

Advances in inkjet technology and fluids are enabling production on a wider variety of paper grades and finishes. How does this impact the evaluation process for papers? What new variables must be considered when evaluating paper for particular application segments. This session discussed the tradeoffs between inkjet formulated and offset grades and the ink and fluids that create compatibility. Many offered work-arounds for scarcity in the market and tips on finding and evaluating papers.

Reflection

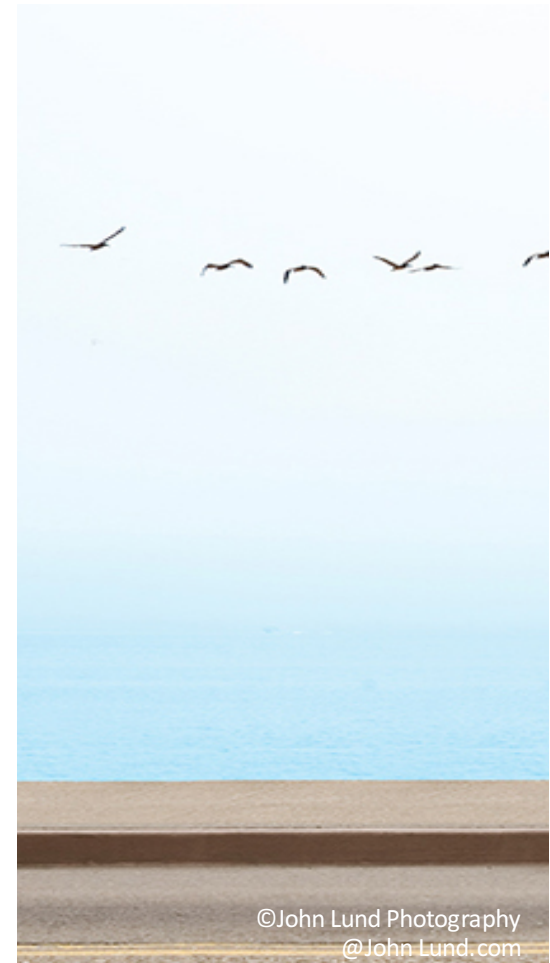


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Mill Closures

Why did this happen?

- Integrated mills consist of a pulp mill and a paper mill on the same site. They produce product utilizing their own materials
- Non integrated mills have to purchase pulp from competitors. Rising costs prohibited them to effectively manufacturer and compete

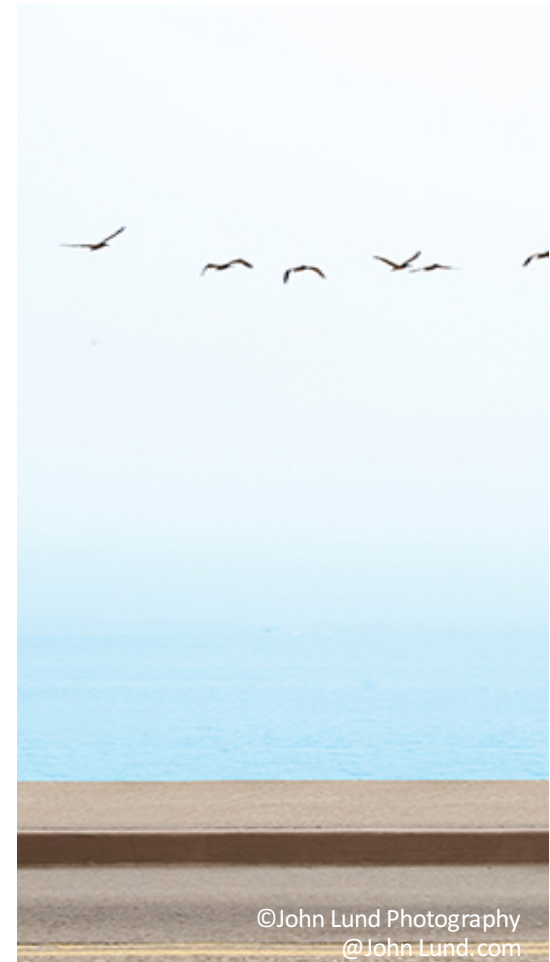


Mill Closures

Pulp Costs on the Rise

According to IBISWorld, the price of wood pulp is forecasted to rise at an annualized rate of 5.1% into 2019.

