Dan Rosen

FLEXOGRAPHIC PRE-PRESS PLATEMAKERS ASSOCIATION™

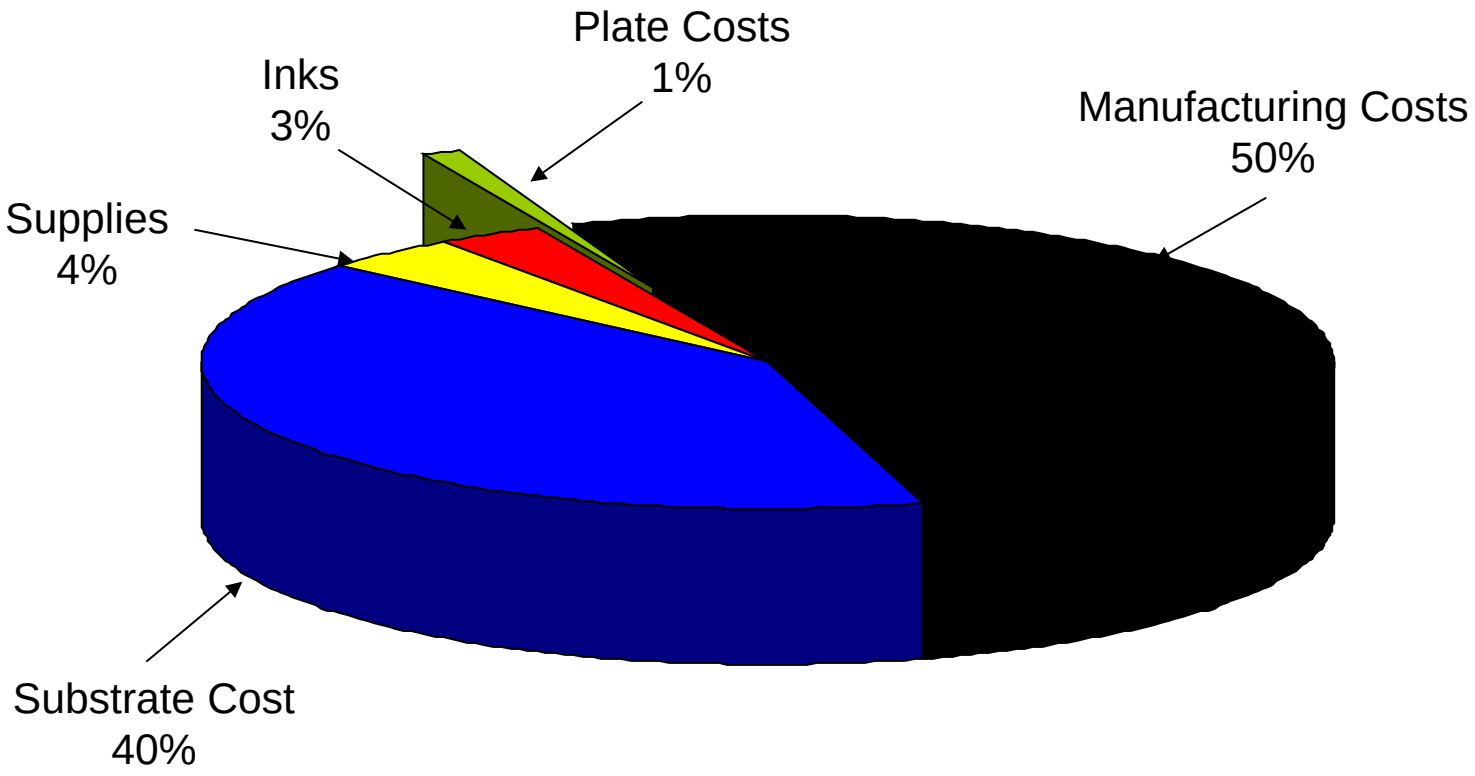
FlintGroup
Flexographic Products

What’s In Our Recycled Corrugated Substrates?

Quality is an Uphill Battle

- More color work is required to meet increasing graphic quality demands
- Cost saving measures test the limits of acceptable materials
- The waste stream of recycled materials into corrugated substrates is causing new problems with solid ink coverage

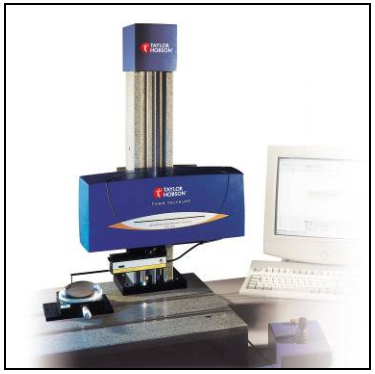
Why All the Pressure to Lower Substrate Cost?



