

# STFI-Mottling – an accurate way of quantifying print density variations

November 2012

**Mottle is without doubt one of the most important factors regarding visual impression of print quality. Investigations in our perception laboratory show that the calculated mottle values correlate very well to the human perception both for full tone prints, screened prints and unprinted samples (e.g. white-top mottle).**

It is still common to use visual assessments to quantify the amount of mottle. However, the drawback of using visual evaluation is high cost and time consumption. Instrumental evaluation using the STFI-Mottling tool solves this problem being both less time consuming and easier to compare with other evaluations.

Since an ordinary flatbed scanner is used to collect the images of the samples it is easy to implement this method in research laboratories as well as in quality control environments.

## Example

Two offset prints showing different amount of mottle

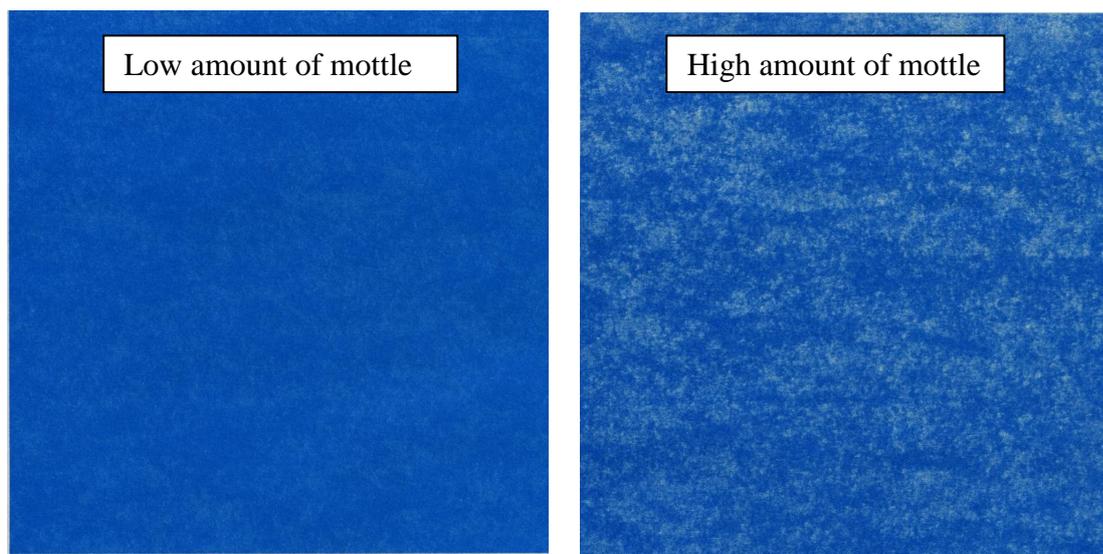


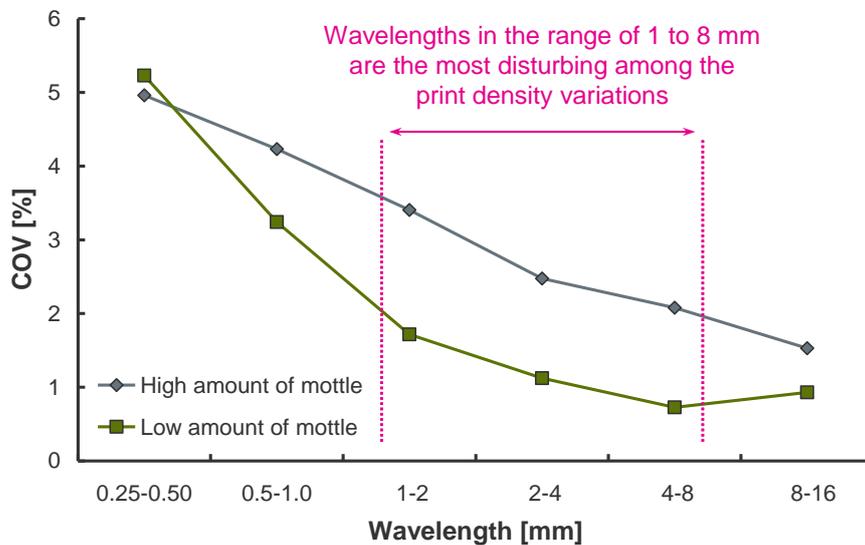
Image size 5 x 5 cm

## How this is made

A flatbed scanner is used to collect the images and the data is calibrated to reflectance using a calibration set. Small and large scale variations are removed using frequency analysis. Only variations in the range 1 to 8 mm are measured since these have been found to be the most disturbing range in visual assessments. The software is very flexible and it is possible to measure areas of size 2.2x2.2 cm up to 20x20 cm. Normally, 4-8 areas are evaluated for better accuracy.

## What you get

- The reflectance variations are presented as Coefficient of Variation (COV) divided into wavelength classes (saved in an Excel-file).



- The reflectance variation from 1 to 8 mm are combined into one single mottle value that correlates very well to the human perception of mottle.

## Additional features:

- Orientated mottle. Is there more mottle in a specific direction (e.g. streakiness)?
- Amount of uncovered area in flexo prints.
- Optical formation – the variations you see looking through the paper.
- Variations in coating thickness (samples have to be prepared using burn-out technique).
- Amount of missing dots in gravure prints.

## Contact

For more information about the method, prices etc. contact:



**Hans Christiansson**  
Phone: +46-8-676 73 81  
hans.christiansson@innventia.com



**Li Yang**  
Phone: +46-8-676 71 34  
li.yang@innventia.com