Low Viscosity and Fast Curing UV Curable Inkjet Ink for Flatbed and Wide Format Inkjet Printing

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Abstract

Unlike other UV curable inkjet inks on the current market, the UV curable inkjet ink developed by Graphic Digital possesses a low viscosity but still fast cured and well workable with regular solvent print heads, e.g. Picojet, Spectra, Xaar heads without needing head and ink delivery system being heated up to make viscous UV ink jetable, which means that Graphic Digital UV curable inkjet ink is operating under the ambient environment (room temperature) for the fast printing and fast curing.

Graphic Digital UV curable inkjet ink is as low viscosity as the regular solvent-based inkjet ink (8-15 cps at ambient temperature, 20-30°C) with fast curing speed. The printing speed with fully cured reaches up to 112 ft/min on the DJT 400 UV curable inkjet flatbed printer at the printing output of 400 sf/hr. Graphic Digital UV curable inkjet inks are instantly fully cured after graphic imagines printed with vivid color gamut on a variety of untreated non-porous substrates. The ultra fine particle sizes (the largest measurable particles are 0.5 μm) with a narrow distribution ensure printer nozzle clogging free and settling free for at least two years of shelf life under the dark and cool storage condition. Cured ink film with a good flexibility has excellent adhesion onto untreated vinyl with strong scratching resistance, chemical resistance and very good weather durability. The principle to choose raw material for the system, processing methods to make stable low viscosity UV curable inkjet dispersion & inks, and tested results etc. will be technically discussed in the details.

The Graphic Digital UV curable inkjet ink is able to be used on many types of UV curable inkjet flatbed and wide format printers and with various applications on signage, banner, display, corrugate cardboard digital UV printings.

Biography

Dr. Jie Wang is the general manager and technical director of Graphic Digital, Graphic Sciences, Inc. In recent years, he has often done presentations on various international inkjet and digital printing conferences to address his research and progress on inkjet ink development. His expertise is in polymer science, physical chemistry, analytical chemistry, and organic chemistry, especially in inkjet ink chemistry and technology in recent years with contributed lots of publications and patents.

After he graduated from SUNY- College of Environmental Science and Forest, Syracuse University with the Ph.D. degree in polymer science, Syracuse, New York in 1996, He worked as a postdoctoral researcher in Ames Laboratory of USDOE and Iowa State University, from 1997 to 1998, then worked for PolymTech, Inc., Ames, Iowa as a senior scientist and technical manager from 1998 to 2000. He started work with Graphic Sciences, Inc., Portland, Oregon since 2000.

Before came the United States, he was an assistant professor of China Textile University, and assistant director of Chemistry Department of Shanghai Institute of Electrical Power, respectively, Shanghai, China from 1985 to 1991. He obtained his M. S. and B. S. degrees in physical chemistry and polymer chemistry in 1984 and 1982, respectively, from Zhejiang University, Hangzhou, China.