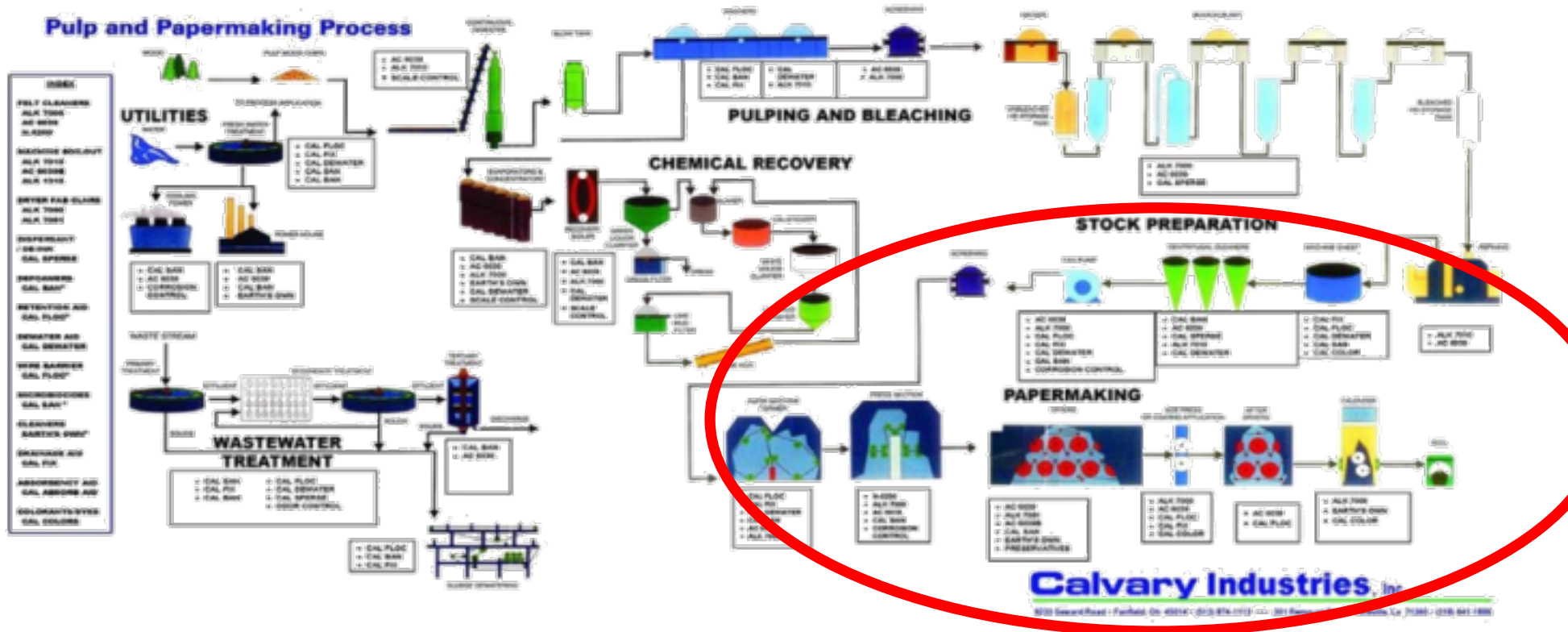
One factor driving the current price increase is supply not being able to keep up with the growing demand for paper-based packaging products.



75% of the process happens before the preparation of stock. Those that only perform the last 25% of the work are challenged to compete.

Mill Closures

Example of Pulp to Paper Complexity



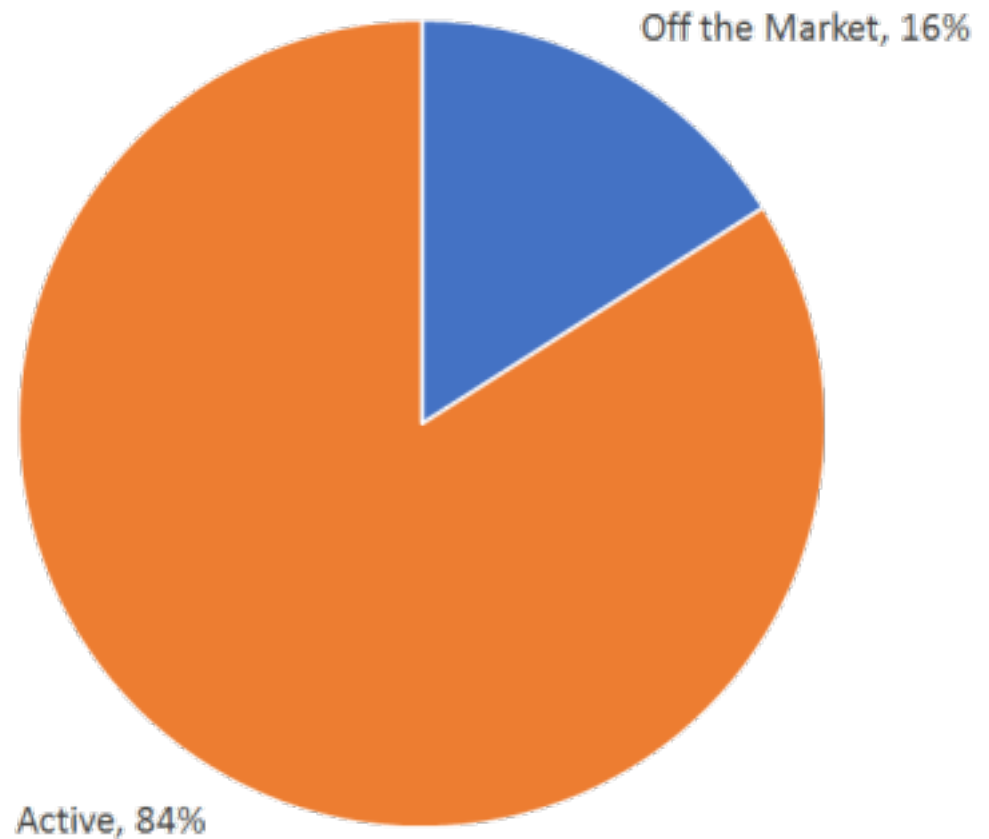
Paper Availability –Lost Inventory in Past Year