Substrate Contribution to Print Density Troubles

- Graphics that we are required to reproduce
- Re-re-recycled materials; i.e. shorter pulp fibers
- Mixed materials including water resistant coatings, food, plastic fibers, and other things water inks don’t adhere to
- Lower quality production standards (cheaper)

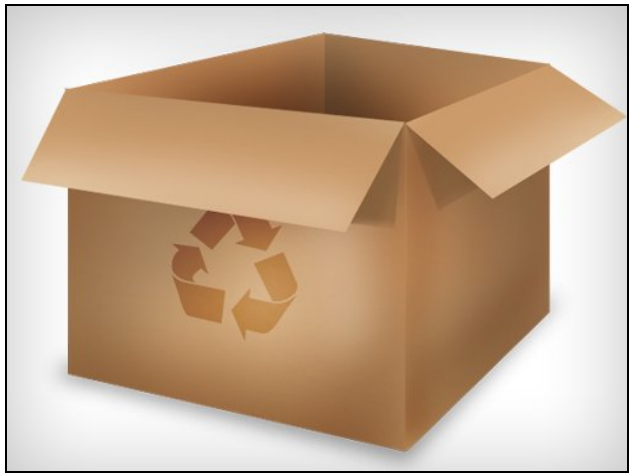
How Do Substrates Compare in Roughness?



