First Steps
Overview

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**Important Notes**

1. In this description you’ll find an overview about the most important functions of InkFormulation 6.
2. Our main target is to bring you the main functions a bit closer on the basis of exercises.
3. These exercises can be realized without any measurement device. The colors which are contained accord to the assortments which will be installed with the new installation.
4. The images were created on the basis of the version Manufacturer with all modules. Depending on the installed version some symbols or menu items might not be visible. This is irrelevant as no special modules were used.

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Description of the toolbar

**Basic Formula**
Create a new formula

**Adjustment Formula**
Adjust an existing formula

**Load Formula**
Retrieve an existing formula

**Save**
Save current formula

**Spectra**
Formula in various graphic displays

**Printing of Formulas**
Print current loaded formula

**Send to dosing system**
Send current loaded formula to the dosing system

**eFormulation**
Send the formulations via e-mail
**SPM**
Connection to the measuring device

**Switch to ColorQuality**
Load of the ColorQuality or switch between ColorQuality and InkFormulation
Set measuring conditions

**General settings**

1. Click menu **Settings: General**.
2. Accept the default measuring settings in the “General Settings” window.
3. Click **OK** to close.

**NOTE**: If you change the language you have to restart InkFormulation.
Display settings

1. Click menu **Settings: Display**.
2. Please accept the default settings in the “Display Settings” window.
3. Click **OK** to close.
Loading of assortment

1. Click the up-arrow on the left side of “Assortment”.
2. Select “Flexo/Gravure incl. colorant elements (Pol, Leneta)” in the opened database and click Select.

The name of the chosen assortment appears in the main window.

NOTE: The item “assortment” characterizes a database which contains basic colors.
Create a basic formula

1. Click on the **Formulate: Basic recipe** icon.
2. First, the guideline color has to be defined. Instead of measuring the color you can load the color data via “ColorNet”, “Color libraries”, “Lab entry” or via “CxF”.

**ColorNet** is the connection between the various X-Rite Applications (InkFormulation, ColorQuality and Spectrophotometer). Saved colors can be exchanged via ColorNet.

You can enter the color data with defined colorimetrical terms via the **Lab-Entry**. However, this definition of the guideline color has the disadvantage that the InkFormulation does not experience any remission data, but only the calculated color data.

Via **Color libraries** you can choose the HKS or Pantone coloring according to the substrate (coated, uncoated, matte) and the lighting conditions (this button assumes that the color guide libraries are provided).

**CxF** is a color exchange format and contains all the key information, and in particular the spectral values of the colors transmitted.
Load an existing color via ColorNet for the exercises:

3. Select the draft of “15.0% green” in the list by selecting “InkFormulation” → “Assortment” → “Flexo/Gravure incl. colorant elements (Pol, Leneta)” → “Green” → “15.0% green”.
4. Click Select to load the coloring as color draft.

After double clicking the supreme folder “X-Rite ColorNet” all available applications appear.

NOTE: The structure of the ColorNet is analog to the one of the Windows Explorers. By double-clicking the folders the ones below will open. Should several folders not be visible, please double-click on the folder above of them.
5. The next step is to define the substrate type of the draft. For our exercise, choose **coated** and click next (>>).

![Image of coated substrate selection](image)

6. In the next step the substrate for our formulation will be announced. For our example we choose the option **Substrate of current assortment** and click next (>>).

![Image of substrate selection](image)

**NOTE:** The substrate information is as important as the color to be formulated for the formulating as the program has to account (compensate) for the color of the substrate in the formulation calculation.
7. Now we can edit the thickness of the coating. We will leave it at the default of 100% and click next (>>).

![Image of coating thickness editing interface]

NOTE: This setting can be performed in **Menu: Settings → Formulation**. There is a control integrated to the formulation procedure. The window is optional and may be deactivated in the same menu.

In the next window you select the desired application.

NOTE: This window only appears if you define more than one application for your current assortment.

Either you select one combination of the first box (already defined application) or you create your own.

8. Choose one combination and go to the next step by clicking next (>>).
Now the window for the color option appears. The available basic colors of the currently loaded assortment ("Flexo/gravure printing incl. Colorants elements") are listed on the left side of the window.

9. Click on the double-arrow (>>) to move all colors from the Available colorants list to the Selected colorant list. Formulation can now be performed with the colors in Selected colorant list. Click on next (>>) at the bottom to continue.