Inkjet Insight

Paper Finder Data

- Discontinued -143
 - Closures
 - Other
- Current Total Inkjet Active Papers –752

Based on: All paper grades and weights combined



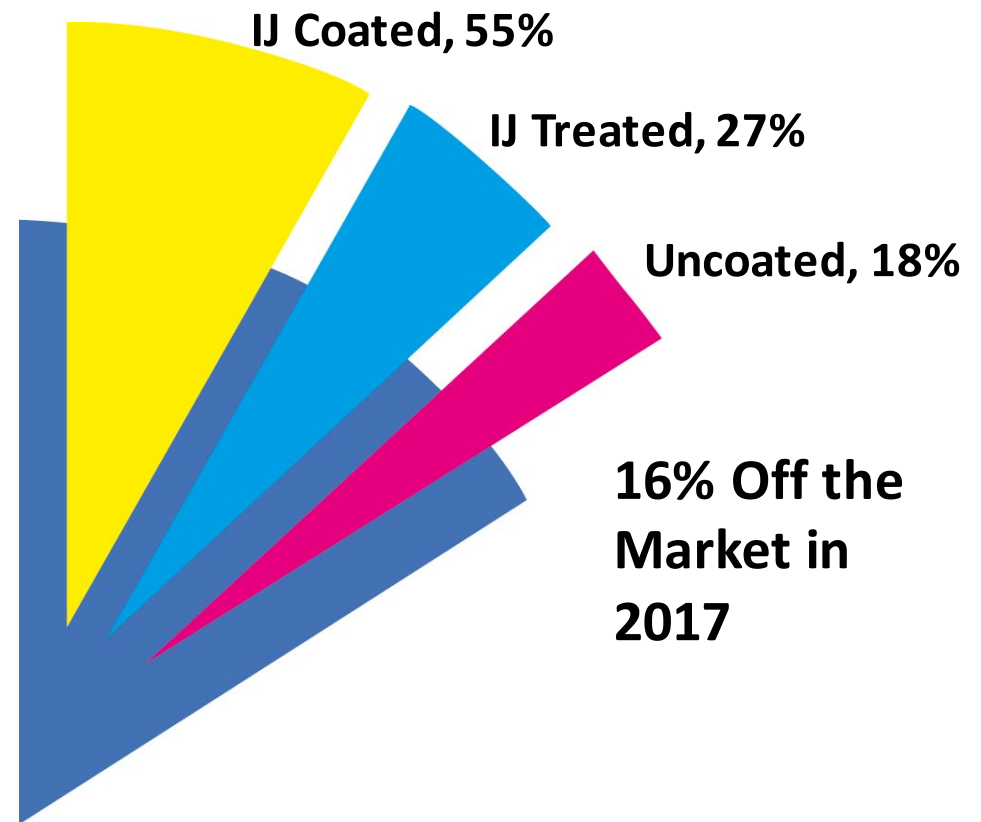
Paper Availability –Lost Inventory

Inkjet Insight

Paper Finder Data

- Uncoated
- IJ Treated
- IJ Coated

Based on: All paper grades and weights combined



Getting Creative



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Paper Industry –Getting Creative

Getting Creative in Manufacturing

- Integrating more advanced pigments, chemistry and applications
 - Specialty drying additives
 - Slowing colorant paper migration
- Better paper formation
- Applying calendaring techniques
- Developing new IJ coated grades

