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INSIDE INNOVATION AT XEROX: SCIENTISTS CREATE A RAINBOW OF CUSTOM-BLENDED COLORS FOR DOCUTECH HIGHLIGHT COLOR SYSTEMS

Even a kindergartener knows that when you mix red and green you get brown. In fact, when you mix the primary colors, the palette is almost endless. Why, then, have highlight-color printers been limited to a few standard colors plus black?

The answer lies in the composition of the colored material, according to Xerox Corporation scientists, who have found a way to expand the palette by mixing a rainbow of custom-blended colors. These colors are available on the [Xerox DocuTech® 128, 155 and 180 Highlight Color Systems](#).

The image in a xerographic print is made from toner, a plastic resin with colorants and other ingredients, that has precisely controlled properties such as electrical charge, melting characteristics, etc. Toner, with particles so small that it takes approximately 50 to make the period at the end of this sentence, is available in primary colors like red, green, blue, black, cyan, magenta and yellow.

To make a xerographic print or copy, an electrostatic charge “paints” an image, toner is attracted to it, and then the image is transferred to paper and fused onto it. Each particle of a pure primary color like red has the same properties, so the toner spreads evenly on the image. However, the properties of different primary colors could vary slightly. That’s what has made it complicated to blend colors.

For instance, copper is used to make green pigment, and it imparts specific properties to green toner, which are different from those in red toner made by using barium-based pigment, according to John Ianni, supplies product delivery manager for Xerox’s highlight color program. The upshot? It is difficult to mix the two uniformly to make brown, and image quality defects associated with separation of toners may result.

Now Xerox scientists have discovered a way to “passivate” the properties in different pigments in order to mix them. While the technology is being applied first with conventional toner in the DocuTech Highlight Color Systems, Ianni said it is planned for other toner technology in additional Xerox products.

The custom-blended colors are being rolled out in phases on the DocuTech Highlight Color Systems. When the final phase is reached later this year, eight primary colors – red, green, blue, cyan, magenta, yellow, black and clear – will be available for mixing.

With them, Xerox will be able to match more than 1,000 individual colors – 88 percent of all the standard colors commonly specified to print providers. The variety will allow Xerox to match colors in corporate logos and in other situations where colors are rigidly specified and controlled.

Xerox scientists and engineers conduct work in color science, computing, digital imaging, work practices, electromechanical systems, novel materials and other disciplines connected to Xerox's expertise in printing and document management. The company was named the Product Development & Management Association's Outstanding Corporate Innovator in 2006, and it received the 2003 IEEE Corporate Innovation Recognition award for the DocuTech product line.

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