Print Control Wizard

How do I Select the White Pattern?

1. White Pattern

From the PCW Software a white test form is to be printed at the specified printing condition. The pixelboost is not to be adjusted for white, the value from the Process Colors is to be used and the type of MicroCell is to be selected accordingly. The test chart looks like the image to the right. There are basically nine patches labeled A to H with eight different types of MicroCell (B to H), the one in the center (patch A) is a solid patch without MicroCells as a reference. Each patch is horizontally divided in two pieces with different orientation of the MicroCells.

Additionally, there is an area for the printing details at the bottom. It is strongly advised to fill out these fields with the according printing condition. Otherwise different samples will all look alike after the second print run.

For the evaluation there are three parameters to be considered:

- Both orientations of the MicroCell need to print the same
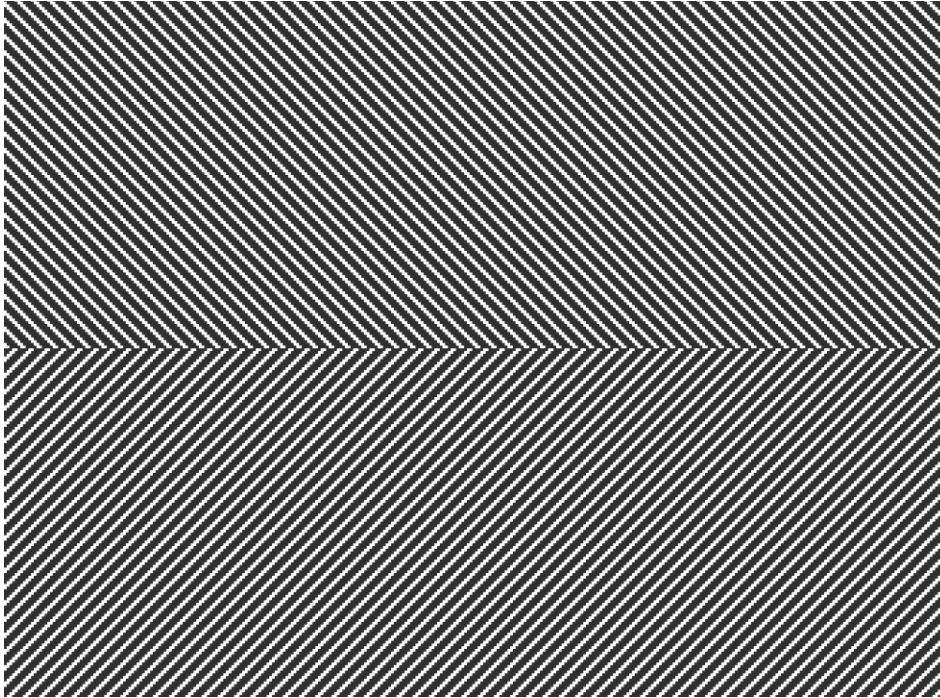- Opacity
- Evenness of the ink film (Mottling)

Quite often the requirement was to have a "good" white ink film, meaning that the white should appear as a clean white, covering the area below completely in a homogeneous way. Due to the limitation of the measurement equipment that is available at printer sites mainly only the opacity has been measured.

2. Orientation

The white microcells have an orientation e.g. groovy line have either a rising of falling direction. However the final printing plate need to perform the same in either direction. Therefore the patches are horizontally split into an upper and lower half with one orientation each. Make sure both areas are printing the same.

3. Opacity

One of the two parameters to be considered for the selection of a white pattern is Opacity. It is a number that describes the "non-transparentness". In other words, this is the ability to hide what is behind. The higher the number is, the more light is being blocked, ideally it is 100%, so all light is being blocked and no light is being transmitted, so it is not possible to see what is behind.

a. Opacity Measurement Device

If there is an opacity-measurement-device available, it is to be used. It delivers in an easy way accurate numbers that can be compared between different sites.

b. Using a Print Densitometer and a Calibration Patch

If there is a print densitometer and a standardized calibration patch (sometimes also called "opacity chart") available this is the preferred workaround. It is best if it is according to ISO. Nevertheless, this is only a workaround.

 i. Set the device to dot area function
 ii. When asked to measure white use the white calibration patch
 iii. When asked to measure black use the black calibration patch (sometimes this is a hole)
 iv. Place the white test patch over the black calibration patch and measure with the device the "dot gain" in black
 v. The opacity for each patch is 100% minus the measured value e.g. the device reads 30% the resulting opacity is 100%-30%=70%
 vi. Repeat for all nine patches

c. Using a Transmission Densitometer and a Light Table

Another workaround that is not the first choice is a transmission densitometer might that is to be used on a light table and densities are to be compared. Opacity readings are not available, but it should be sufficient to rank the patches relatively. Therefore, it is not the preferred workaround.

 i. Calibrate the densitometer on a transparent piece of the film
 ii. Measure the density for the white patch.

d. Using a Print Densitometer Without Calibration Patches

Also, a print densitometer can be also be used but a piece of black film is required (graphical film of foil from the box of raw Flexo plates). Put the film to be measured onto the black underground. This is the workaround as a last choice.

    i.   Calibrate the densitometer on the white patch
    ii.   Measure the black background through the transparent film

The higher the density the bigger the contrast is, so the white is "whiter", thus the opacity is higher.

4. Evenness of the ink film

Opacity is one parameter to be measured but even more important is the evenness of the ink film. It can be measured with an according device (such as the Flex3Pro when measuring "mottle"). Mottling is describing the evenness of the ink film. This is also including the pinholes.

In case it is not available it can be done manually by visual inspection. Here is an example what to look for.

SOLID	EXP3
Mottle: 7.02	Mottle: 1.32
Opacity: 56.9%	Opacity: 55.2%

The opacity is more than 1,5% higher in the left case of "SOLID" compared to "EXP3" in the right case. But the ink lies much smoother, so the less structure is in the ink film the smaller the "mottle-number" becomes the smoother the ink lies.

A visual inspection already gives a good feeling what is a "good white". If two patches look similar the opacity reading is going to help to drive a decision. This is usually the case at "mottle-numbers" below 1.