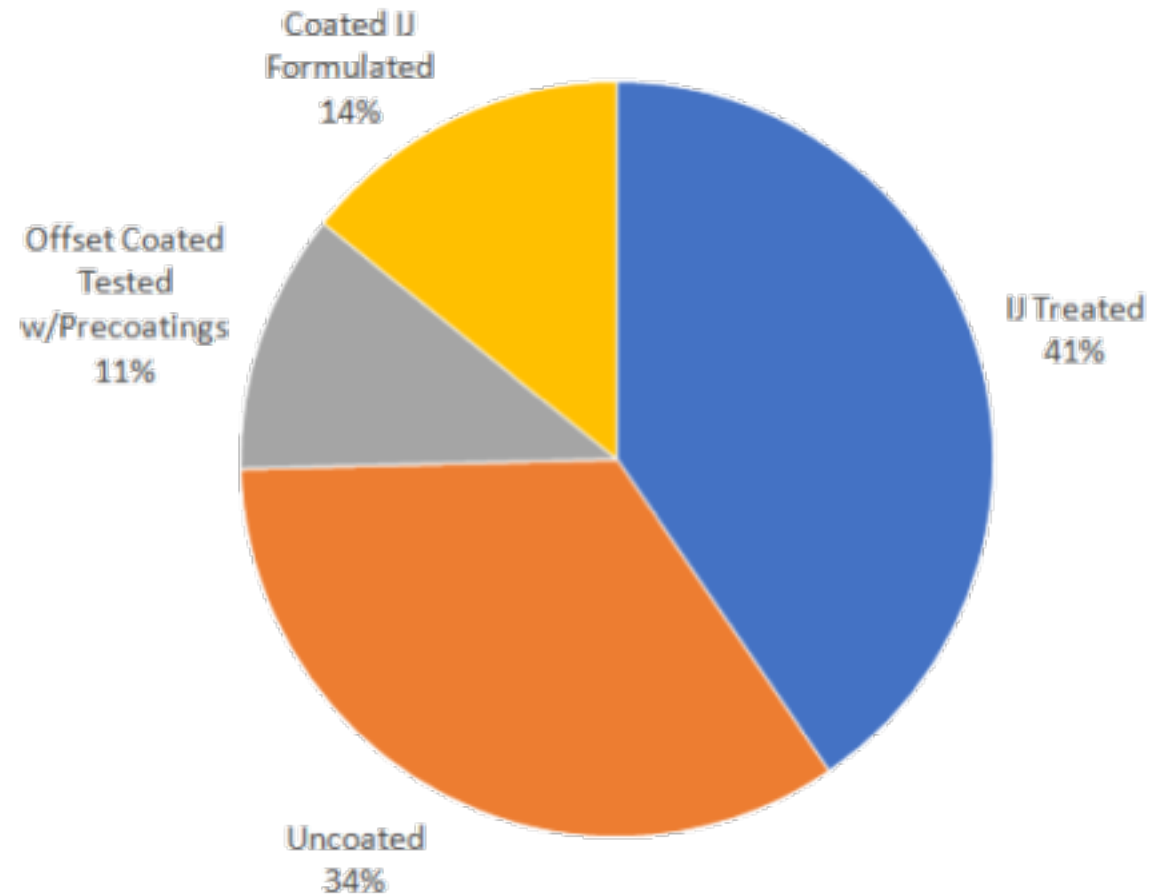


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Paper Industry –Moving Forward

752 Active Paper Finder Listings

- Uncoated
- IJ Treated
- IJ Coated
- Offset Coated compatible with IJ pretreatments





Enabling Paper

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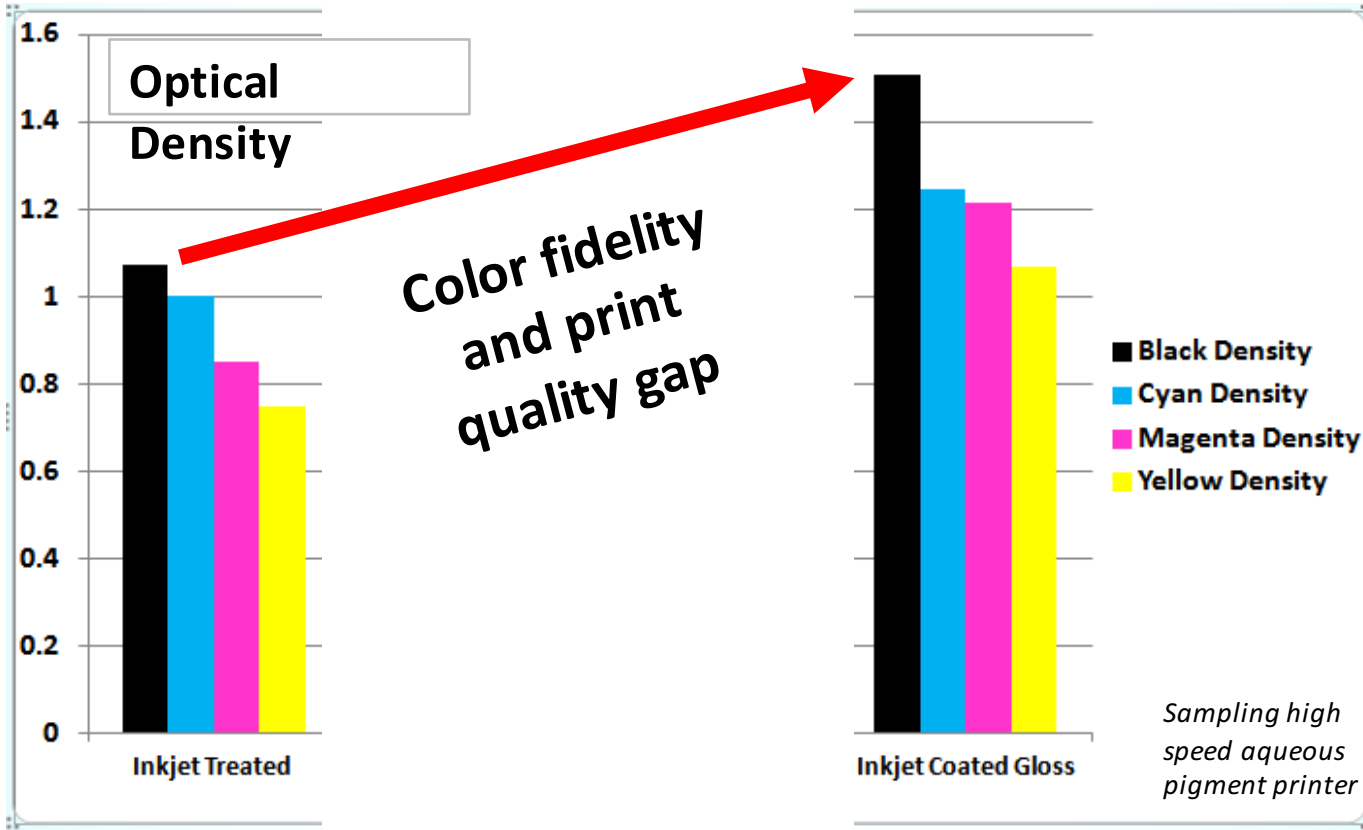
Mills Enabling Paper

