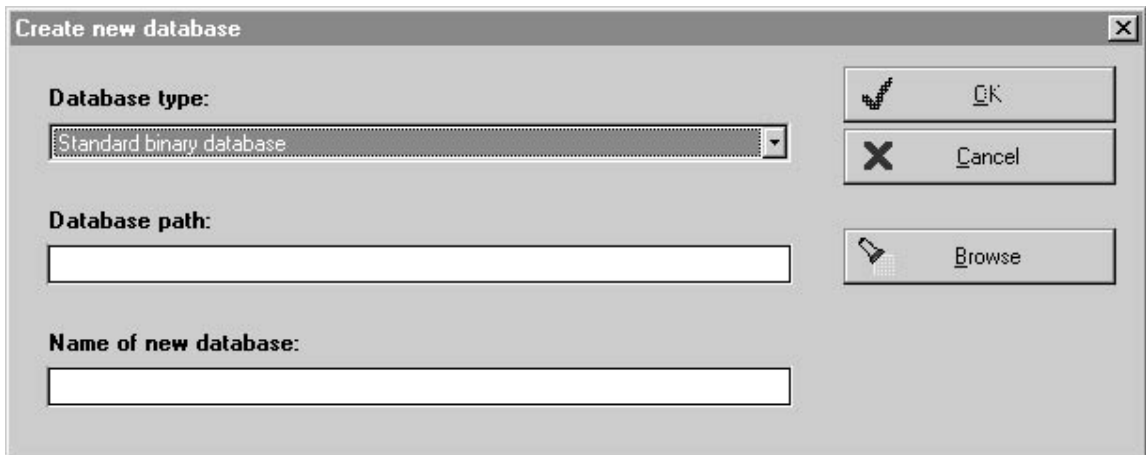


---

**Note:** With **Rename**, the logical name of the database can be changed at any time. Click on **Info** to display the path to the selected database.

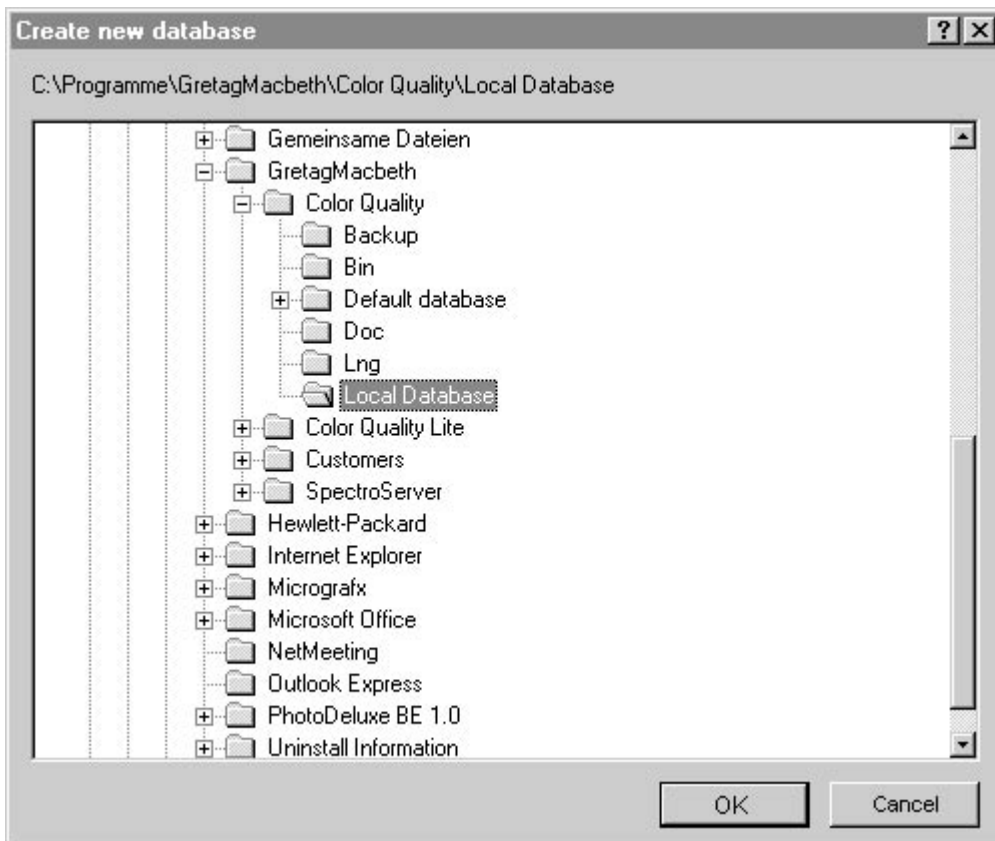
---

2. In the **Set up databases** window, click on **New database**.



3. In the **Create new database** window, enter the path for the database and the required name.
4. Click on **OK**. The database name you have entered is displayed in the **Set up databases** window.

If you click on **Browse** in the **Create new database** window, you can select the required directory in an additional window.



**Note:** **OK** can only be selected if no database already exists in the selected database.

---

## 12.3 Linking an existing database

To allow access to an existing database, it must be linked to Color Quality.

Procedure:

1. In the **Database** menu, click on **Set up**. The **Set up databases** window is displayed.
2. In the **Set up databases** window, click on **Connect database**.
3. In the **Connect to database** window, enter the path for the database.
4. Click on **OK** and the name of the database is displayed in the **Set up databases** window.

If you click on **Browse** in the **Connect to database** window, you can select the required directory in an additional window.

---

## 12.4 Disconnecting a database

If a directory is no longer required, it can be closed. The database is not deleted and it can be reactivated at any time by selecting **Connect database**.