Profilometry

3D Surface Measurement

B Flute Kraft Recycled Substrate

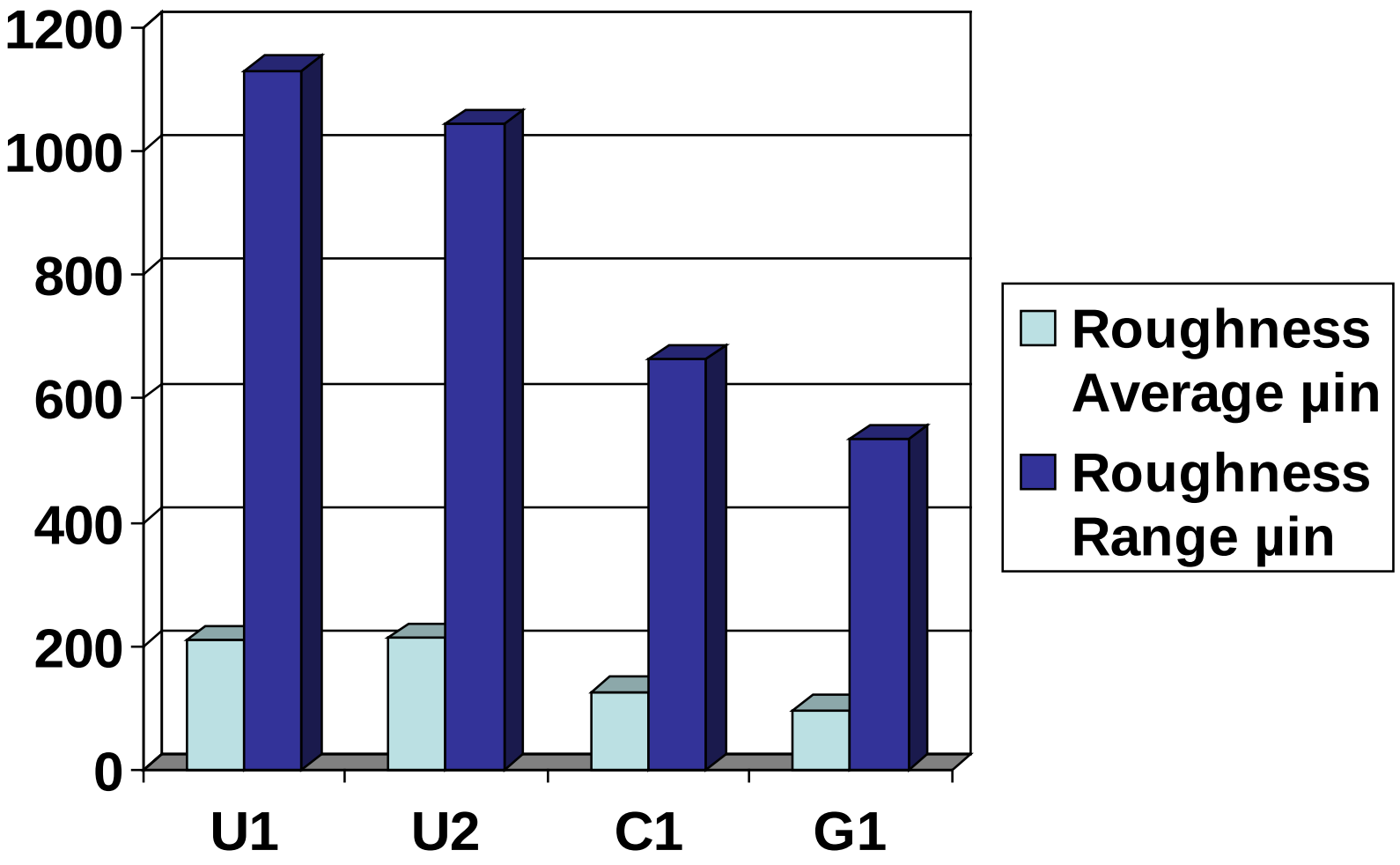


- Multiple samples supplied to Flint Group and Independent Labs

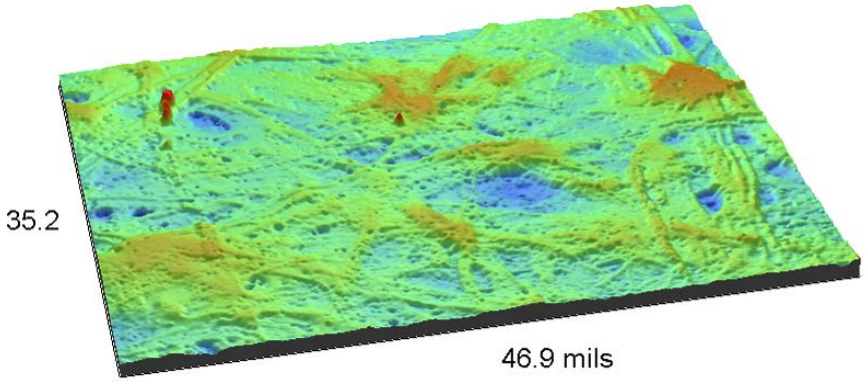
Highlighted for Comparison:

- Sample U1 (USA)
- Sample U2 (USA)
- Sample C1 (China)
- Sample G1 (Germany)