“Highly” Calendared Stock – “Coated Feel”

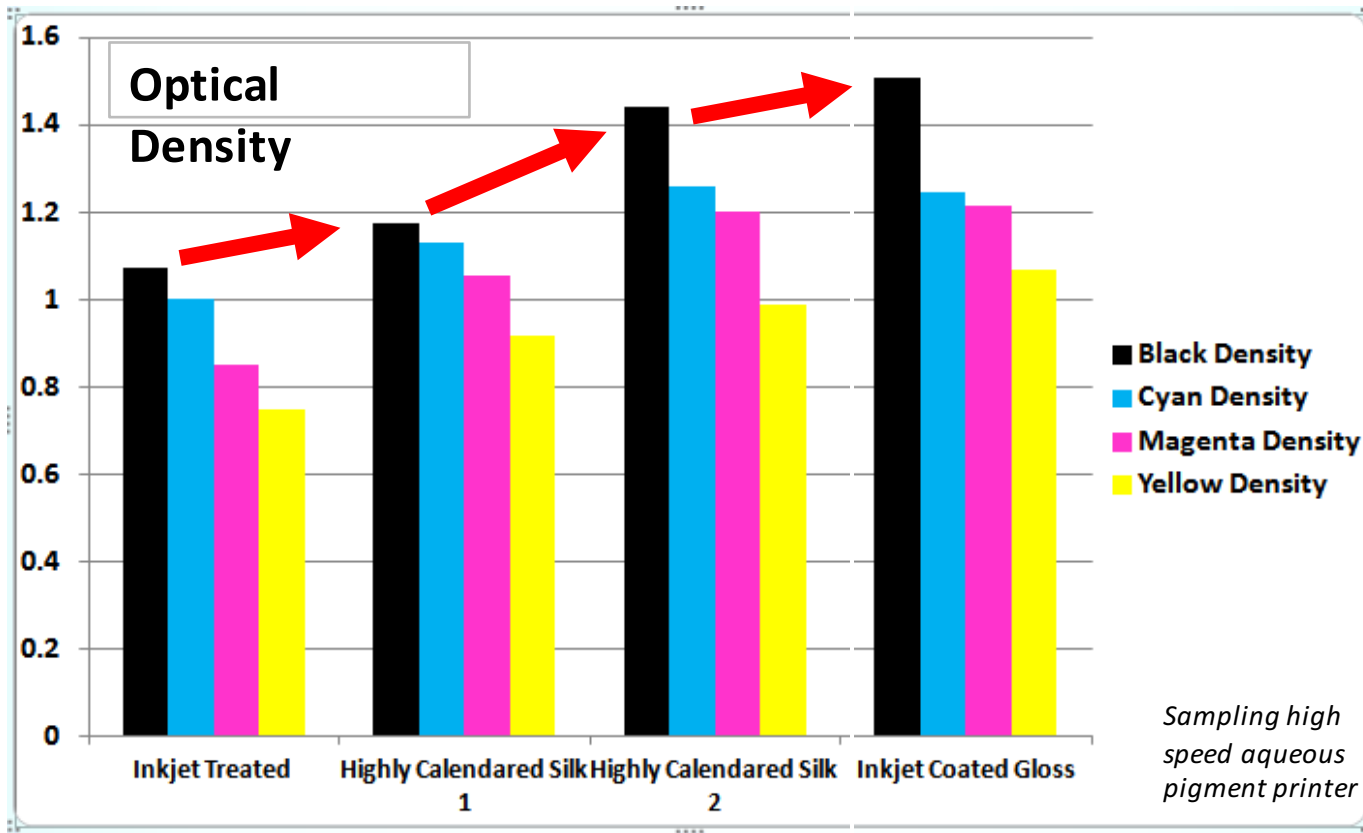
- Print quality higher than IJ Treated / Closer to Coated
- Available in matte or silk “feel” / “feels” like Coated
- Drying and speed performance of treated
- Better drying performance than IJ coated
- Normally lower cost than IJ coated
- Highly calendared, smooth “slick” surface
- Bensten Roughness factor of 20-30 respectively
- Higher chroma and color gamut than treated
- Fills the gap from treated to IJ coated stock- color and \$

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Mills Enabling Paper- Density



