Differences in Physical-Chemical Properties of the Nonprinting Areas for Conventional and CtP Process

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Abstract

The difference between printing and nonprinting areas in lithography is achieved through opposite physical-chemical properties. The printing areas attract hydrophobic substances - printing inks. The nonprinting areas, made of aluminium-oxide, attract hydrophilic substances - the fountain solution. In the printing process, the nonprinting areas are first covered with fountain solution, which makes them unable to adsorb printing ink.

The amount and stability of the fountain solution adsorption on those areas has direct influence on the quality level of the reproduction.

The aim of this paper was to determine how developing time in conventional and CtP plate making processes influences the physical-chemical properties of the nonprinting areas. For the research samples of conventional and CtP printing plate were made. All samples were exposed by light in optimal time and then immersed in developing solution in various times. The contact angle between fountain solution and nonprinting areas was measured. Results have shown differences in physical-chemical properties between those two types of plates.

Keywords: *Plate making process, conventional process, CtP process, developing time, contact angle*

1. Introduction

One of the most commonly used printing techniques today is lithography. In this printing technique, the difference between printing and nonprinting areas is achieved by them having opposite physical-chemical properties.[1] The printing areas are made of photoactive layer that attracts oil and chemical substances with oil solvent - printing inks. The nonprinting areas are made of aluminium-oxide, which attracts water based substances - the fountain solution. In the printing process, the nonprinting areas are first covered with fountain solution, which disables them to adsorb printing ink.

The printing plates are made from aluminium foils. The aluminium surface must be processed mechanically and chemically to create rough aluminium surface covered with thin and porous layer of aluminium-oxide, which as said before, has the ability to adsorb water based solutions.[2] The processed aluminium foil is at the end covered with photoactive layer that enables photomechanical copying process of motives on the printing plate and because of its chemical properties, in the printing process attracts oily based printing ink.

The plate making process consists mainly from two processes, exposure of the photoactive layer with determined light emission and the developing process, where a part of the layer is removed from the printing plate. [3]