Procedure:

1. In the **Database** menu, click on **Set up**. The **Set up databases** window is displayed.
2. Click on the database to be disconnected.
3. Click on **Disconnect database**. The name of the directory is deleted from the list.

To permanently delete the database, the database files must be deleted from Explorer. Naturally, this should only be done when all the workstations have been disconnected from the database.

---

## 12.5 Creating a common database in a network

To create a database in the network, proceed as follows:

- In the **Set up databases** window, use the **New database** command to create a new database (refer to section 12.2 'Creating a new database').

- Enter a network path as the path for the database. It does not matter whether or not a drive is linked to the corresponding network drive.
- Enter the name of the new database and click on **OK**.

In order to access the network database from another computer, use the **Connect database** command in the **Setup databases** window to connect the database (refer to section 12.3 'Linking an existing database'). As the path for the database, enter the same path that you specified when you created the database.

---

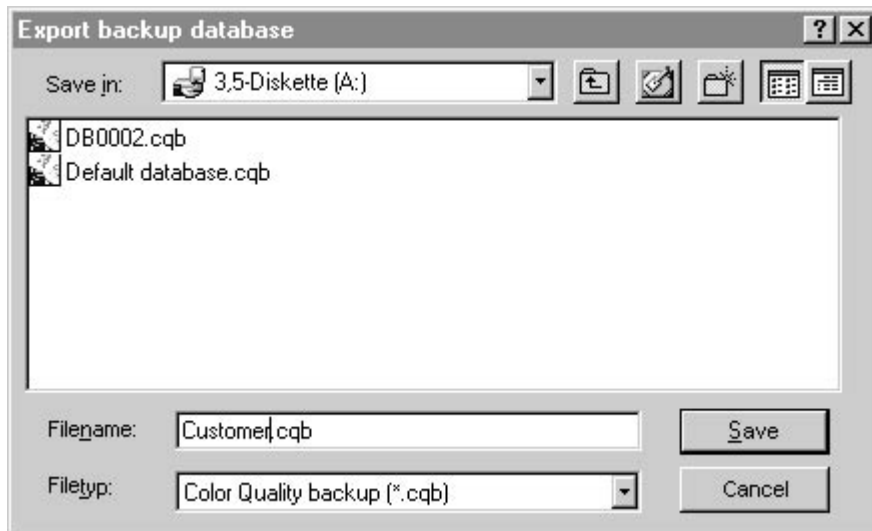
## 12.6 Backing up your database

We recommend that you back up your database on a regular basis. You can back up to a floppy disk or to another storage medium. Keep your backup media in a safe place. Then, if you have a defect in your hard drive or data loss due to other reasons, you can easily reload your information from your backup.

If the size of your database exceeds the size of your floppy disk, export your database to a hard disk and create your backup from there using a suitable backup program. If you work on a network, save your data to the server. You will then obtain a backup in accordance with the server backup concept in use.

Procedure:

1. If a job is currently active, close it by clicking on **Close** in the **Job** menu.
2. In the **File** menu, click on **Database**.
3. In the selection field, click on **Backup**. The **Select current database** window appears.
4. Click on the database to be backed up and then click on **Select**. The **Export backup database** window appears. The backup file is displayed in the **Filename** field.

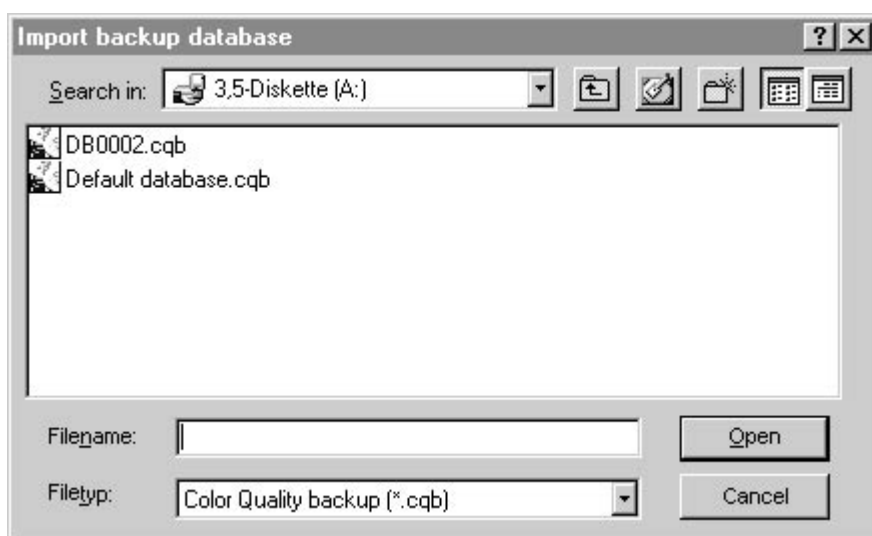


5. Select the drive and the directory to which the backup file is to be exported.
6. Click on **Save**. The **Export backup database** information window appears. The backup file is exported.

## 12.7 Restoring your database

Procedure:

1. If a job is currently active, close it by clicking on **Close** in the **Job** menu.
2. In the **File** menu, click on **Database**.
3. In the selection field, click on **Restore**. The **Import backup database** window appears.



4. Select the drive and directory from which you wish to import the database.
5. Select the backup file. It now appears in the **Filename** field.

6. Click on **Open**. The **Select current database** window appears.
7. Select the database which is to be restored.
8. Click on **Select**. The **Restore database** information window appears.
9. Select the required option.

---

**Note:** If you wish to combine several databases into one, click on **Append to DB**. If you wish to rewrite your database, click on **Overwrite DB**.

---

The **Import backup database** information window appears and the database is updated or overwritten.