Highly Calendared Treated- Fills the Gap



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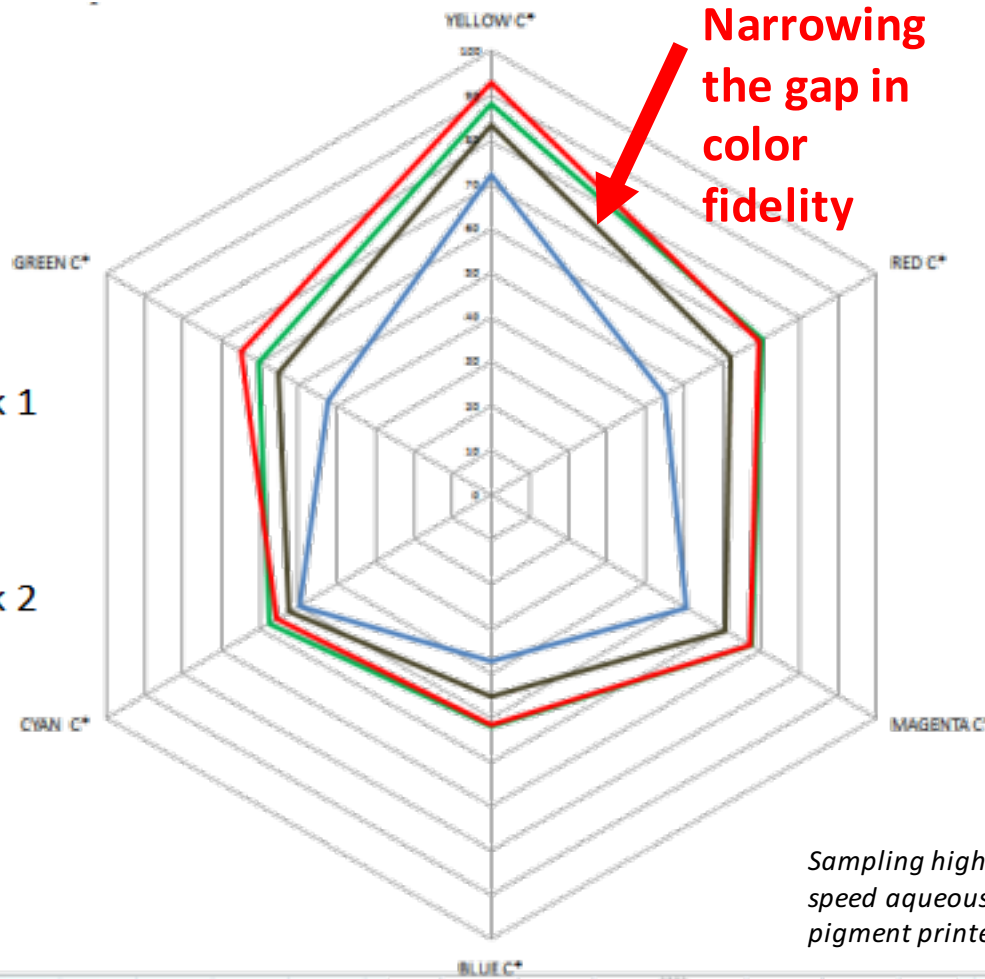
Mills Enabling Paper-Chroma

