Print and Materials Analysis Lab (PMAL)

Services and Equipment

Services

**Comprehensive Evaluations**
- Evaluations of paper, ink, toner, fountain solution, plate, blanket, and other media
- Comparative print performance analysis
- Product audits
- Defect analysis
- Competitive benchmarking
- Product/grade development
- Customized corporate-sponsored studies and development activities
- Press simulation

**Print Performance and Evaluation Criteria**

**Printability**
- Dot analysis: gain, shape, roundness, spacing, placement
- Contrast resolution index
- Color gamut
- Gray scale densities
- Print gloss, delta gloss
- Print non-uniformity
- Print mottle
- Back trap mottle
- Banding (inkjet)
- Banded multiscreeen anilox or single screen anilox (flexographic)
- Cell skip (gravure)
- Color-to-color bleed: black line over yellow background (inkjet)
- Feathering (inkjet)
- Folder crack test (web)
- Hexacrome, Hi-Fi (sheetfed)
- Ink trapping
- Modulation transfer function
- Pick count
- Light fastness

**Runnability**
- Contaminant test: slitter dust, milking, linting, picking (web, sheetfed)
- Wet pick vs. dry pick
- Back trap dry pick (sheetfed, web)
- Blister resistance, fiber rise (web)
- Chill marking (web)
- Ink and water balance window (web, sheetfed)
- Ink mileage (web)
Services Continued

**Paper Characterization**
- Abrasion
- Caliper
- CIE whiteness; CIE color/shade
- Contact angle
- Formation, K&N oil absorption
- Grammage
- ISO /GE brightness
- Moisture
- Opacity, scattering coefficient
- Roughness
- Sheet dimensional stability: fan-in, fan-out
- Sheet formation
- Sheet mottle: uniformity
- Sheffield or Parker print surface roughness
- Water absorption
- TAPPI Brightness
- Fold
- Topography
- Stiffness
- Internal bond
- Porosity
- Surface strength
- Gloss
- Bursting strength
- Ash and filler
- Curl
- Paper edge quality
- Coefficient of static and kinetic friction
- Electrical surface volume resistivity
- Cut edge Quality
- Dust content cut size paper

**Ink Characterization**
- Color
- Grind
- Hue
- % Solids
- Set time
- Strength
- Tack
- Viscosity
- Water pick-up
- ISO 2846 color and transparency

**Other Materials Analysis Options**
- Absorption curves
- Debris analysis
- Electrophotographic print analysis
- Liquid absorption function
- Microsurface roughness
- Spectrophotometric curves
Instruments

Image Pro Plus Image Analyzer
- Image quality analysis
- Sheet dimensional stability (fan-in, fan-out)
- Sheet formation
- Print mottle
- Print roughness
- Print dot analysis
- Modulation transfer function
- Liquid absorption function
- Contact angle
- Debris analysis
- Surface roughness
- Micro surface roughness

KDY Image Analyzer
- Dot placement
- EP print analysis
- Inkjet print analysis
- Image analysis

Verity IA Image Analyzer
- Mottle
- Topography
- Formation
- Size and shape
- Calendar blacking

Datacolor SF600 Plus Colorimeter
- CIE whiteness
- CIE color responses
- Spectrophotometric curves
- Absorption curves
- ISO/TAPPI brightness
- % OBA contents
- Ink color, strength and shade

BYK Gardner microgloss (60,75)

Technidyne S-4 Brightness Tester

Technidyne Technibrite Micro TB – 1C
- Brightness
- L*a*b*
- L*C*h*
- ISO opacity
- Hunter whiteness
- ASTM Yel
- ASTM/CIE/Wh/Tint
- Scat/absorp

Betaflex 334 Flexo System Analyzer

IGT F1 Flexography Printability Tester

IGT AIC2-5 & High Speed Inking Unit
- Press simulation
- Backtrap mottle
- Wet pick, dry pick
- Ink trapping
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Instruments Continued

- Elmendorf Tearing Tester
- MIT Folding Endurance Tester
- 32-07 TMI Slip and Friction Tester
- Scott Internal Bond Tester
- Cobb Test
- Taber V-5 Stiffness Tester
- Sutherland Rub Tester
- Taber Abrasion Tester
- Sheffield Smoothness / Porosity Tester
- Gurley Bending Resistance Tester
- Parker Print Surf Roughness / Porosity Tester
- TMI Micrometer
- Larray Falling Rod Viscometer
- Brookfield Low Shear Viscometer
- Paprican Dynamic Sorption Tester
- Harper Phantom Proofer
- Thwing Albert Inkometer
- Duke water pickup Tester
- Mettler AG204 analytical scale
- ThermoLyne Muffle Furnace
- Moisture analyzer, gravimetric method
- Fisher Auto Tensiometer
- Apparent Surface Tension Meter
- Motorized Little Joe Proof Press
- Keithley Electrometer
- Keithley 8009 Resistivity Test Fixture

Color Measurement
- X-Rite 938 and 939
- X-Rite 528 and 530
- X-Rite DTP70
- X-Rite Spectroscan/Spectrolino
- X-Rite eye-one iSiS
- X-Rite eye-one iO
- X-Rite SpectroEye
- X-Rite iCCColor