NOTE: You are not forced to choose all colors. You can select a single color by double-clicking it or by highlighting it and clicking the single arrow right button (>). Colors can also be removed from the Selected colorant list by highlighting the color and clicking the single left arrow button (<). Please note that the program may be limited by a selective choice of basic colors in the formulation possibilities.
10. The next step is to define the formulation mode. You can choose between regular and palette formulation. Available palette recipes are automatically shown in the box. This window optional. If you do not work with palette recipes, you deactivate that step. Select the Regular formulation option.

11. Now the calculated recipes according to the selected sorting criteria are listed:

- dEcurrent
- dE CIELab
- Price
- Components
- X-Rite Optimum

12. Click on the desired criterion. All recipes are automatically sorted accordingly.

13. Click on the first recipe and click Finish to go to the next step.

**NOTE:** We recommend the criteria “X-Rite Optimum”. A combination of different criteria like Delta E, number of components, metamerism etc. are listed by their importance.
The formula appears in the main window:

14. You are not forced to use the first formula. Usually you can choose the second or the third, because often there are only very few differences between the first three or four formulas regarding the formula performance. Use the forward and backward arrows to choose:
15. Click on the **Spectra** icon on the main window. In the window that appears there are drafts and formulas compared in different view windows.

**Comparison of the remission curve:**

![Comparison of the remission curve](image1)

**CIELab color circle:**

![CIELab color circle](image2)

The red “x” in the center shows the draft and the blue “x” shows the formula.
Comparison of draft and formula on white and black for three different illuminants:

This aspect gives you a visual impression of the color under three different illuminants with adequate color distance dE (e.g. D65, D50 and A).

Display of the formula under different illumination techniques:
Display of the behavior by changing the coat thickness:

![Graph showing the behavior change](image)

**NOTE:** The position of the window is not fixed. You can move it while keeping the left mouse button pressed on the title bar on the top of the window. By dragging one edge of the window while keeping the mouse button pressed, the size can be adjusted (bigger or smaller).

Saving the color formula:

16. Click the menu **Recipe: Save**.
17. Enter the name “15% green” as formula name into the window and save the formula by clicking **OK**.

The formulating procedure is now finalized and the recipe saved. It can now be printed and mixed.
Formulate a correction

1. Please load the earlier saved formula “Green”. Click the menu **Recipe: Get**.
2. In the open window, double-click “15% green” or highlight it and click **Select**.

**NOTE**: In InkFormulation you basically have two possibilities to choose a color: either by highlighting a color and clicking on **Select**, or by double-clicking on the corresponding formula.
After loading the formula please click on the menu item **Formulate: Correction recipe**. In the open window you have to enter the current mixture. In practice it’s normally realized by measuring the mixed and printed basic formula. In our exercise we take this color via ColorNet. For this, please click on **ColorNet**.

3. Select the color “10% Green” in ColorNet by selecting “InkFormulation” → “Assortments” → “Flexo/Gravure incl. colorant elements (Pol, Leneta)” → “Green” → “10.0% Green”. Click **Select**.
4. The next window displays the color selection window where all colors are selected. Click next (>>) to continue.

After the colorant selection window the software calculates all possible corrections, shown accordingly to the sorting criteria:

5. Click on the first recipe of X-Rite Opt. and then click Finish.
The adjustment to the formula is shown properly arranged:

In the main window you can see the adjustment quantities in the second row on the right side next to the original quantities.

The addition of the basic and adjustment quantity is available via “Add to additional ink quantity”.

6. Click on **Add to additional ink quantity**.

This can be performed in two different ways:
   a) Click menu **Recipe: Add to additional ink quantity** or;
   b) By clicking the right mouse button in between the formula window and selecting **Add to additional ink quantity**.

NOTE: Besides the **Add to additional ink quantity** function, you can complete several other actions in the popup-window.
After adding the adjustment the total of the color quantity is 100. This is the same value that was set in the window “Formula Adjustment” earlier.

NOTE: There are 2 possibilities to perform an adjustment:

a) The color will be mixed again with the adjustment quantity. In this case you have to choose the above procedure or;

b) You change an already existing mixture. In this case the formula will be printed with the separately indicated adjustment quantities. To perform this adjustment, choose the option “Existing color quantity” instead of “Total color quantity” in the window “Adjustment of the formula”. Reduce the quantity by the quantity which was already used for the proof.

Example: Mixture: 100g; Consumption of proof: 15g; → “Existing color quantity”: 85g.