# 13 Printing

---

## 13.1 Printer setup

Procedure:

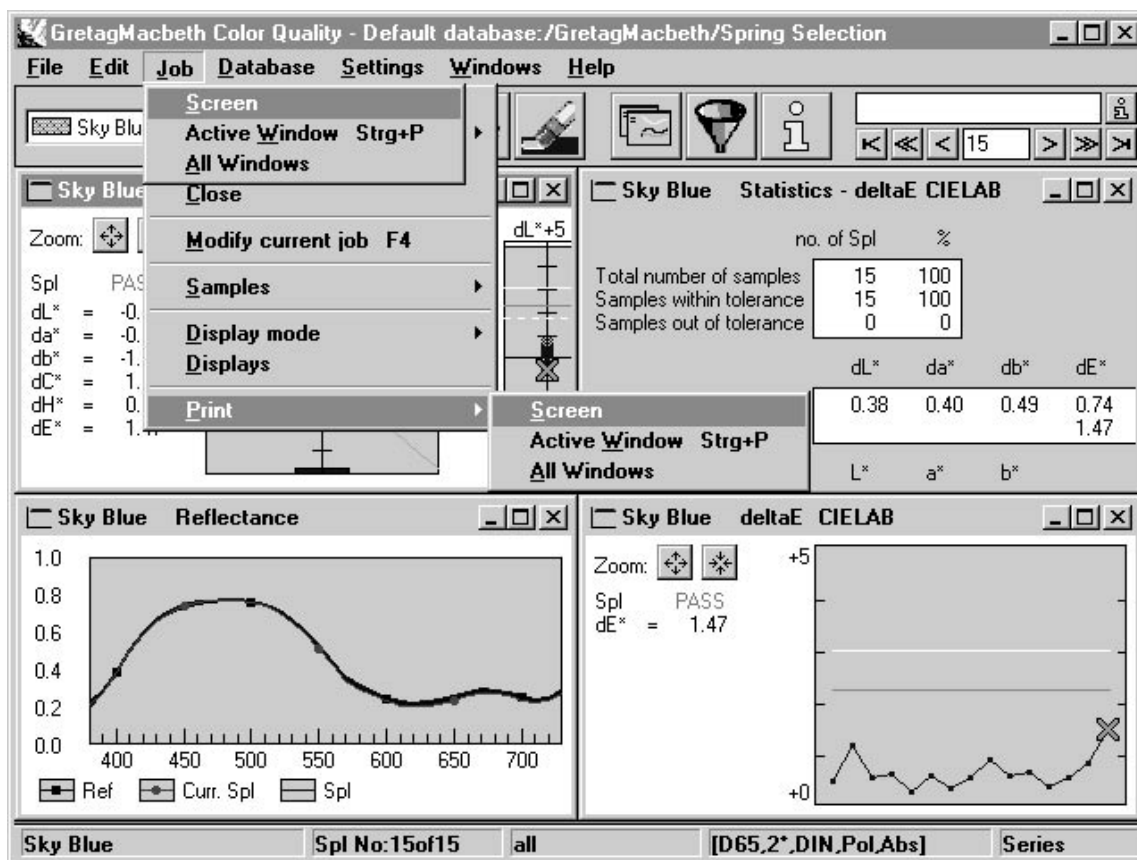
1. In the **File** menu, click on **Set up printer** in order to display the system window for the printer setup.

Depending on which printer you are using, you may have an opportunity to select options, such as portrait or landscape, paper size and paper feed.

2. Click on **OK** to return to Color Quality.

## 13.2 Printing

### 13.2.1 Printing from the job window



Procedure:

1. In the **Job** menu, click on **Print**.
2. Select the required option:
  - Screen
  - Active window
  - All windows.

### 13.2.2 Printing from the database

You can print data and lists of customers, jobs and standards from the database.

Procedure:

1. In the **Database** menu, select the entry from which you wish to print the data: **Jobs**, **Standards** or **Customers**.
2. In the **Database: Jobs** window, select the customers whose jobs you wish to print and, in the center of the window, select the jobs you wish to print out.

or

In the **Database: Standards** window, select the customers whose standards you wish to print and, in the center of the window, select the standards you wish to print out.

or

In the **Database: Customers** window, select the customers whose data you wish to print out.

3. Click on **Print**. The selected data is printed.

# 14 Settings to make

## 14.1 General settings

Procedure:

1. In the **Settings** menu, click on **General**.
2. Either select the options you require or make the required entries (refer to the following sections).
3. After you have entered all your settings, click on **OK**.

**General Settings**

**Default measuring conditions**

Illumination: D65  
Observer angle: 2°  
Density standard: DIN  
White base: Abs  
Filter: Pol

**Color scale:**  
CIE-Lab

**Illuminants for metamerism:**  
M1: A  
M2: F11

**Language:**  
English

**Averaging:**  
of 1 measurements

**White calibration request:**  
GretagMacbeth recommendation

**User name:**  
Quality Control Departement

OK  
 Cancel

### 14.1.1 Default measuring conditions (illumination, observer angle, filter)

You can define the default measuring conditions for your job in accordance with your wishes (also refer to chapter 16 'Application notes'). You thus have the following options for measuring parameters:

- illumination,
- observer angle,
- density standard
- filter.

---

**Note:** Ensure that these values are correctly set before opening a new quality control job. They will be permanently assigned to the job and cannot be changed later.

---

### 14.1.2 Color Scale

You can choose among various color systems such as CIE-Lab and CIE-LCh. Depending on the options you selected, e.g., LCh values may be displayed instead of Lab values at various points in the program.

