Ink Amount Check
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Introduction

Before starting with the printer calibration it is wise to check whether all available dot sizes will be printed in good quality when using 100% ink. It might be possible that a certain combination of printer/ink/media does not print good results e.g. for 100% black with medium dots.

After having created the density linearization and before creating the printer profile, it is absolutely necessary to check the quality of the density linearization and to find out how much ink your media can absorb. The ErgoSoft RIP offers several tools for checking the quality of the density linearization and for limiting the amount of ink used.

Performing the 100% ink per dot size usage possibility check before starting with the printer calibration and the quality of the density linearization check before setting the total ink limit and before creating the printer profile might help in avoiding unnecessary repetitions of printer profile creation.

Checking for 100% Ink per Dot Size Usage Possibility

The ErgoSoft RIP provides a simple tool to check whether all dot sizes can be used with 100% ink or whether some has to be limited because of e.g. bleeding.

Select menu Tools > Linearization & Profile Tools > Print Ink Assignment to print the available physical inks in all available dot sizes with maximum ink possible (100% ink).

Checking the Quality of the Density Linearization

In order to check the quality of your density linearization before starting with printer profile creation you should print a test chart or just some gradients using only pure inks. When the density linearization is not good, e.g. has some gaps, all printouts using this part of the density linearization will show strange effects.

You can either use a CMYK density test chart provided as part of the ErgoSoft Profile Test-charts in the Sample Images section of the download area on the ErgoSoft web site or create your own one using all color channels you use for printing.
Tools for Ink Amount Limitation

Dot Size and Light Ink Limitation

When certain combinations of ink dilution and dot size do not print well they can be limited. This is done in the settings of the dithering method in the print environment.

Ink Limitation for Non-Mixed Colors

The darkest dilution of an ink can be limited in the density linearization when examining the measurement values.

Ink Limitation for Mixed Colors

To check the amount of ink for mixed colors a media can absorb we recommend printing an ink limit test chart provided as part of the ErgoSoft Profile Testcharts in the Sample Images section of the download area on the ErgoSoft web site.

When having found the ink limit you may set it in the print environment as well as in ColorGPS when creating the printer profile.
Solutions for Common Problems

Printout Shows Strange Pattern

The printout can show strange patterns because of the following reasons:

1) Regular patterns especially in large areas with solid colors often indicate a so called moiré meaning that there are interferences between the image raster (especially for scanned images) and the dithering method for the output. 
   Try another dithering method in the print environment.

2) Regular patterns that are independent from the selected dithering method often indicate a kind of hardware “problem” with the used combination of printer/resolution/ink/media. 
   Try another setting for the slider in section “Reduce printing artifacts” of the settings for the dithering method in the print environment.

3) Long vertical stripes in the direction of the media feed often indicate a kind of hardware “problem” of the printer’s media transportation system; the rubber rolls of the media feed system press a bit too hard on the media so that the media shows a kind of “rubber roll’s street”. 
   Try another setting for the slider in section “Reduce printing artifacts” of the settings for the dithering method in the print environment.

4) A certain color tone (mixed with two dilutions of an ink color or with two dot sizes) might always show strange pattern because the used mixing of ink dilution and/or dot sizes creates interferences or bleeding. 
   Try the “dot size and light ink limitation”.

Ink Assignment Strip is not Good

Bleeding patches in the ink assignment strip (used to check for 100% ink per dot size) indicate that the combination of ink dilution and dot size for the bleeding patch is not suitable for the used media.

Try the “dot size and light ink limitation”.
Density Linearization Chart is Bleeding

There are several kinds of bleeding for the density linearization chart:

1) **The chart is bleeding somewhere within the patches of a color but not at the end.**
   This indicates that the transition from one dot size to the next bigger one or from one ink dilution to the next darker one causes problems with the current settings.
   Try the “dot size and light ink limitation”.

2) **The chart is bleeding at the end but still can be measured.**
   a) The ink assignment strip (used to check for 100% ink per dot size) shows the same problem:
      The media cannot absorb 100% of this ink.
      The output limitation in the density linearization (dialog “Measurement results of chart”) should be used. When you would have to skip a lot of patches in this kind of limitation you can combine it with the limitation described in point 3 by limiting the printout to the second patch bleeding and using the limitation in above mentioned dialog for fine-tuning (after having printed and measured the limited density linearization chart).
   b) The ink assignment strip does not show this problem:
      The last patches in the density linearization chart are printed not only with the darkest ink dilution but also with the next lighter one.
      In the advanced settings of the dithering method (print environment), switch from “Prefer light inks” to “Prefer small dots” or limit all combinations of ink dilution and dot size except for the darkest one.

3) **The chart is bleeding (or polling) at the end and cannot be measured at all.**
   a) The ink assignment strip (used to check for 100% ink per dot size) shows the same problem:
      The media cannot absorb 100% of this ink. The density linearization chart must be limited to the patches that can be measured.
      In the density linearization dialog “Prepare Linearization” use the “Resolve Problems” button to limit the printout of the density linearization chart to the last patch that can be measured. Before measuring, you have to print the density linearization chart again.
   b) The ink assignment strip does not show this problem:
      See the explanation for point 2b.

Chart for Printer Profile is Bleeding

When the chart for the printer profile you intend to create in **ColorGPS** is bleeding you have to use a smaller value for the “Total ink limit” in **ColorGPS**.
Output Uses too Much Ink

1) **Printing CMYK images without input profile**  
The ink limitation in the printer profile is not used but the “Total ink limit” set in the print environment which should be reduced.

2) **Printing images with input profile and using a printer profile you created yourself**  
The printer profile was created using an ink limit too high and should be re-created with a lower ink limit.

3) **Printing images with input profile and using a printer profile not created by you**  
The printer profile was created using an ink limit too high. Since you cannot re-create the profile with a lower ink limit you can only reduce the “Total ink limit” in the print environment and use it “on Top of Printer Profile”.

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Finding the Best Settings for Dot Size and Light Ink Limitation

Since the best settings vary from media to media there are no common rules but just try and error solutions and experience.

1) **Print a gradient for the color to be examined that is long enough to show all values from 0% to 100%**.

2) **Examine it with the help of the ink assignment strip (used to check for 100% ink per dot size) to find the combinations of dot sizes or ink dilutions that cause the problem**.

3) **Limit the value of the smaller dot size or lighter ink dilution in the advanced settings for the dithering method in the print environment**.

4) **Print the gradient of step 1 again.**  
Repeat steps 2 to 4 until the printout shows no longer bleeding.