



**SONOCO**  
**INSTITUTE**  
CLEMSON® UNIVERSITY

## Process Color Management Seminar

Location: Harris A. Smith Auditorium

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Day 1

**8:30 Program Overview and Introductions**

**8:45 Process Color Workflow: Design-to-Print and Key Indicators**

Map press, prepress, design and customer; review key components in each section; review how components integrate with process color.

**9:15 Color Metrics, Measurement and Instrumentation**

Spectral reflectance curve and physics of color; illuminants and observer; CIELAB and CIE LCh; density, dot area and dot gain;  $\Delta E$  - DL, DC and Dh formulas; instruments, bulbs, geometry and agreement; handheld, tethered and in-line.

10:15 Break

**10:30 Color Systems, Dots and Gray Balance**

RGB and CMYK; additive and subtractive; CMYK ink trapping and overprints; tone reproduction with CMYK theory; tone reproduction in practice (intro to Dot%, NPDC and LPI); visual gray balance theory; gray balance in practice - grayscale, intro to G7 gray.

**11:30 Color Specifications and Standards**

ISO 12647-6; FIRST process color specifications; preserving hue and maximizing chroma.

12:00 Lunch

**1:00 Flexo System Optimization I: Ink and Anilox**

Substrates and ink film thickness; ink concentration and resulting color; anilin volume, CPI, color strength, coverage and wear; banded anilin test and controlled experiment.

**1:30 Flexo System Optimization II: Plates**

Plate dot structures including translation from file to plate; implications of the highlight dot to process color workflow; optimization with mounting - slur, mottle and coverage; solid patterning.

**2:00 Breakout Sessions**

**Session A: Press Calibration**

Press testing 101; press colors to ISO 12647-6; sample measurement; near-neutral calibration; curve generated; establishing a process control benchmark.

**Session B: Banded Anilox Evaluation**

Anilox roller selection; capability analysis; LPI evaluation and selection; highlight optimization; hands-on densitometers and dot area plot.

**Session C: Ink Analysis and Formulation**

Drawdowns with different anilox on different substrates; basic color measurement; analysis of color strength and chroma, return on investment and ink film thickness.

5:30 Group Dinner

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Day 2

**8:30 Curves and Prepress Workflow**

Accounting for press and flexo system variability with prepress curves; curve selection and continuous improvement; near-neutral calibration methods; halftone angles; total ink limit.

9:45 Break

**10:00 Digital Proofing for Flexo**

Flexo proofing considerations; technology available; screened and contone; ICC deficiencies; certified proofing.

**11:00 Breakout Sessions**

**Session A**

Plate process control; anilox process control; print IT8 and color test; dial-in to established benchmark; documentation.

**Session B**

Color reference file; color measurement; color data analysis compared to standard data-sets; profile generation; profile analysis.

**Session C**

Photoshop color evaluation; separations to GRACoL; separations to custom; output proofs; proof certification.

12:00 Lunch

**1:00 Breakout Sessions (Continued)**

3:00 Break

**3:30 Print Quality Assurance**

Global and multi-plant perspective; ink, anilin and plate; pressroom process control; tone strips: 100, 70, 30, 10, min; linear vs. curved; plate control, print control and curve control.

**4:30 Process Overview and Final Job Preparation**

Review entire process color characterization workflow and prepare images for final job (RIP and inspect).

5:00 End of Day

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Day 3

**8:30 Managing Flexo Expectations: Customer Perspective**

Process color in packaging; managing creative expectations through proofing; process control for packaging repeatability.

**9:15 Expanded Gamut Process Color Printing**

CMYK integration within ECG; extra process inks defined; curve calibration with ECG; intro to color management in ECG.

9:45 Break

**11:00 Breakout Sessions**

**Session A**

Inspect and measured samples of process print defects to determine root cause of problem.

**Session B**

Running to the numbers; final job printing; samples; proof-to-press evaluation.

11:30 Evaluations and Adjourn