### 14.1.3 White calibration request

If you select the **GretagMacbeth recommendation** option, you will be requested by Color Quality at various points in the program run to carry out a white calibration (refer to section 4.2 'Perform a white calibration of the measuring device').

If you select the **Never** option, no requests will be made. In this case it is up to you to ensure that the measuring device is correctly calibrated.

### 14.1.4 Averaging

Depending on the homogeneity of your patterns, you can perform single or multiple measurements with average value calculations. In the average calculations field, enter the number of measurements (if possible, a number between 1 and 10) that you wish to carry out for the measurement of a sample or a pattern.

If you have entered a number > 1, the measuring value averaging window appears after the start of each measurement. The current measuring value and the current average value are displayed in this

window. When the average value appears sufficiently stable to you, you can stop the measurement at any time.

The accepted measuring value corresponds to the average of the performed measurements.

If you require a single measurement, enter **1**.

#### **14.1.5 Language**

If required, you can select another language. Since you cannot change the language if the program is running, you have to quit it and restart before the selected language becomes active.

#### **14.1.6 User name**

The text (e.g., your company name) that you enter into this field is used as the header when printing the job window.

#### **14.1.7 Measurement initiation**

If the **Initiate measurement also by SPM** control box is activated, the measurement can be started either in Color Quality or at the measuring device. If deactivated, the measurement can be started in Color Quality only.

#### **14.1.8 Assignment of individual samples to series**

If the **Sample is assigned to series with minimum color distance** control box is activated, an automatic assignment of samples takes place. If deactivated, the assignment is carried out manually.

If the measuring fields to be monitored differ from one another, Color Quality can undertake the assignment of the samples automatically. The series is automatically activated by Color Quality following the measurements. The automatic assignment is the simplest and most user-friendly type of assignment.

If for any reason you select manual assignment, ensure that the series you wish to assign to the samples is active before you start the measurement (refer to section 7.2 'Measuring samples').

#### **14.1.9 Metamerism**

In the **M1** and **M2** fields, you can select the two types of light which are to be used for the metamerism observations in relation to the preset type of job light. In the metamerism display in the job window, the metamerism index is then displayed against the corresponding type of light.

---

<b>Note:</b>	The types of light used are
	D65      Daylight (6500 Kelvin)
	D50      Daylight (5000 Kelvin)
	A        Artificial (tungsten filament) light
	F11      Department store light

---

## 14.2 Settings program

Procedure:

1. In the **Settings** menu, click on **Program**.
2. Select the required options or enter the required value (refer to the following section).
3. Click on **OK** when you have entered all the settings.

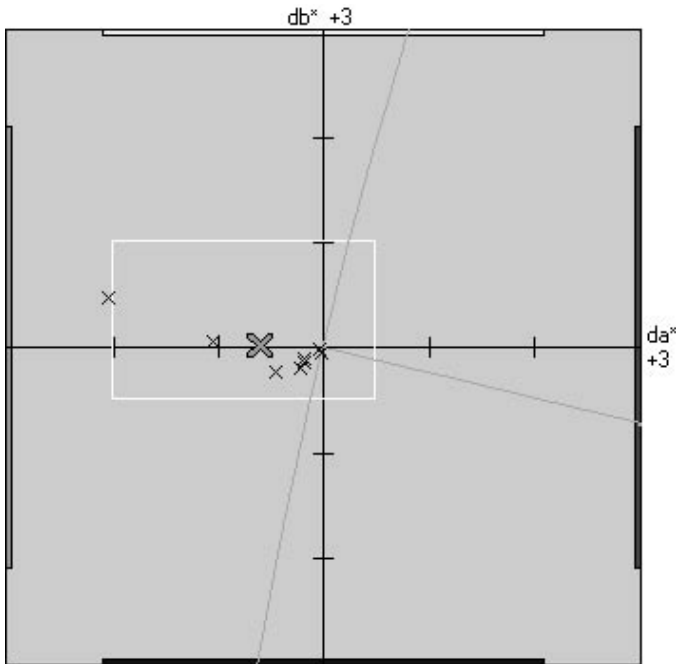
### 14.2.1 Default tolerance

The tolerance formula selected here and the associated standard values are recommended by Color Quality when defining a new series or a new standard.

The tolerance value determines the maximum acceptable color distance between the reference color and the samples of a series.

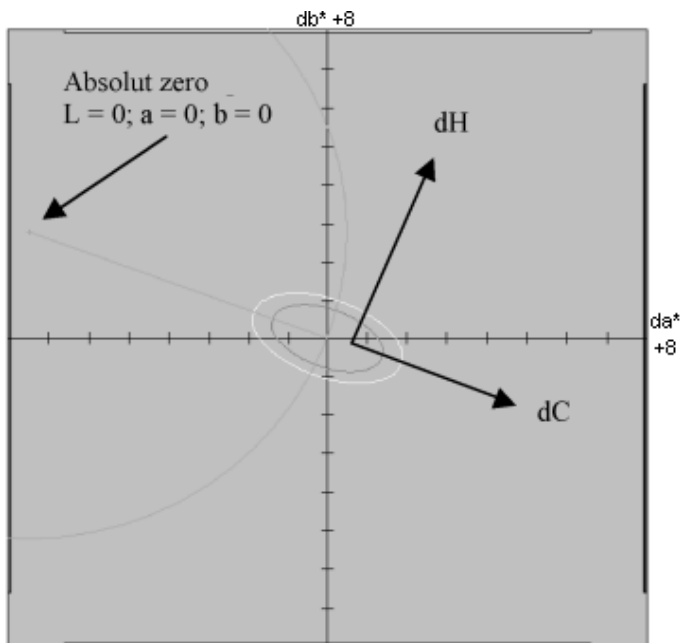
#### **CIELAB dLab tolerances:**

Different tolerances can be entered for positive and negative dLab values.



