

# THE INFLUENCE OF THE FLEXO PLATE MOUNTING FOAM BACKING ON THE QUALITY OF MAGENTA COLOUR REPRODUCTION

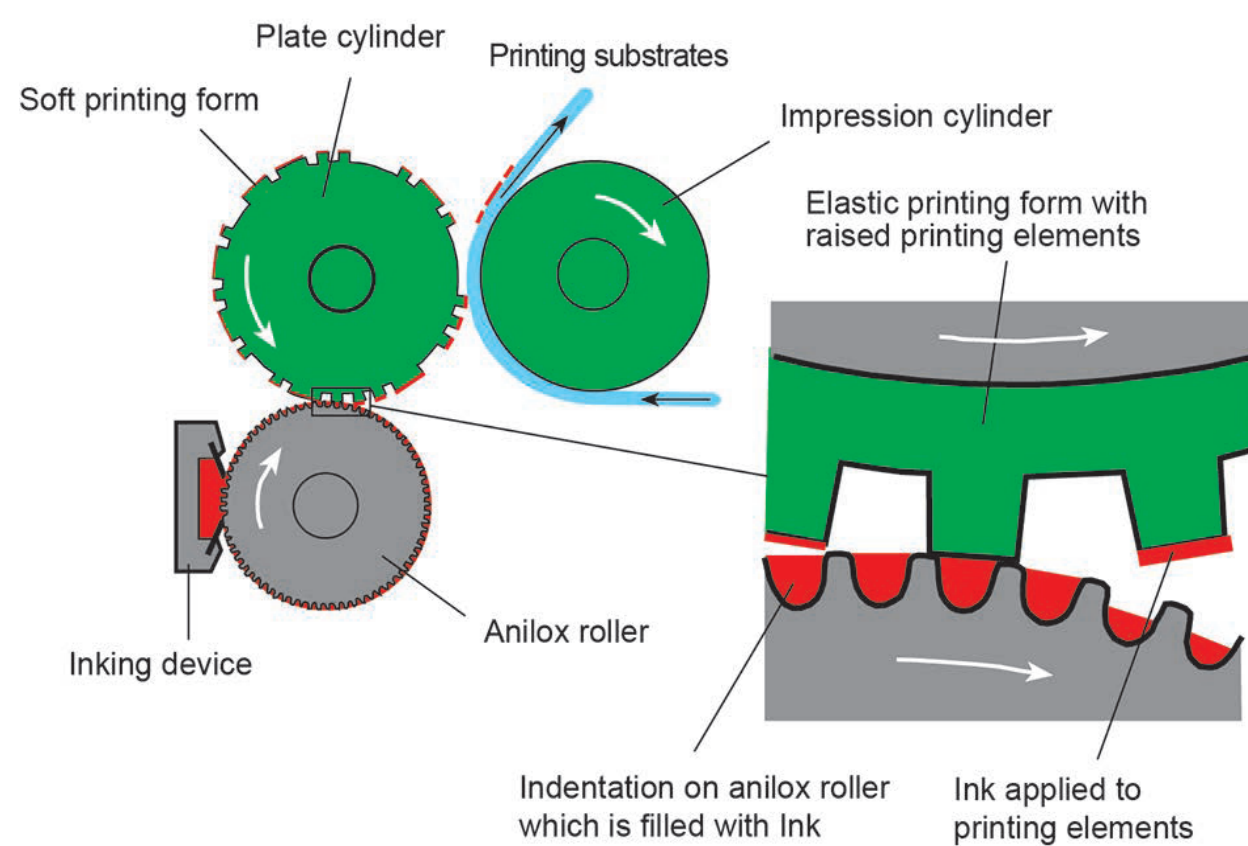
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## Abstract

Flexographic printing technology is relevant for producing flexible packaging. The quality of reproduction in flexographic printing is influenced by various factors such as the screen frequency, the volume of the anilox roller cells, and the hardness of the plate mounting foam backing. This study aims to investigate the impact of different plate mounting foam backings with varying hardness (Tesa Softprint Soft, Tesa Softprint Medium, and Tesa Softprint Hard) when used with the standard NX raster produced by Kodak (STD\_NX). Additionally, different volumes of anilox roller cups ranging from 3,8 cm<sup>3</sup>/m<sup>2</sup> to 11,6 cm<sup>3</sup>/m<sup>2</sup> were considered. NX plates were produced on a Kodak Flexcel large CTP device and printed using a WGH VISTAFLEX CL8 machine with a printing speed of 300 m/min. The printing was done on a 60 µm low-density polyethylene substrate using process magenta solvent ink. The printed samples were analyzed using a densitometer and a spectrophotometer (TECHKON SpectroDens) to obtain and compare the reproduction curves with the ISO printing standard 12647-6 (FOGRA 39 reference data). Furthermore, a detailed visual analysis of the printed samples was conducted using a Dino-Lite Edge digital microscope. The results of this research will provide guidance on the selection of the appropriate plate mounting foam backing in combination with the standard Kodak Flexcel NX screen and the suitable anilox cell counts in the roller. It was observed that the finest anilox (400 L/cm = 3,8 cm<sup>3</sup>/m<sup>2</sup>) yields the highest quality magenta prints and the smallest tone value increase. Additionally, the soft Tesa plate mounting foam backing offers the most accurate initial reproduction curve, staying closest to the allowed tolerance area.

