

Digital Plates and CtP Performance

Digital plate materials are the cornerstone of the entire CtP production process.

The ability of a computer-to-plate (CtP) system to deliver the benefits for which it was intended—improved image quality, near-perfect registration, fast turnaround, and the myriad advantages of a totally digital workflow—is dependent as much on the quality and performance characteristics of the digital plate material in use, as on the device employed to image the plate material.

The following discussion is a brief overview of some of the key plate characteristics and how they interact to facilitate digital platemaking, thus impacting the quality of the digital plate material. While these observations are applicable to all CtP plate materials, they are particularly true in the case of thermal plates; the use of which has grown dramatically worldwide and are the preferred choice for high-quality lithographic reproduction.

Aluminum requirements

In analog platemaking, the accuracy of dot placement on the plate is controlled to a significant extent by the accuracy of stripping and the pin registration system if a vacuum frame is used, or by the step-and-repeat device. In either case, it is necessary that the plate lie fairly flat, but because the imaging process is via contact exposure, the process can tolerate a relatively high level of variance in plate flatness—and thus in the flatness of the aluminum substrate used to manufacture analog plates. However, because digital plates are exposed via focused energy from a laser source, flatness requirements for digital plate materials, including the aluminum substrate, are much more stringent.

Additionally, the use of focused energy for imaging (as opposed to contact exposure) means that for a digital plate to image properly (i.e. without visible banding), there can be no streaking in the graining and anodizing on the aluminum.

Coating

The emulsion coating on a digital plate must be even, uniform, and free of defects. Because the writing spot size in a laser platesetter is itself so small, any airborne particle that gets onto the web during manufacture, no matter how minute, can cause an image artifact. In fact, image anomalies can be created by static bar marks so small they cannot be even seen with the magnifying glasses used to inspect conventional plates.

The same uniformity requirements apply to the composition of the sensitized coating on a digital plate. Consider: when a conventional analog plate is imaged by a UV lamp, it is bombarded with approximately 10,000 times more energy than is delivered to the coating of a digital plate by the laser system in a platemaker. This means that, in addition to meeting the precise physical characteristics described above, the sensitive coating of a digital plate must meet far tighter tolerances for spectral sensitivity, composition (i.e. the molecular structure of the coating), and energetic response. The manufacture of digital plates thus requires special, premium chemicals as well as special manufacturing procedures.

Physical requirements

Even the physical handling of the plates themselves requires a different approach than with analog plates. Because many digital plate imagers use the edge of the plate as a reference point for calculating image placement, digital plates have very strict requirements in terms of edge straightness and uniformity. With a conventional plate this is a relatively minor issue, but if a digital plate has uneven, non-straight or damaged edges, it simply won't work.

Digital plates also have somewhat more stringent temperature requirements than analog plates. Throughout the manufacturing process as well as warehousing and distribution, they are maintained within a range of 20 to 25° Celsius (68-77° Fahrenheit). It is recommended that printers maintain their plate storage areas within this range as well.

Service

The final stage of digital plate manufacturing is the creation and maintenance of a service organization that can help a printer solve problems if and when they arise. This is a factor that should be considered in the evaluation of any plate material, analog or digital, but it is especially important with digital plates. Printers in a CTP environment are typically working to very tight customer timeline expectations, which means that when they need help they tend to need it in a hurry.

Summary

When comparing one digital plate material or platewriting system with another, it is useful to keep in mind that the end product is not a stack of plates delivered to a printing plant, but the presswork produced by an accurately imaged plate that performs without problems on press.

When looking at the costs of manufacturing digital plates, there are a number of significant reasons why the costs are higher than conventional plates. The most significant is the requirement for high quality materials and processing specifications for manufacturing digital plates. KPG has made significant investments in manufacturing to insure consistent and accurate plate performance. KPG has been making thermal CtP plates for nearly ten years and continues to make significant research and development improvements to make the plates better, faster, longer running and with higher resolution. The graphic arts customers around the world have appreciated the effort. Thermal technology is the dominant choice for printers going CtP. The higher price for the thermal plates is offset by a higher quality end product.

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