**CIELAB dLCH elliptical tolerances:**

Different tolerances can be entered for positive and negative dLCH values. The tolerance is determined by an ellipsoid, which is bounded by the dL-dC-dH cuboid.



**LABmg:**

An additional color space with tolerance definitions similar to CIELAB.

**CMC I:c, dE\*94, FMC II:**

Special calculation formulas for color distance, based on the CIELAB color space. For further information, please refer to the relevant technical literature.

## Density dD

A standard tolerance can be entered for each density filter. The density filter with the highest density (auto density) of the series is used for the density tolerance calculation.

### 14.2.2 Density calculation

The density is calculated in relation to the substrate (paper) or to absolute white.

If **Substrate** is selected as white reference, the density values are calculated on the basis of the paper. To do this, the substrate must be evaluated during the job definition process (refer to section 5.5 'Defining a new series' or section 6.4 'Modifying current job').

### 14.2.3 Dye strength calculation

Color Quality gives the dye strength as the value of the function  $K/S$ , where  $K$  signifies light absorption and  $S$  signifies light scatter.

The value  $K/S$  for the absolute dye strength serves as a measure of quality and as an aid to color production and mixing. The calculated  $K/S$  value is proportional to the color concentration.

The relative dye strength is indicated as the relationship of  $K/S$  value of sample and reference color. The relative dye strength indicates whether a color is available in sufficient concentration and the concentration in which a color has to be produced in order to approximate as close as possible to your target color.

## Colorant

Depending on your application, select between

- transparent ink and
- opaque ink.

Offset colors are transparent in most cases. By mixing in opaque white, opaque ink layers can be created, e.g., for packing and label printing.

## Calculation method

Depending on your application, select the calculation method

- at maximum  $K/S$  or
- xyz-weighted  $K/S$ .

The dye strength can be calculated under various conditions. The calculation at the absorption maximum is displayed for comparing

the dye strength of dyes with the same pigments. If the pigments differ substantially, then select the method with the CIExyz-weighted dye strength.

### White base

You must take the substrate into account the substrate when calculating the dye strength. Color Quality therefore offers you two possibilities:

- **Substrate:** The substrate which can be evaluated during job definition is used for the calculation (refer to section 5.5 'Defining a new series' or section 6.4 'Modifying current job').
- **Absolute white:** Color Quality uses an ideal white background (100 % remission) for the calculation.

---

## 14.3 Settings measuring device

Using the **Settings SPM** menu, you can determine the measuring device interface and select the option for the maximal transfer rate.

The following measuring device data is also displayed:

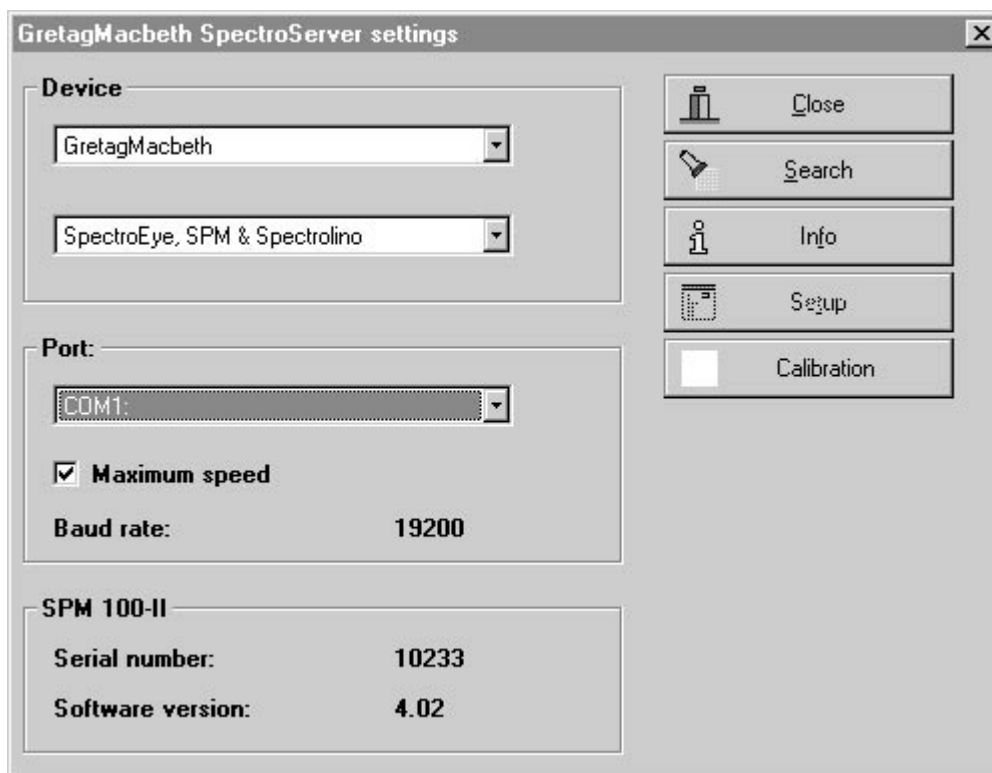
- port
- baud rate
- device type
- serial number
- software version

### 14.3.1 Selecting the interface

Color Quality is capable of automatically recognizing the interface you selected. Normally you will not need to make use of this selection sequence.

Procedure:

1. In the **Settings** menu, click on **SPM**. The **SpectroServer Settings** window appears.



2. Click anywhere in the **Port** field. An interface selection list appears.
3. Click on **Automatic search** or on the name of the interface connected to the measuring device. A search is made for the interface and appears in the **Port** field.
4. Click on **Close**.