— Inkjet Treated

— Highly Calendared Silk 1

— Highly Calendared Silk 2

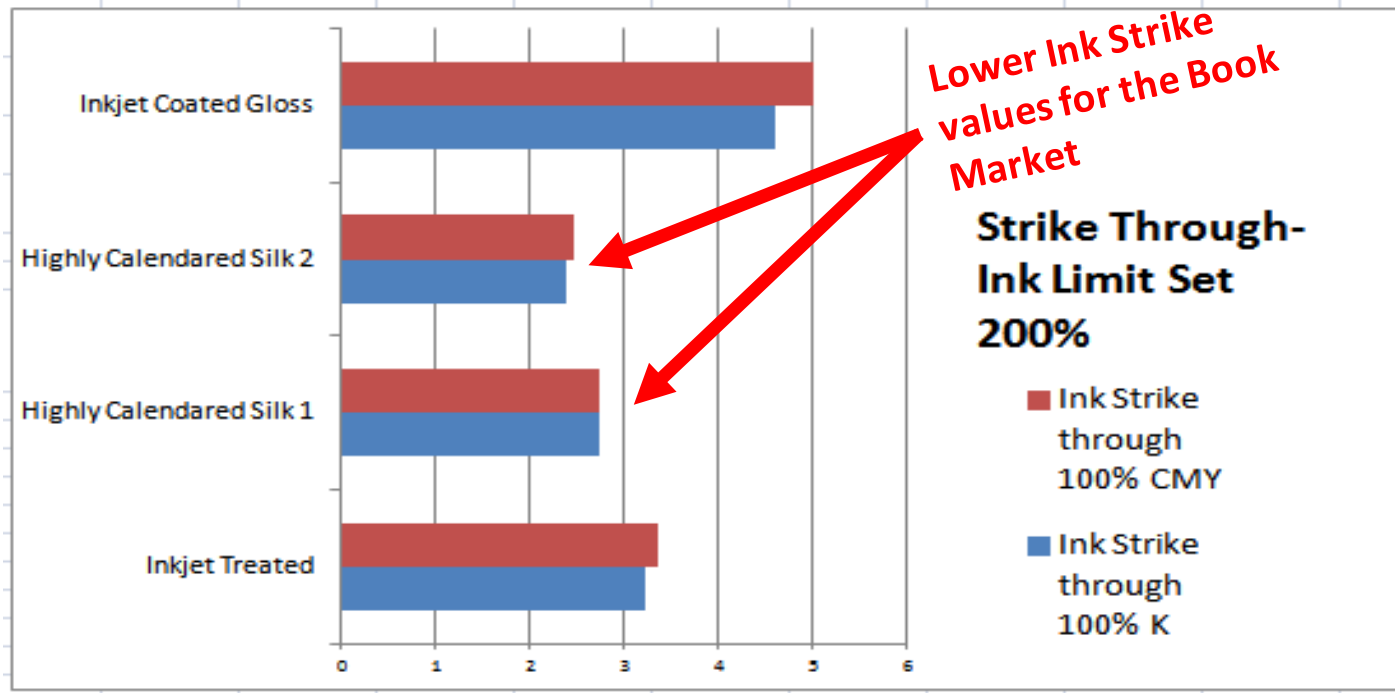
— Inkjet Coated Gloss



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Mills Enabling Paper- Ink Strike

90gsm Paper Stock



Sampling high speed aqueous pigment printer

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Mills Enabling Paper- New IJ Treated, Highly Calendared “Coated Feel” Paper

When is it a good substitute

- Higher chroma color gamut than standard IJ treated
- Trans Promo, books, catalogs, magazines

When is it not

- Protective or decorative OPV’s are required (test first)
- Paper porosity value critical for even OPV applications

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OEM's Enabling Paper -Uncoated

Applying Pre-coatings

- Jetted or Anilox applied
- Expands paper choices
- Creates compatible print surface
- Slows ink colorant into paper surface
- Increases color and print quality



Precoating Challenges -Uncoated

Precoating

- Adds head costs
- Adds fluid costs
- Adds machine costs
- Additional maintenance
- Adds additional moisture to thin papers
- Need for more drying capacity
- Anilox full coat application
- Not truly smooth application
- Stock minimum gsm can apply

OEM's Enabling Paper –Coated Offset

Precoating

- Jetted or anilox applied
- Creates compatible print surface
- Fixes ink to coated surface
- Increases color and print quality
- Expands paper choices
- Utilizes offset inventory

Post Coating

- Anilox applied
- Surface Protection
- Aqueous or UV varnish options
- Specialty coatings
 - Textured -Soft Touch
 - Scented
 - Spot, Raised
 - Gloss or Dull

Coatings Challenges -Coated Offset

Jetted Pre-coatings

- Adds head costs
- Adds fluid costs
- Adds machine costs
- Additional maintenance
- Additional moisture
- Need for more drying capacity
- Not compatible with all coated paper
- Can cause coalescence/color to color bleed
- Wet on Wet Process- ink **MUST** be optimized previous to any color management

Post Coating

- Required for protection
- Adds fluid costs
- Adds machine costs
- Anilox maintenance
- Ink must be dry before application
- Peeling if applied to soft ink
- Can give orange peel effect
- Paper porosity can cause light reflectance mottle affect