7. Save the adjusted formula by clicking the formula Save icon.
8. Keep the formula name “15% green” in the open window and click on OK.
9. A warning message appears that this name is already in use. Confirm with Yes, so the original formula will be replaced by the adjustment formula.
Create an ink leftover

1. Menu **Database: Ink leftovers.**

   ![Database Window]

2. In the Define ink leftovers window click **New.**

   ![Define Ink Leftovers Window]
3. In this step you are asked to define the ink leftover.

In practice you would measure a printed ink leftover. For this exercise we will load an existing color via ColorNet.

4. Click **ColorNet**.

5. Select the draft “15.0% Green” in the list by selecting “InkFormulation” → “Assortment” → “Flexo/Gravure incl. colorant elements (Pol, Leneta)” → “Green” → “1.0% Green”.

6. Click **Select** to load the coloring as color draft.
7. Define the substrate in the next step. Choose **Substrate of the current assortment option** and click next (>>).

8. The film thickness is 100%. Click next (>>) to continue.

**NOTE:** In practice the substrate would normally be measured. This is because it typically differs from the assortment substrate. For InkFormulation it is very important to obtain the exact substrate information, so the substrate color can be correctly compensated.
9. Enter the name “Leftover Green” into the Designation field.
10. For the “Available quantity” option, enter “100” and “kg” as the unit.
11. Click Finish to close the window.

12. The ink leftover is now saved on the database. Exit the process by clicking Close.

NOTE: The process shown here to enter the ink leftover is not the only method available. Further information is provided in the online help or the user’s manual.
Formulate with an ink leftover

We recalculate the recipe “15.0% Green” by including the previously defined ink leftover.

1. Load the saved recipe “15.0% green” (Menu Recipe: Get) and recalculate (Menu → “Recipe” → “Recalculate”).

Within the formulation workflow the use of ink leftover will be activated directly in the window “Colorant Selection”.

**NOTE**: “Recalculate” can always be used if the draft color and the substrate are kept unmodified, and only the formulating process is modified again.
2. Select the first recipe according to the criteria dE2000 and click **Finish**.

3. The maximum quantity of the ink leftover was attached. This is because this green matches well to the green color draft.
4. The use of the ink leftover in InkFormulation contains a semi-automatic quantity maintenance. This means that the used quantity must be manually accepted after formulating. To accept this change, select the **Recipe** menu item and then **Reduce ink leftover**.

5. In the window “Reduce ink leftovers” the status before and after the change for the used quantity in the formula is showed. Click on **OK** to accept the change.

6. Save the formula by selecting the **Recipe** menu item and then **Save**. Enter the name “15.0% green with ink leftover” in the Designation field and click **OK**.
7. Reopen the window of the ink leftover database (Menu Database: Ink leftovers). Here you can see that the original value of “100” was reduced by the used quantity in the formula and now has a new value of “0.07”.

Remark: To work with the quantity is not mandatory but an option. You can work without quantity without problem. The user has the responsibility to ensure that the ink leftovers (which are used in the formula) are available in the required quantity.

8. The formulating circle under “use of an ink leftover” is finalized. Click Close to exit.
Enter a formula manually

This function enables the creation of existing formulas into InkFormulation.

1. **Menu Recipe: New.**
2. In practice only the proof of the formula would be measured. In our example we will load the color via ColorNet. In the New Recipe window click **ColorNet.**

![Image of InkFormulation software interface]

**NOTE:** The case which we are referring to is based on existing proof or dross. If only the formula is available, you can enter it via Menu **Formula → New → Calculate.** The color of the formula will then be calculated by InkFormulation.
3. Select the concentration stage “55.0% Orange” in the list by selecting “InkFormulation” → “Default” → “Assortments” → “Flexo/gravure printing incl. Colorant elements (Pol, Leneta)”.

4. Click **Select** to load the coloring as our mixed color.

5. For our example please choose the option **Substrate of the current assortment**. Click next (>>) to continue.

**NOTE**: In practice it is very important to measure the original substrate on which the formula was printed.
In the **Recipe entry** window above on the right side the color shade appears with the corresponding color data under “Formula measured”.

6. Enter the color name “Recipe Orange”.
7. In the list on the left double-click the available assortment color “Orange”.
8. Enter the quantity “55” into the field “Color quantity”.
9. Double-click on “Transparent white” in the list on the left. The assortment color changes to transparent white as well to the right side of the formula window.
10. Enter the quantity “45” into the field of the “Color quantity”.
11. The formula is now completed. Click **OK** to close the window.

The formula appears in the main window.
Create a new recipe folder

You will need to create a new formula folder for the formula that you just created.