### 14.3.2 Maximum transfer rate

If you click on the **Maximum speed** control box, your measuring device is set to a higher transfer rate. Do not select this option if your measuring device is being used with a printer or other device which has a lower transfer rate. Please refer to the operating instructions for the measuring device.

## 14.4 Settings displays

In the **Settings Displays** menu, you can select the display types which are activated in the job window and can therefore be displayed:

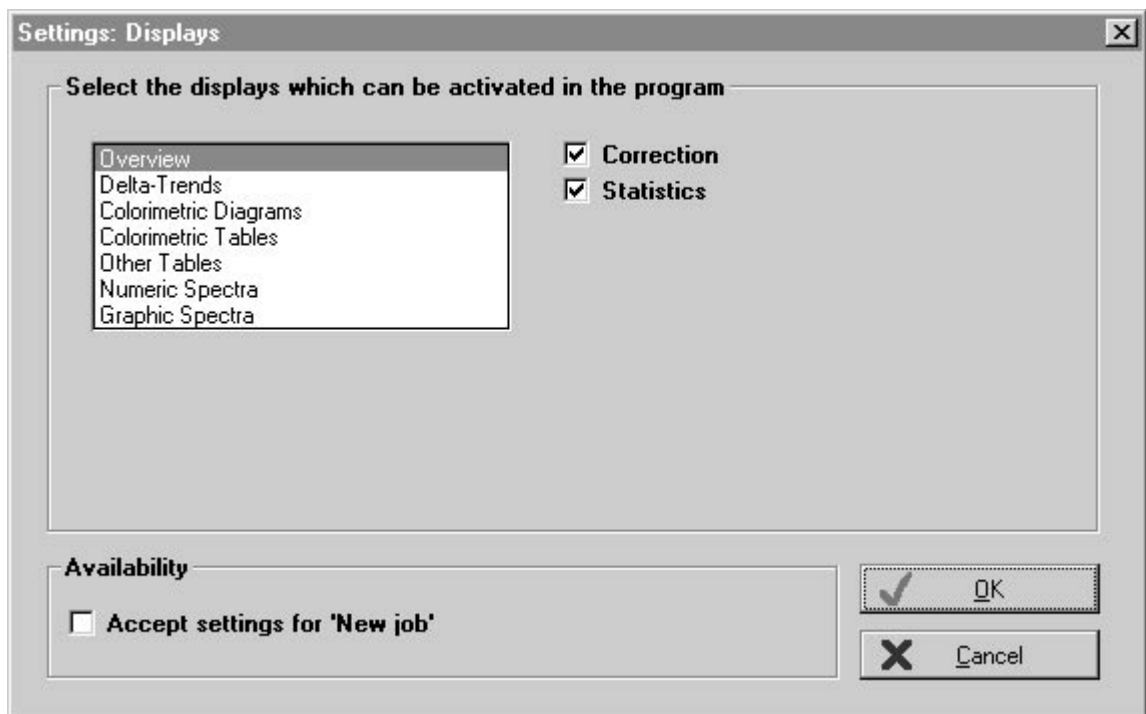
- overview
- delta trends
- colorimetric diagrams
- colorimetric tables

- other tables
- numeric spectra
- graphic spectra.

If you activate the availability control box, your selected display types are entered for each new job and can therefore be activated within the job window. You can, of course, change your selection of display types for an existing job at any time.

Procedure for selecting display types:

1. In the **Settings** menu, click on **Displays**. The **Settings: Displays** window appears.



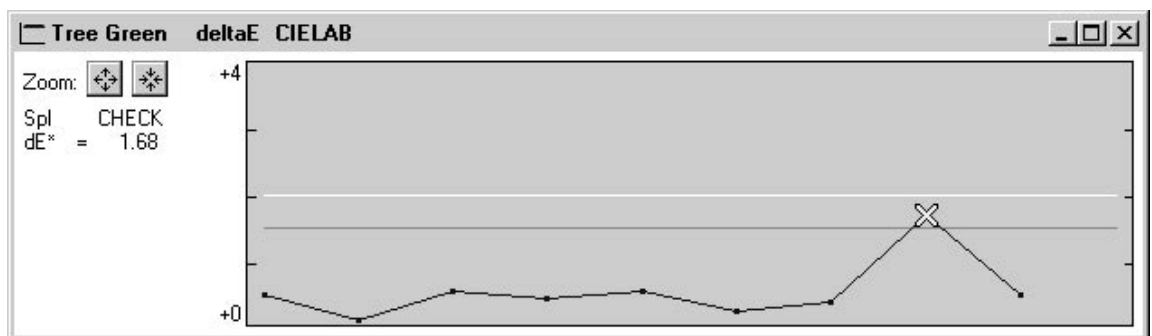
2. In the list, click on the required entry and activate the relevant control box next to the selection list.
3. Repeat this procedure for additional display types.
4. If required, active the **Availability** control box.
5. Click on **OK** after you have made all your settings.

