

Selecting The Correct Cliché For Your Pad Printing Job

by Julian Joffe, President of Engineered Printing Solutions

The following list describes the different types of clichés that are available currently:

Polymer (*Important to note that there are many different qualities*)

- a. Single exposure (Plate has same depth of etch usually 30 microns)
- b. Double exposure (Depth can be varied, see later explanation)

Steel

- a. Thin steel (Flexible approx .020" thick)
- b. Thick steel (From .25" to approx. .5")

My personal experience with Pad Printers covers the old style doktor blade units and the new style Sealed ink cup units with ceramic ring doctoring system and I mention this as each has certain specific characteristics when it comes to the choice of cliché.

When choosing a cliché the following points should be considered:

- Size of the run
- Amount of coverage of the largest / smallest ink area
- The thickness or opacity of ink required

The first consideration is usually cost (this is not my personal opinion) as it relates to the size of the Pad printing job for which the cliché is being chosen. If the open inkwell doktor blade system is being used it's far quicker to change from job to job when polymers are used; therefore short jobs lend themselves to polymer due to both cost and set up speed.

Any print job that exceeds 10,000 cycles will usually consume at least one or more polymer clichés and if you cannot make your own clichés in house, you are probably better off with a thin steel or thick steel cliché to prevent interruption of the print job. You could also order more than one polymer cliché to keep as a back up but please consider the potential rejects as well as down time which will rapidly consume the savings you made by ordering the cheaper polymer clichés. The use of Polymer clichés also requires choosing a more suitable (usually more flexible) doktor blade to prevent tearing up the fragile polymer surface of the cliché.

This flexible doktor blade will also tend to more easily dip into image areas that lie parallel with the blade or larger areas of ink causing images with faded areas. This is commonly referred to as scooping. In many cases even multiple hits will not eliminate the problem and if rotating the image does not solve the problem you may have to resort to a firmer doktor blade. Using a firmer blade usually necessitates the use of the steel plate with half tones in the large areas to prevent scooping and keep the ink layer more even.

The fundamentals of half tone:

The etched area, instead of being simply a large open space, has small peaks which are created by exposing the cliché with a half tone screen (lines per inch and percentage can be as low as 70 line 70 % or as high as 300 line 90%). The etched area takes on the appearance of a crater with tiny evenly spaced bumps or peaks.

These bumps or peaks serve 4 purposes:

Half-Tone Peaks



- Help support the doktor blade and eliminate the scooping that may otherwise occur.
- Help breakdown the surface tension in the ink and allows for a more even layer of ink for pick up by the pad.
- Prevent ink from moving around the image during the doctoring process.
- Prevent excessive ink travel due to pad pressure during pick up.

The old style open inkwell machines lend themselves to steel clichés and in many cases are used exclusively with steel clichés as setting up these units on polymers requires some finesse and experience. The use of thick steel clichés is never necessary with the ceramic ring cup system and in fact can be problematic if the cliché is not perfectly flat.

The newer style ink cup machines (at least those with high quality ceramic rings) lend themselves well to the use of polymer clichés in the case of print runs of less than 100,000 cycles. In cases where runs exceed the 100,000 mark the use of the thin steel cliché is recommended as these clichés are relatively inexpensive and will last easily in excess of 1,000,000 cycles.

In my experience scooping problems when using ceramic ring cups on polymers can occur but rarely. By using extreme care during the etching technique, and using the double exposure high quality polymers, these problems can usually be overcome. These scooping issues are not as pronounced when using the ceramic ring cups as with the doktor blade system. This is due to the fact that the ring itself will not flex into the etched areas. Any scooping that does occur is caused by the flexing of the cliché. It is therefore self evident that a very thin flexible cliché will create more scooping than a less flexible heavier polymer or thin steel cliché. In cases where the solid ink areas exceed 1" in diameter the use of a well made half toned thin steel will always work very well.

The double exposure polymers always have the half toned etched areas and in many cases I have seen the elimination of pin holes by using this type of cliché. The double exposure cliché also enables the pad printer to create an etch depth that best suits the application, *eg. Printing on wood or leather would always require a deeper etched cliché than when printing onto less porous materials such as most plastics or glass.*

The single exposure polymer has really only one advantage over the double exposure cliché and that is if you have extremely fine detail images which tend to be lost due to the second exposure, where the screen masks the extremely fine details. The single exposure cliché is usually more expensive and is recommended only when the artwork to be etched consists of mostly very fine to fine images. If you were to use the single exposure cliché with larger images, chances are scooping would occur.

Choosing the correct cliché for your print job becomes less of an issue if you are equipped with your own in house polymer cliché making equipment as you can always very quickly replace a worn or damaged cliché.

This article is by no means a very extensive explanation of any of the concepts raised and I hope that if you have any comments suggestions or questions that you contact the writer at **1-800-272-7764**.

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