## Problem Description



## Methods

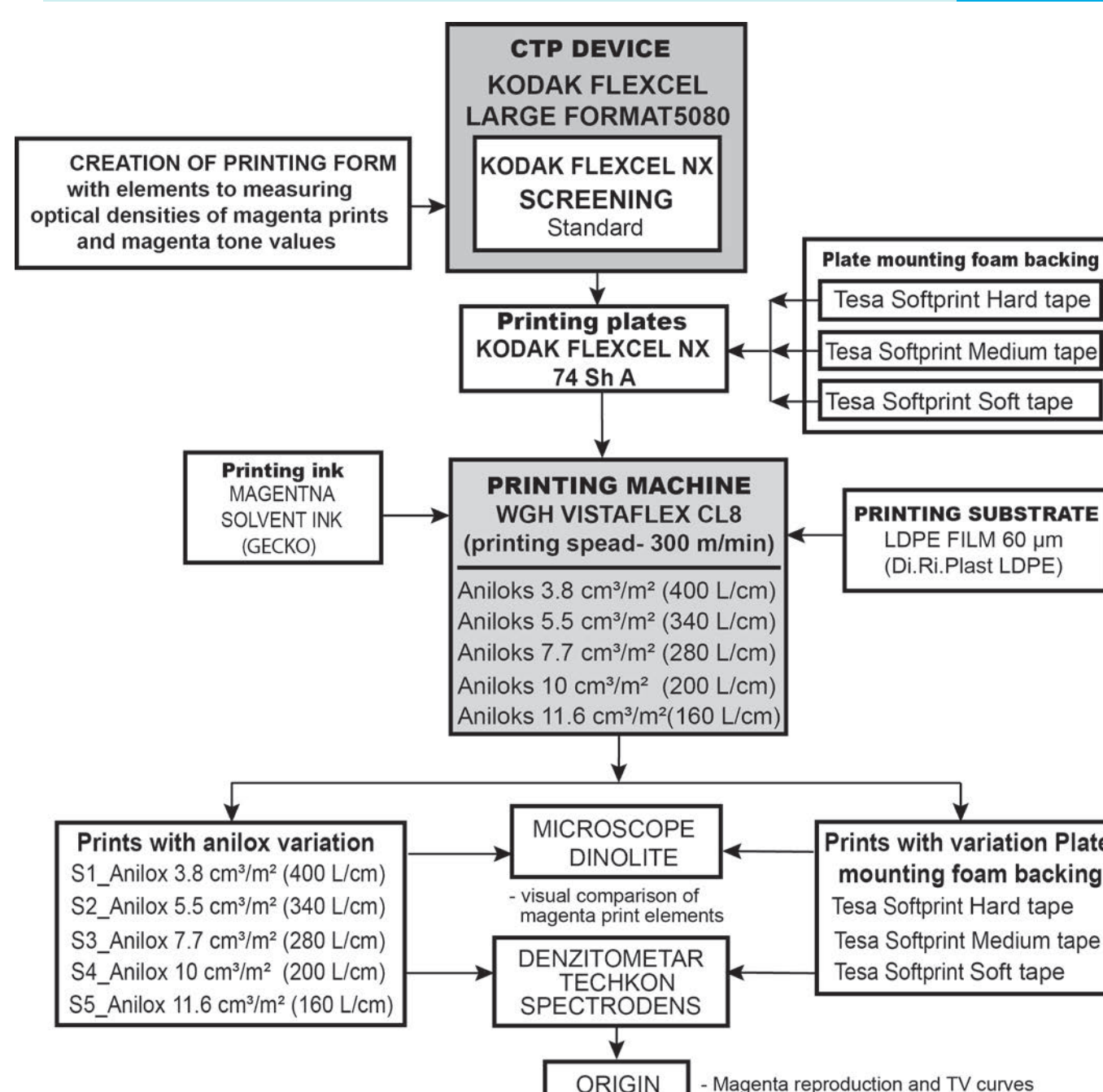


Figure 1  
Schematic representation of the performed experiment

## Results / Discussion

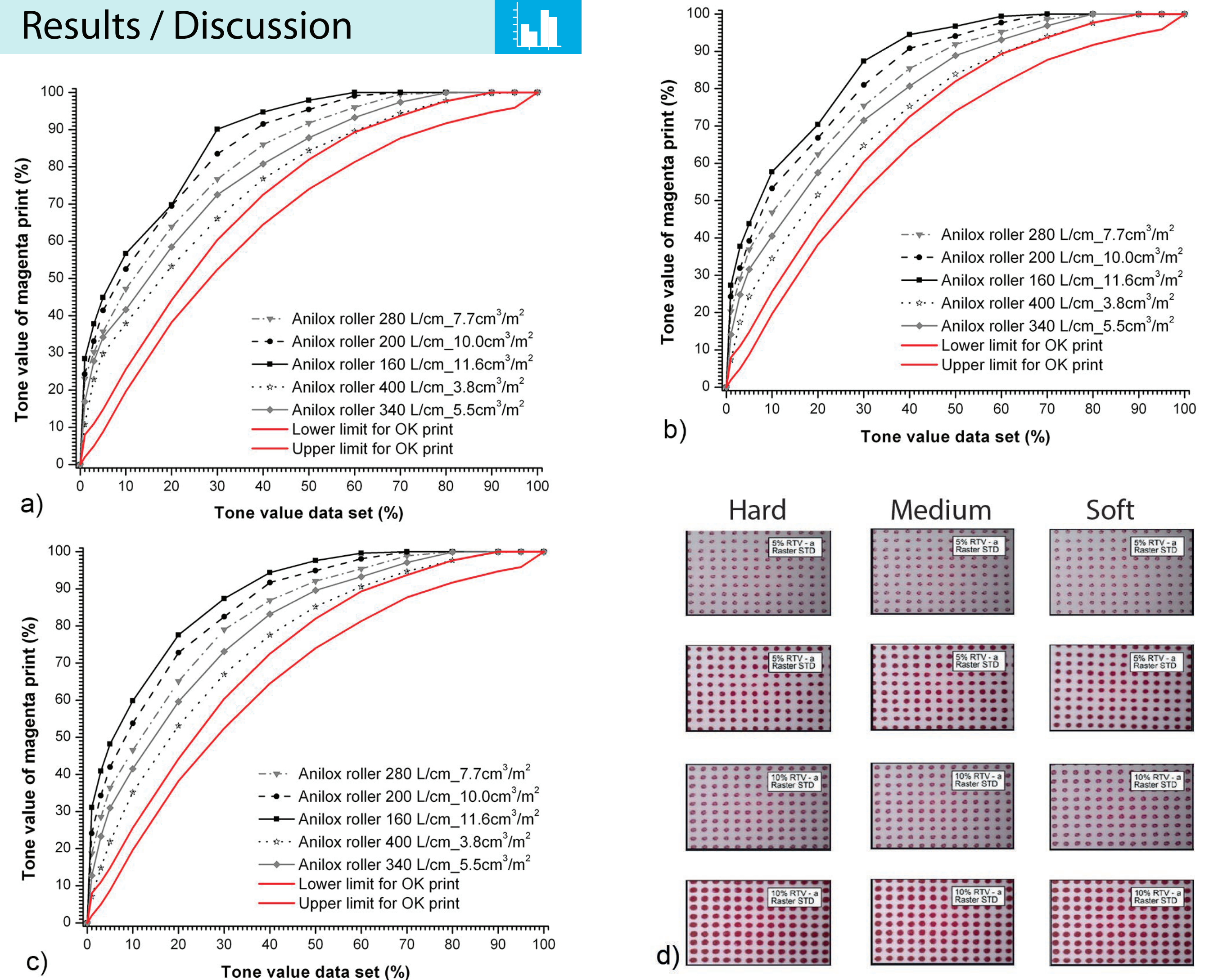


Figure 2 Influence of anilox rollers on the magenta reproduction curve when using NX standard plate fixed with plate mounting foam backing: a) Tesa Softprint Hard; b) Tesa Softprint Medium; c) Tesa Softprint Soft; d) enlarged view of wedge segment with anilox 400 L/cm and anilox 160 L/cm.