## 14.5 Settings check area

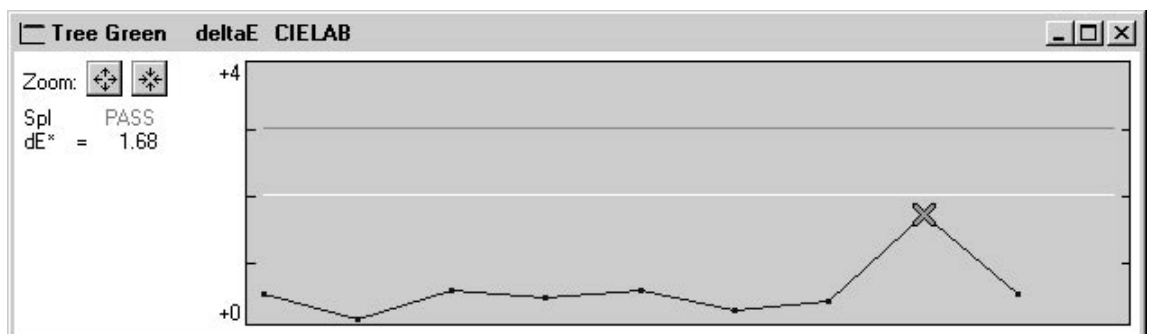
A hard blend between the pass region and the fail region is often undesirable. By entering a factor between 0.50 and 2.00 you will be permanently positioned in a check area between the pass and fail regions. In this case, any samples with deviations from the reference of between 1.00 x tolerance and factor x tolerance are not classed as 'Fail' but are designated 'Check'.

A factor <1.00 produces a check area within the tolerance field.

Example: tolerance 2.00, factor 0.75



A factor >1.00 to 2.00 produces a check area outside the tolerance field. Example: tolerance 2.00, factor 1.5



If you activate the **Accept settings for 'New job'** control box, your selected factor will be accepted for all new jobs.

Procedure:

1. In the **Settings** menu, click on **Check Area**. The **Settings - Check Area** window appears.
2. Enter your required value into the **Factor** field.
3. If required, activate the **Accept settings for 'New job'** control box.
4. Click on **OK**.

# 15 Quitting Color Quality

---

## 15.1 Quitting Color Quality

Color Quality automatically stores all objects – jobs, customers, standards or samples – in the database. Thus, you can always quit the program without having to save any information beforehand.

Procedure:

1. In the **File** menu, click on **Quit**.

Never switch your computer off until the program has closed in an orderly fashion. If you do, you may lose data.

# 16 Application notes

---

## 16.1 Recommended device settings

You must set the white basis (Auto/Pap/Abs) to **Abs** (absolute white reference) when measuring target colors.

With the filter wheel setting (No/Pol/D65), you will obtain better agreement of the colors for both moist and dry surfaces.

Don't forget to carry out the white calibration before you initiate the measurements.

---

**Note:** With the GretagMacbeth SpectroEye, this process is automatic.

---

---

## 16.2 Measuring patterns

When measuring coarsely-structured patterns (such as textiles, etc.) you must carry out multiple measurements. By observing the average value continuously displayed on the screen, you can determine when sufficient measurements have been made. As a rule of thumb, consider that you can quit the average value calculations as soon as the displayed  $L^*a^*b^*$  average value deviates by less than  $dE^* = 0.2$ .

The pattern measurement should take place on the same homogeneous substrate (e.g. white cardboard) as the one used for the comparison between the pattern and the reproduced colors.

If the pattern is thick, all four feet of the measuring device must be positioned on the flat pattern. If this is not possible, shim the feet accordingly.

# 17 Hotkeys

---

## 17.1 Overview

Using hotkeys, you can very quickly carry out various commands or change to another window. These functions are mainly accessible in the job window and the main window, but also to a certain extent in other windows.

Purpose	Press
Copy all	Ctrl+C
Change to <b>Select a customer for the new job</b> window	Ctrl+N
Change to the <b>Open job</b> window	Ctrl+O
Print the active window	Ctrl+P
Arrange the windows horizontally	Shift+F4
Cascade the windows	Shift+F5
Help	F1
Measure	F2
Change to the <b>ColorNet</b> window	F3
Change to the <b>Modify current job</b> window	F4
Change to the <b>Database. Jobs</b> window	F5
Change to the <b>Database: standards</b> window	F6
Change to the <b>Database: Customers</b> window	F7
Change to the <b>General Settings</b> window	F9
Change to the <b>Settings: Program</b> window	F10
Change to the <b>SpectroServer Settings</b> window	F11
Display info picture (version, serial number, licenses)	F12

# 18 Installing Color Quality

---

## 18.1 Hardware & software requirements

### IBM compatible personal computer

- **Processor:** Recommended type Pentium or higher.
- **Operating system:** Graphical user interface Windows Version 95, 98, 2000 or Windows NT 4.0.
- **Memory (RAM):** at least 16 MB (essential for satisfactory running of the operating system).
- **Hard disk:** at least 20 MB of free memory.
- **Monitor:** VGA color monitor
- **Interfaces:** You need a free serial interface to connect your measuring device.

---

## 18.2 Installation on a personal computer

### 18.2.1 Preparing for the installation

If you already have a version of this software installed and if you perform an update, you should either create a complete backup copy of the program directory or back up the database (refer to chapter 12 'Creating and managing databases').

If you already have an installed version of this software and if you perform an update, you should carry out a complete backup of the program directory or a backup of the database (refer to section 12.6 'Backing up your database').

### 18.2.2 Installation of Color Quality

Procedure:

1. Start WINDOWS.
2. Insert the CD into the CD-ROM drive and wait until the **GretagMacbeth Setup** window appears.
3. Click on the symbol for **Color Quality**.

The Setup program then takes you step by step through the installation. Carefully read the information displayed before you proceed with the installation.

### 18.2.3 Connecting your PC to the measuring device

In order to carry out measurements or to read data from measuring devices, the measuring device must be connected to one of the serial ports (COM1:, COM2:, ..., COMn:) of your personal computer. When you work with Color Quality, you can disconnect the measuring device in order to make off-line measurements at any time and then reconnect it to your computer. Color Quality automatically recognizes the interface you selected.

### 18.2.4 Copy protection plug (single license)

Connect the copy protection plug to a parallel output on your personal computer. You can connect additional copy protectors and a printer cable onto the Color Quality protection plug.

