MacDermid Printing Solutions

Tech Tip 20

Digital Production

Digital Density, Linearization, Bump Curves

ESKO CDI

Density – Like film, density values of the carbon mask play an equally important role. If a digital mask density is too low pin holing will occur (because not all light is being blocked by the carbon layer). Likewise, if the carbon mask has a high density it will prevent the laser from properly ablating the digital mask. If an area of a plate is not properly ablated it will hinder exposure causing malformed dots.

1. Remove the Coversheet of the digital plate
2. With a piece of **RED TAPE** remove a section of the Carbon Mask
3. Using a **CALIBRATED Transmission Densitometer** zero out the device to the raw photopolymer.
4. Measure the digital plate (carbon side up) using the density function
5. The digital plate should read a value between 3.50 - 4.25. Because density is a logarithmic function the difference between a 4.25 and 4.3 is minimal. However, if you measure a 4.5 or higher take note.

Linearization – Linearizing (or calibrating) the ESKO CDI is done through a process called the **Stain Test**. Esko will provide all the tools necessary for this task minus the digital plate. There are two variables that can be changed to alter laser power **Wattage** and **RPMs.** Esko prefers to ablate at full power and alter RPMs. As well, consult the CDI manual to establish limitations of RPMs for plate gauges. (Thicker plates must be run at a slower RPM than thinner plates.)

1. Mount a back exposed digital plate on the CDI
2. Find the test target provided by ESKO that has 50% tone and 100% tone.
3. Ablate the target from 2.2 – 4.0 joules / cm^2 in increments of .2 joules/cm^2.
4. Step and repeat each target 3 around the plate for a good sample variance.
5. After ablating the test target, remove the plate from the CDI and take a piece of tape to remove a section of the Carbon Mask.
6. Using a **CALIBRATED Transmission Densitometer** zero out the device to the raw photopolymer.

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5210 Phillip Lee Drive • Atlanta, GA 30336
404.696.4565 Fax: 404.696.8357

7. Starting with the first target read the 100% tint patch on the test target using the **Density** function of the device. This value is your **STAIN LEVEL**. The number should be between .03 to point .07. The stain level is a quality control of proper laser power. A stain level higher than .07 shows that there is carbon being left behind after ablation. Therefore not enough power is being output to the mask.
8. Zero out the densitometer to the STAIN LEVEL/100% tint patch.
9. Read the **50% tint patch**. The value should read a **.28 - .32**.
10. If the values are off, move to the next test target and start with step 7.
11. The power setting that matches step #9 is the linear power setting.

Bump Curves - Good platemaking conditions, correct power settings and bump curves will eliminate malformed highlight dots in plates.

1. Using the established power settings for the Stain test, ablate the ESKO test target at the customers specified LPIs.
2. Expose and washout the ablated plate
3. Allow the plate to properly dry.
4. Using a 75x or 100x power microscope on a clean light table note the formed dots for each line screen measuring .001” (through the backside of the plate).
5. Apply the bumps to a newly created file.
6. Ablate the new file and create plates with the same conditions to confirm a correct bump curve.

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