1. Click on the Save icon or choose menu Recipe and Save.
2. In the Save Color Recipe window click Folders.
3. In the Folders window click New.
4. Enter Test recipe folder in the “Name of new folder” field and click OK.
5. Highlight “Test recipe folder” in the Folders window and click Select.

6. Click OK to save the formula to the chosen folder.
Search a recipe: by name

This research helps to find recipes again.

1. Click Recipe menu. The Database: Recipes window appears.
2. We are searching for our first created recipe “Orange”. Click Search.

3. In the Search criteria window enter Orange in the “Designation” field. Define the recipe folder “Default”. Click OK.

NOTE: To refine the search you can enter the specific date or period.
4. The window appears with no formula found. Select the Test folder by clicking Folders at the bottom, or by selecting Test from the list on the right.

One color with the name “Orange” appears in the list.

5. Close the window without choosing the color by clicking Close.

NOTE: All formulas which contain “Brown” as part of the name appear.
Search a recipe: by smallest dE*

This search method is used before formulating to find formulas which are similar to the formula you want to create.

1. Click menu **Recipe: Define target color → Get.** The Define target -> Get window appears.
2. Now the color draft has to be measured. For our exercise, it is sufficient to load a reference from ColorNet. Click on **ColorNet.**
3. Select the draft level off “55.0% Orange” in the list by selecting “InkFormulation” → “Default” → “Assortments” → “Flexo/gravure printing incl. Colorant elements (Pol, Leneta)”.  
4. Click Select to load the color.

5. The Formulation window appears. From this window you can limit the choice to filter formulas with unwanted color components. Click on next (>>) to continue.
6. The program now changes to the formula database and lists all existing formulas. In this list is chromatically arranged and begins with the color with the smallest color distance (smallest dE*).

The indicated formula corresponds with our draft. The program accordingly calculates a dE* 2000 of 0.0.

7. Click **Search**.

8. Select **All folders** option from the “Show recipes of folders” list.

**NOTE:** As you can see in the Search criteria window there is the possibility to limit/expand the search to:
- Recipes of the current folder
- Recipes of all folders of the current assortment / of all assortments
- Recipes only with contained color (limited to one assortment)
- Substrate-related formulas
- Only formulas of ink leftovers and base formulas
9. The search criteria are expanded for the program. Therefore, there are several formulas shown (of all folders). Click **Cancel** to close the window.
Create a substrate

If you often use a constant substrate you have the option to save it in the database. This allows you to load it from the database for the formulating process instead of measuring it each time.

1. Click menu **Database: Substrates**. The Database: Substrate window appears.
2. Click **New**.
3. Enter **Own substrate** in the “Designation” name field.

Besides the name of the substrate you can indicate the type and the quality of the substrate, as well as give information about the surface finish (only on uncoated substrates).

4. Choose the **Coated** option for the “Substrate quality” list.

5. In practice you would measure the substrate. For our exercise we will load the substrate of ColorNet. Click **ColorNet**.

6. Select “**Substrate: White**” in the list by selecting “InkFormulation” → “Default” → “Assortments” → “Flexo/gravure printing incl. colorant elements (D65, Leneta)”.  
7. Click **Select** to load the substrate to Own Substrate.
8. Repeat this process for the measurement of substrate on black.
9. Finalize the entry for the substrate by clicking **OK**.

The new substrate appears in a list together with the remaining substrates. By closing the window the measurement of the substrate is finished.

Should the substrate information be available in the database for future formulas, you can choose the desired substrate on the option **Substrate from database.**

NOTE: The stored substrates always guarantee the exact identical values. There is no influence exerted on eventual substrate variations however. If the quality varies the substrate to be printed should be measured each time. Otherwise, there can already be incorrect information for the formulation.
Backup a database

1. Click menu **File**: **Database**: **Backup**. The Export backup database window appears.
2. For this exercise, save the backup on the desktop. Use the default name of “dbif.ifbx” for this backup.
3. Click **Save**. All data (formulas, assortments, substrates, etc.) are stored in one file.

**NOTE**: Normally, you can create a backup name according to your requirement. For security reasons the backups should be saved on an external medium or on a network drive which is typically backed up as well. Backups should be created on a regular basis, i.e. weekly.
1. Click menu File: Database: Restore. The Import backup database window appears.
2. Highlight the backup just saved (dbif.ifbx) and click Open.

3. In the “Restore database” window choose the option Overwrite DB. Confirm the overwrite warning message by clicking OK.

NOTE: Caution should be taken to only choose the “Overwrite DB” when you really want to overwrite (replace) the existing database.

