

COMPARISON BETWEEN FINE ANILOX VOLUME CHANGES AND PRINT DENSITY – BASED ON TROIKA ANILOX QC EQUIPMENT

Location: Paragon Labels Boston UK
 Present: Mark Chapman – Production Coordinator; Paragon Boston
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Products used:

- MPS press
- 4 band anilox roll at 750 lpi with 0.1 cm³/m² volume difference between bands
- Troika Anilox QC software (8.4.8) with a v7.2 AniCAM 3D scanning microscope.

The objective of the test was to prove the relationship between the engraved anilox with 4 bands and density measurements on the printed copy.

Previously the anilox had been used to check the printed results for correct ink density, and to determine if there was good correlation between the apparent 0.1. cm³/m² difference in each band on the anilox.

THE PRINTED RESULTS WERE PROVEN TO CORRELATE WITH THE ANILOX ENGRAVING AS FOLLOWS:

	Band 1	Band 2	Band 3	Band 4
Manufacturers volume & depth	3.1 cm ³ /m ² 11μ	3.2 cm ³ /m ² 12μ	3.3 cm ³ /m ² 13μ	3.5 cm ³ /m ² 15μ
Cyan Density	1.14	1.17	1.20	1.22
Magenta Density	1.17	1.18	1.19	1.24
Yellow Density	0.96	0.98	1.01	1.04
Black Density	1.43	1.46	1.52	1.62

The difference in density on all colours became discernable to the eye when band 1 was placed on top of band 4 – approximately 3ΔE.

CHECKING THE ANILOX QC & ANICAM FOR CORRELATION WITH THE PRINTED RESULTS

This test would prove the consistency of the AniloxQC software with the AniCAM camera, and how it correlated to the printing densities printed and measured at Paragon Labels. The anilox had been cleaned in the Paragon ultrasonic cleaner prior to the test.

It was not expected that the numerical value of the volume measurements or the depth measurements between the anilox engravers measurements and those of the Anilox QC would match. (ref: Research on volume and depth measurements by different Anilox manufacturers. Troika 2007) However correlation between the readings was expected to be very similar.

Initially 3 readings on 3 places of the first band were taken, with AniCAM & Anilox QC, but as the consistency of readings and evenness of the anilox bands showed no variation it was decided to do 2 readings on 2 places on each band. The readings were witnessed by Mark Chapman of Paragon Labels, Boston.

COMPARISON REPORT – CONTINUED

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Manufacturers volume & depth	3.1 cm ³ /m ² 11μ	3.2 cm ³ /m ² 12μ	3.3 cm ³ /m ² 13μ	3.5 cm ³ /m ² 15μ
AniCAM Anilox QC volume & depth	4.0 cm ³ /m ² 14μ	4.2 cm ³ /m ² 15μ	4.3 cm ³ /m ² 16μ	4.5 cm ³ /m ² 18μ
Cyan Density	1.14	1.17	1.20	1.22
Magenta Density	1.17	1.18	1.19	1.24
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The test has proven the correlation between fine anilox engraving and print density, and has proven the ability to be able to measure the differences in density.

THIS ALLOWS PARAGON TO REDUCE PRESS SET UP TIME BY:

- 1 Ensuring their aniloxes are engraved correctly and are closely matched in volume.
- 2 Use standard ink and minimise ink adjustments.
- 3 Prove the quality of their anilox cleaning, and
- 4 If set of aniloxes are matched from one press to another to achieve similar density, jobs can be more easily be spread from one press to another.

THIS WILL POTENTIALLY ALLOW PRINTERS TO:

- 1 Increase productivity
- 2 Reduce wastage
- 3 Get products out to customers in time by load sharing.

The ability to achieve these targets is through a high level of print management, and the ability for the Printer/Converter to measure and quantify the condition of aniloxes and the performance of its cleaning unit offline rather than online.

Paragon Labels currently have Anilox QC at 3 of their sites for anilox volume and cleaning checks, and are assisting Troika with the development of a multi site Anilox Management System (mAMS) that will enable Paragon evolve the management and measurements of their aniloxes at the remaining 5 sites.

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