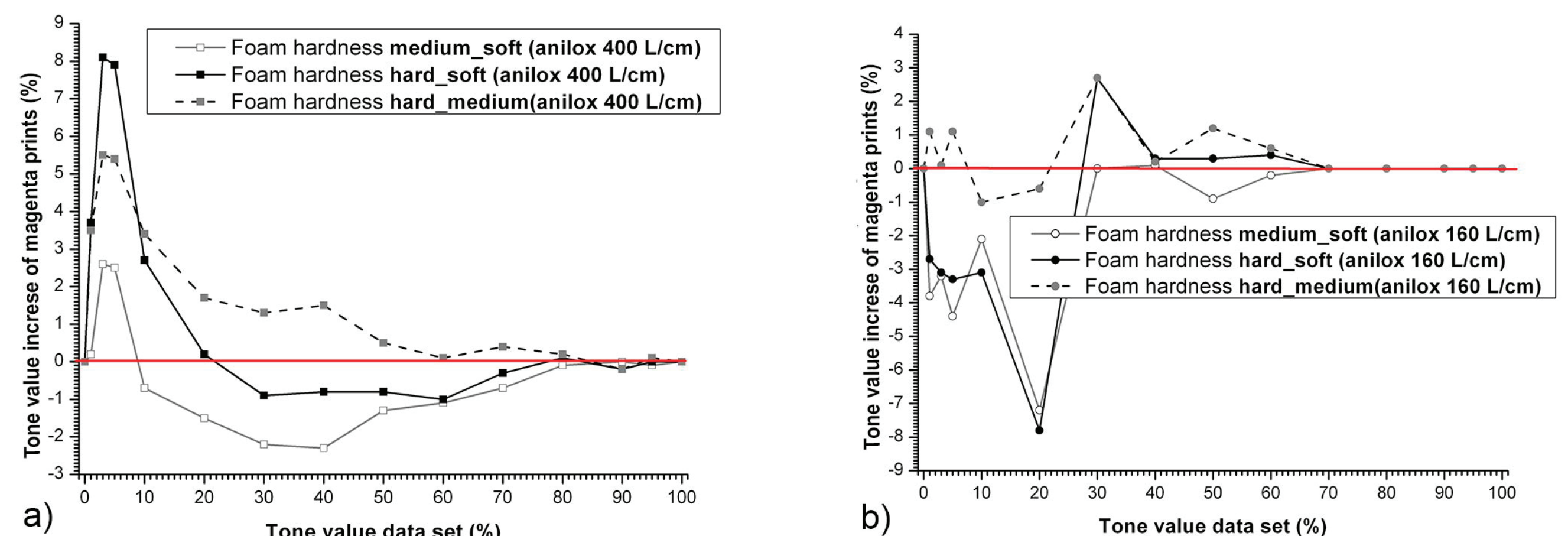


Figure 3 Comparison of changes in the reproduction curves resulting from direct variation of the hardness of plate mounting foam backing: a) with anilox 400 L/cm b) with anilox 160 L/cm.

## Conclusion

The use of Tesa plate mounting foam backing with a Kodak NX flexo plate and various anilox rollers did not produce reproduction curves that align with the FOGRA 39 standard tone values. As a result, it will be necessary to create plate compensation curves for the analyzed anilox rollers.

Densitometric measurements indicated that the finest anilox (400 L/cm = 3,8 cm<sup>3</sup>/m<sup>2</sup>) produced the highest-quality magenta prints with the smallest increase in tone value. On average, all combinations of plate mounting foam backing and halftoned surfaces resulted in a 67,7% TVI.

Conversely, the anilox 160 L/cm (11,6 cm<sup>3</sup>/m<sup>2</sup>) led to the poorest magenta prints and the highest dot gain increments, with an average tone value increase of 79,55%. The average difference between the best and worst reproduction curves was 11,85%.

The use of soft Tesa plate mounting foam backing resulted in the most accurate initial reproduction curve, closest to the allowed tolerance area. Transitioning from the soft plate mounting foam backing to the medium plate mounting foam backing while using the shallowest anilox led to a slight negative dot gain increase and improved reproduction of the brightest areas of the image.

However, using the 160 L/cm anilox resulted in unsatisfactory dot gain increments, with minimal impact from the variation in plate mounting foam backing. Nonetheless, changing the hardness of the plate mounting foam backing from medium to soft still achieved an increased curve within the ISO standard tolerance 12647-6. The use of Tesa plate mounting foam backing with a Kodak NX flexo plate and various anilox rollers did not produce reproduction curves that align with the FOGRA 39 standard tone values. As a result, it will be necessary to create plate compensation curves for the analyzed anilox rollers.