

## SPECTRA COLOR PROOFING

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The Spectra Color Proofing System, which was researched and developed by the Keuffel & Esser Company of Morristown, New Jersey, and marketed by the Heidelberg Eastern Company of New York, is not based on brand new technology, but, rather, the re-application of existing technology.

As K&E, one of the largest polyester coaters in the world, was contract coating a present day color proofing material, they decided to investigate the development of a proofing process of their own. Independent surveys were obtained, as well as a market survey of their own. As the contracted surveys were not well defined, the K&E survey revealed if the following criteria were met, we would have a better proofing system. They are: (1) Consistency (2) proof on production stock (3) negative acting system (4) blend colors for toners accurately (5) no polyester cover sheet.

We went back to R&D with this information and, nearly six years later, we began to field test the Spectra system.

From the beginning, we realized that a diazo photoresist had many advantages, such as: high resolution (300 line screen can be used), white light handling, any high UV light source can be used, very wide exposure latitude. (Increase in exposure enlarges the dots - primarily in the mid-tone to shadow ranges. For example, a 2X exposure could simulate a 5 percent dot grain.) And, best of all, as far as we were concerned, it allowed us to use a very dry adhesive to attract the toner. This meant that the toning properties of our system would not be affected by heat or humidity; therefore, densities would remain the same consistently.

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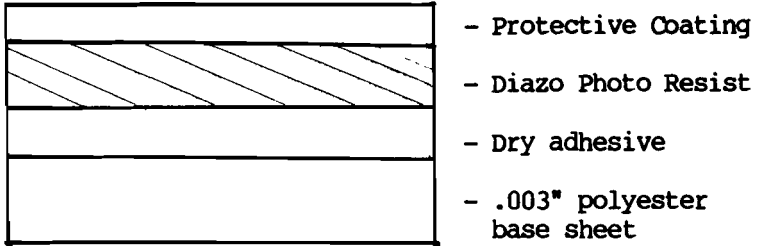
*\*Heidelberg Eastern*

There was, however, one disadvantage - diazo photo-resist needed liquid development. Our next step was to design an automatic processor. We then manufactured and field tested an automatic processor, using an odorless aqueous alkaline developer water rinse and drier. Of our existing customer base, the most frequently mentioned benefits are excellent color fidelity and consistent proofs, even when operators and ambient conditions are changed. One customer even tried to increase density by toning for a 30 minute period, only to find a .05 increase. The density can only be controlled by toner blend, ie, mix a high density with a low density to achieve the required density.

To make a SPECTRA proof, you would first pin register a sheet of SPECTRA image film (see Figure #1) using any good punch system, next expose to the negative emulsion to emulsion for about 30 seconds (SKW diazo lamp). After exposure, feed the image film into the automatic processor. Prior to toning, the film is clear, so all exposure times are the same and, in fact, size permitting, all four colors could be exposed at the same time. After development, the film is then toned on a standard toning console. A 3M plate developing pad works very well. Just cover the image area with toner and wipe off the excess - there are no required patterns or sequences. After toning, the film is fed back into the same processor to remove any extraneous toner and the photo resist from the non-image areas. At this point, we would have the required number of colors, each on a separate sheet, which would resemble a transparent overlay proofing sheet. Each color could be inspected and, if one sheet contained an error, that color could be re-done while the remaining colors can still be used.

Once all the colors are ready for assembly of a surprint proof, we mount a sheet of Spectra receptor film (see figure 2) on the laminator drum. The receptor film becomes the top protective sheet of the proof and is available in either a matte or glossy surface.