With the option “Append to DB” new data (since the last backup) will be added to the existing data. The existing data will not be changed.

End of exercise.
On the next page you’ll find an overview regarding general settings.
Settings: General

1. Click menu **Settings: General**.

   a. This option allows you to change the illumination and observer angle. The filter option will be defined by creating a new assortment. The program automatically changes the filter according to the assortment that was created.

   b. Color scale: This option allows you to switch between “CIE-Lab” and “CIE-LCh”. The values are shown accordingly in the main window.

   c. Illuminant for metamerism: With above mentioned settings possible metamerism is shown under “warm” (yellowish, “A”) and “cold” (bluish with parts of UV, F11) light. This is a typical setting.

   d. Averaging: for homogeny color films one measurement may be sufficient. If the color film is broken or turbulent we recommend 2, 3 or more measurements.

2. Click **Cancel** to close the window without saving setting changes, or click **OK** to close the window and save setting changes.
Settings: Formulation

1. Click menu **Settings: Formulation**.

   a. Recipe correction: In “Addition-Mode” the adjustment quantities are shown as a second row in the main menu. In “Basic formula-Mode” the adjustment quantities are immediately added to the quantity of the basic formula.

   b. Recipe output: The available options depend on the printing process and the installed modules. Following are possible options: “Printable colors”, “Master colors and dissolvent” and “Basic material”.

   c. Opacity control: “none (only color optimization)” is the typically used setting. The need for using the other settings are colors with partly or completely opacity, and a corresponding assortment that was created on white and black.

   d. Ink film thickness (Colorant calibration = 100%): If there is a difference of coat thickness between the coloring calibration and the printing process, a general adjustment could be done by an adjustment of the percentage values.

   e. In addition, the user has the option to turn off several steps of the formulation process. For example, deactivate the **Colorant selection** window.

2. Click **Cancel** to close the window without saving setting changes, or click **OK** to close the window and save setting changes.
### Settings: Display

1. Click menu **Settings: Display**.

   a. **Recipe output**: The “Fix number of decimals” option is used to define the number of the digits after the comma which are shown in the main window, and on the printed formula. The “Maximum color distance” option defines outer $dE$ limit where the formulas are shown.

   b. **Database: Recipes**: If this option is activated only formulas of the current loaded assortment are shown in the formula database.

   c. **Tolerance**: With this setting the $dE^*$-Tolerance limit can be fixed. In the display of the color space this limit is shown as a gray circle.

   d. **$dE^*$-Formula**: For the identification of the used Delta $E^*$-Formula.

2. Click **Cancel** to close the window without saving setting changes, or click **OK** to close the window and save setting changes.
Settings: Batching systems

In this settings window you can define the connection to the batching system.

1. Click menu Settings: Batching systems.

2. From the “Available batching systems” list select **Universal Batching System** and click the right arrow (>).
3. Highlight the system and click **Modify**.
4. In this window you can fix the formula edition and the order of the dosing.
5. Click on **Setup**.
6. Indicate the initial path for the formulas to be dosed.

![Modify batching system dialog box]

- **Batching system designation:**
  - Universal Batching System (1)

- **Output file for recipes:**
  - `C:\PROGRAM FILES\X-RITE\WINFORMULATIONS\scalesUtil.exe`

7. Click **Cancel** to close this window without changing the setting.
**Settings: SPM**

In this settings window you can search and calibrate a connected spectrophotometer. You can also choose the serial interface (COM) and set the baud rate. At the bottom of the window you’ll find information about the connected device (Serial number, software version).

1. Click menu **Settings: SPM**.
2. Click **Close** to exit the window.

**NOTE:** Besides X-Rite measuring devices some devices of competitors are supported as well. These are listed in the window for the choice of devices.
Settings: Communication

In this window you can connect InkFormulation to ColorQuality. You can also define the input and output path for sending data.
Settings: Library folders

In this window you can write-protected recipe folders. Users can then be prevented from unintentionally storing recipes into a protected folder.

1. Highlight a recipe folder.
2. Click Lock. The designation of the button changes to Unlock and the folder is marked by a red key icon.
Settings: Set up Printer

In this window you can create, modify and delete print layouts. You can also define the directory for the layout.

NOTE: Further information is provided in the online help or the user’s manual.
**Settings: Workflow**

In the setting workflow window you can deactivate single windows of the formulation wizard. If you are always working with the same thickness, sorting criteria and colorants you can deactivate these windows.

Pallet formulation: Activate the check box to switch the mode during the formulation.