OEM's Enabling Paper –UV Ink

High Viscosity UV Ink Chemistry

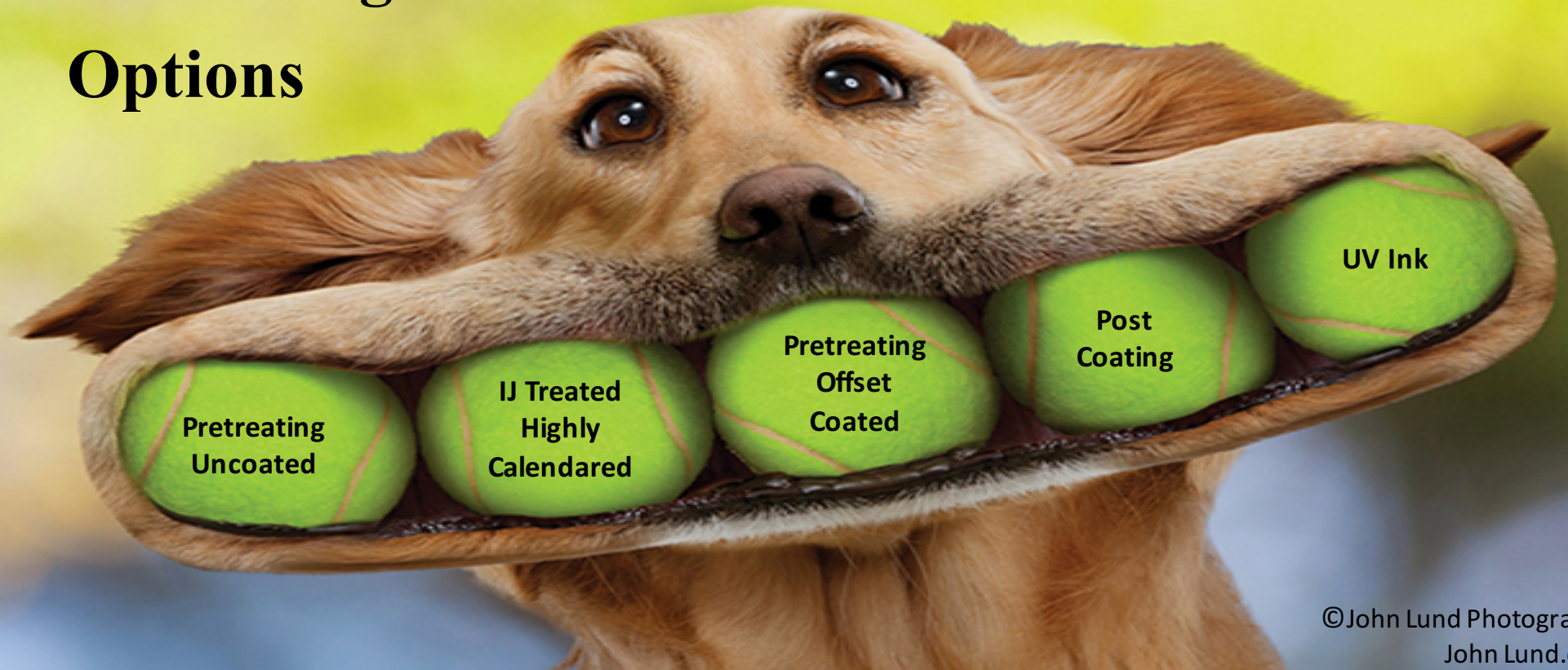
- Prints diverse media types
 - Uncoated and coated offset paper
 - Poly, synthetics – with pretreatment
- Minimum ink migration
- No water/paper saturation
- No ink strike thru
- No paper pretreatment needed
- Reduces dot wicking/coalescence
- Expands color gamut
- Requires less ink to target color space
- No heat used
- Sheets flatter on exit
- LED drying minimum paper dry out/shrinkage
- Compatible with preprinted offset stocks

Ink Challenges –UV Ink

High Viscosity UV Ink Chemistry

- Raised surface
- Ink height needs to be managed via ink optimization previous to color management
- Ink is rigid and can crack on fold (need to score, crease and fold)
- 10-15% higher ink costs, *respectively* than aqueous
- Ink higher in viscosity (thicker) than aqueous
- Slower jet speeds
- Not best chemistry for “high” speed... *yet*
- Ink needs longer cure time if going direct to finishin
- Improper cure can cause dull sheen
- Post coating application requires pretreatment

Evaluating Options



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Evaluating Your Options

Outline your print market needs

Review all stocks & pre-post coating

- Uncoated, IJ Treated, Calendered IJ Treated, IJ Coated, Offset Coated, GSM Availability, Whiteness, Brightness, Opacity

Plan ahead

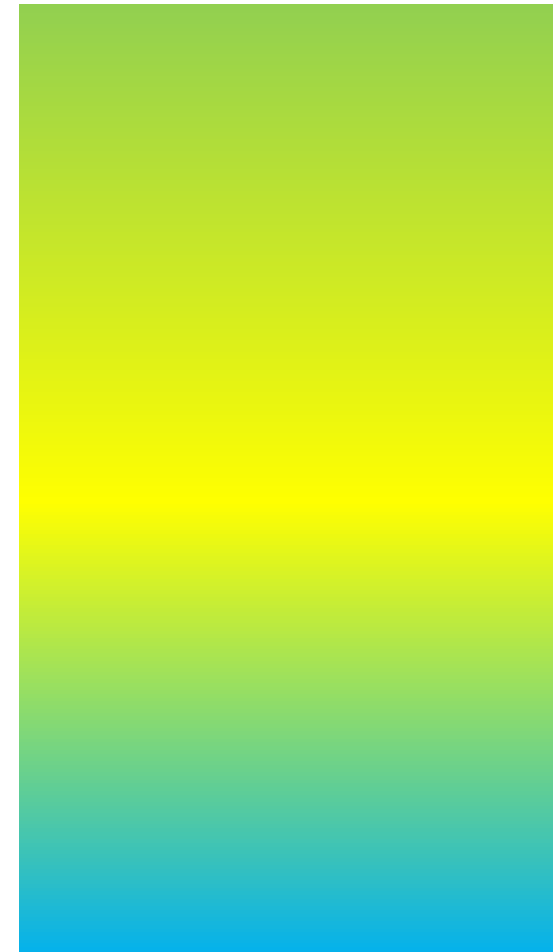
- Choose house papers to test/start production

Objective measures

- Run ability, drying, print quality, cost, availability

Consider all costs in evaluation

- Paper, fluids, drying requirements, energy consumption



Don't get complacent

Need to test new papers regularly

- ¼ PQ Analysis of machine and paper to track trends
- Keep up to date with Paper Finder

Know how all your technology compares

- Keep up to date with Device Finder

Keep on top of market trends

- InkjetInsight.com, WhatTheyThink.com, PiWorld.com, IT Strategies, etc.

Opportunities to save money/improve quality

- Quarterly meetings with suppliers

Reduce risk from mill consolidation/closure





For more information please contact:

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