---

## 18.3 Installation in the network

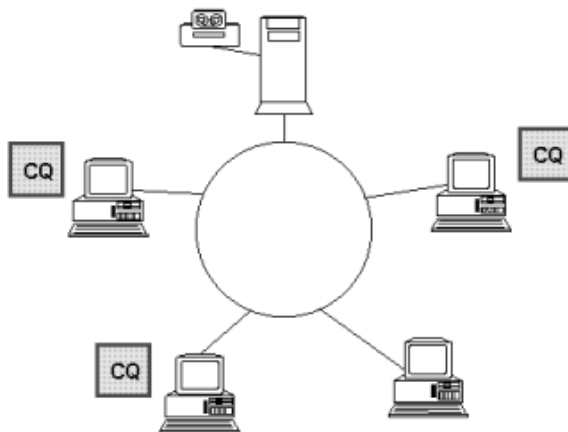
### 18.3.1 General

If a number of workstations are operating in a network, the following installation options are available:

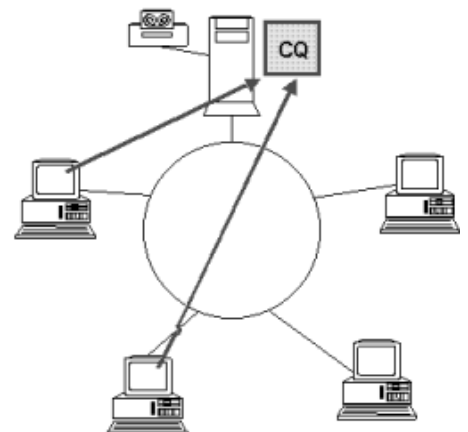
#### a. Program

In a network (client) installation, Color Quality can be installed on any network drive, from where it can be started by all the users; this allows centralized administration and maintenance of the program. However, Color Quality can also be installed locally on each individual workstation.

Personal Computer Installation



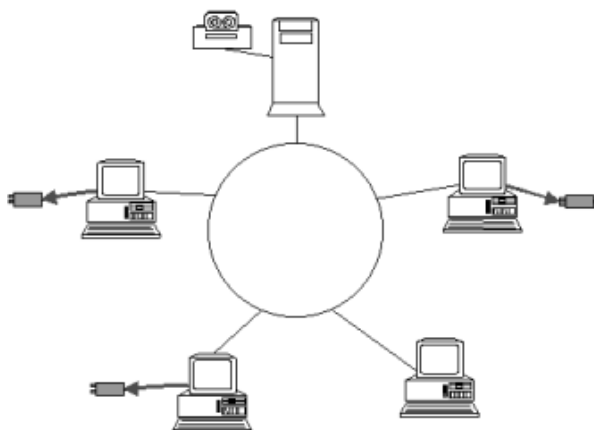
Network (Client) Installation



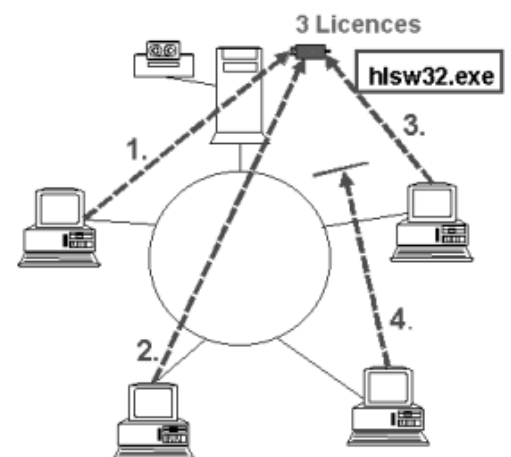
### b. Network protection plug (floating license)

The major advantage of the floating license, apart from centralized administration and the easy expansion option, is flexibility of use. Whereas with the single license the copy protection plug is physically connected to a computer, with the floating license Color Quality can be started by any number of computers connected to the network. As many computers as there are licenses can be started simultaneously.

Single Licenses



Floating Licence(s)



A network protection plug can be installed on any network computer and may incorporate any number of licenses. If all the licenses have been assigned, Color Quality displays a message to that effect.

The number of licenses and the authorized version can be increased at any time. Additional licenses can be activated immediately with a password from GretagMacbeth™.

**Note:** Any combination of normal copy protection plugs (single license) and network protection plugs can be used in a network. During startup, Color Quality

begins by checking that a local copy protection plug has been installed and then searches the network for a network copy protection plug.

---

### c. Databases

Databases can be created on any network computer and they can be opened by different computers at the same time (refer to chapter 12 'Creating and managing databases').

---

**Note:** The use of a common database in a network is dependent on the type of installation of the program or of the copy protection plug.

---

### 18.3.2 Installation in the network

Color Quality can be installed on a network drive, from where it can be started by all the users. No special version of Color Quality and no network copy protection plugs are required for this purpose.

The normal installation program is used for the first PC in a network installation. Specify a directory on a network drive as the installation path. The installation program installs Color Quality and SpectroServer at the specified location.

The **Network Client Setup.exe** program is used for each additional PC on which Color Quality is to be started. This program is located in the **Color Quality** directory, in the installation path. The program only generates links and settings in order to be able to start Color Quality on the workstations.

The databases should also be located on a network drive, so that all the PCs in a network installation have access to the same databases (refer to chapter 12 'Creating and managing databases').

### 18.3.3 Installation of a network copy protection plug (floating license)

The network copy protection plug supplied is connected to any network computer (usually at the server). To activate the network protection plug, the **hls32.exe** installation program must be executed on this computer. This program is located on the installation CD, in the **..\Files\Hardlock Server** directory.

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