Figure 1  
Spectra Image Film - Before Processing



Spectra Image Film - After Processing

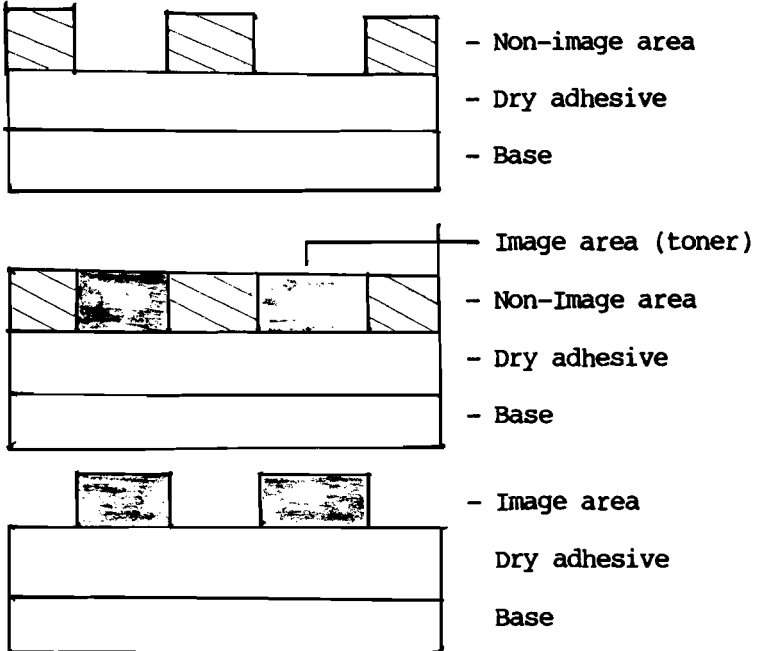


Figure 2  
Spectra Receptor Film

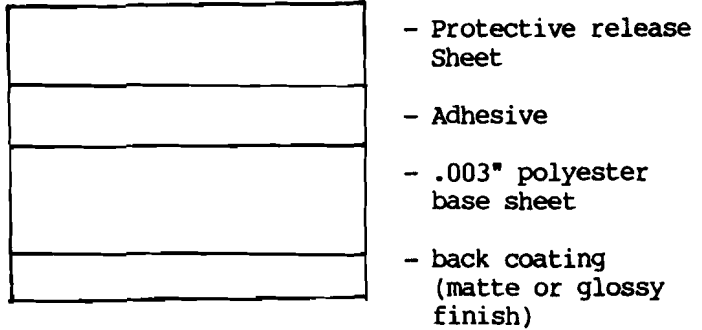
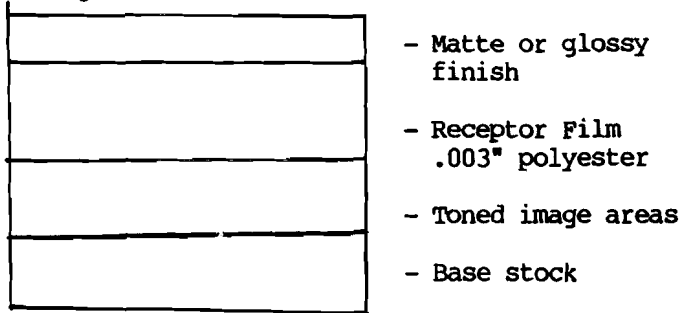


Figure 3  
Diagram of a Four Color Spectra Proof



The first color (any color order) is now mounted on the register pins located on the blanket cylinder of the laminator. The cylinders are then closed and rotated, thus transferring the image to the receptor film. The cylinders are then opened and the carrier sheet for the toned image is peeled off, leaving only the image on the receptor film. No care is required when peeling the carrier sheet off. This process is repeated for each color.

The final step is to select a sheet of base stock, which can be paper, foil or plastic and position it on the blanket cylinder, then close and rotate the cylinders. The entire process for a four color proof takes about 30 minutes. Additional colors can be included in the proof, as we have tested up to eleven colors on a single proof.

Spectra toners are primarily ground ink pigments that do mix and match well. We now have 28 colors, including S.W.O.P.s.

Our current maximum size proof is 22" X 28", however, we are currently field testing a 30" X 40" system, using the same processor and a larger laminator.

Other R&D programs are continuing at this time to make Spectra even better in the future.