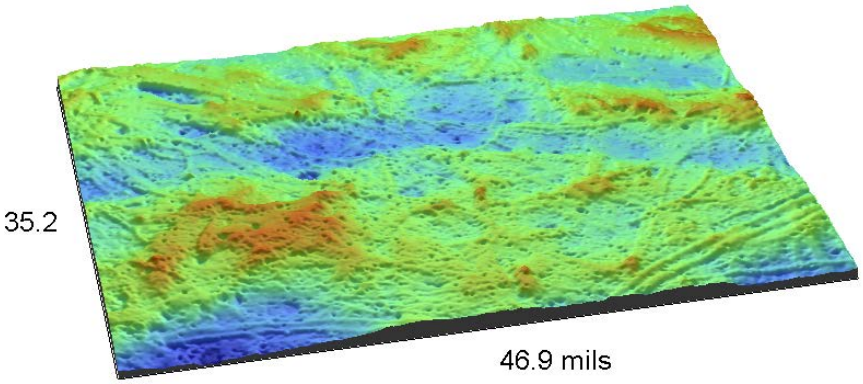
B Flute Kraft Recycled Substrate



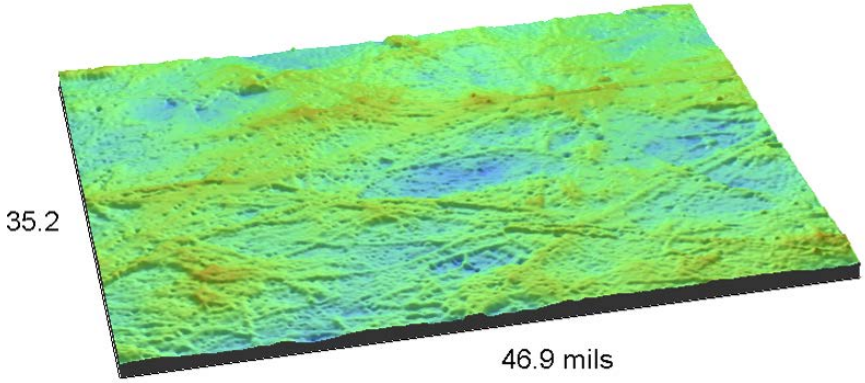
3D Surface Analysis: Normalized Volume



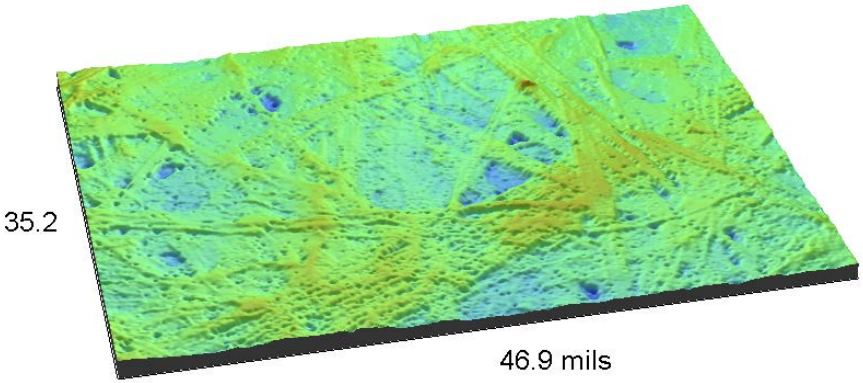
Sample U1: BCM of 10



Sample U2: BCM of 12.7



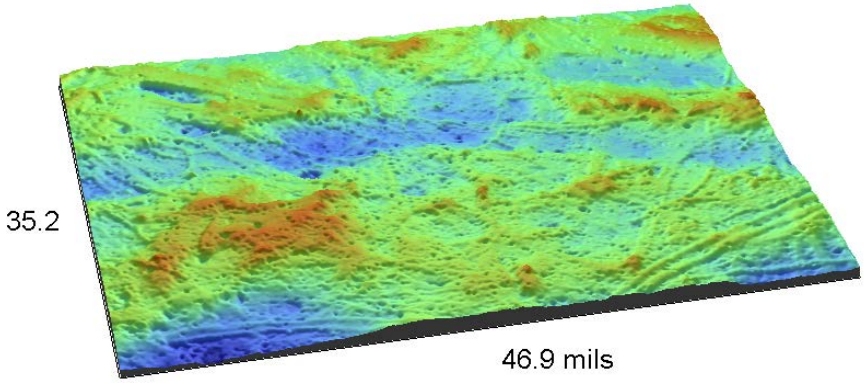
Sample C1: BCM of 7.8



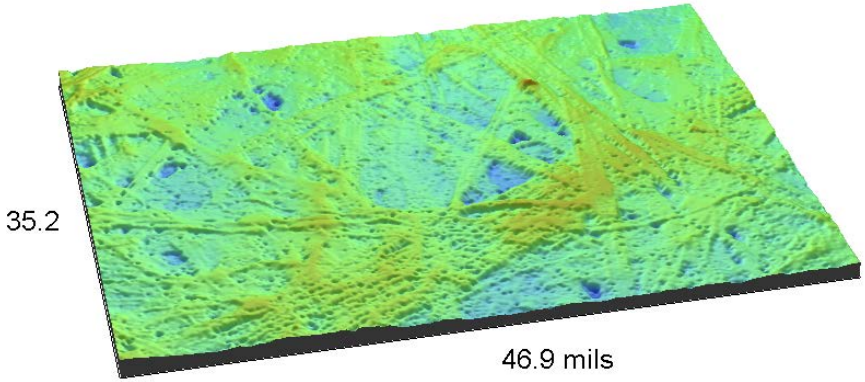
Sample G1: BCM of 7.2

3D Surface Analysis: Normalized Volume

76% More Ink Volume Required to Fill the Surface of Sample U2



Sample U2: BCM of 12.7



Sample G1: BCM of 7.2

What Are The Printing Solutions?

- Using the right anilox rolls, in good operating condition
- Using the best under packing cushion with the plate
- Helpful ink solutions to maintain good color and pH control
- New, softer sheet photopolymer plates that conform to uneven substrates with less impression

Flint Group's New PremoCorr™ Inks

Unlike traditional corrugated inks, PremoCorr™ eliminates the need for addition of amines to maintain viscosity. The result is a low maintenance ink with a stable viscosity over a wide pH range. In addition to low maintenance, PremoCorr provides exceptional resolubility, rub resistance, and print quality.

PremoCorr™ Level 1

- Entry level post-print corrugated

PremoCorr™ Level 2

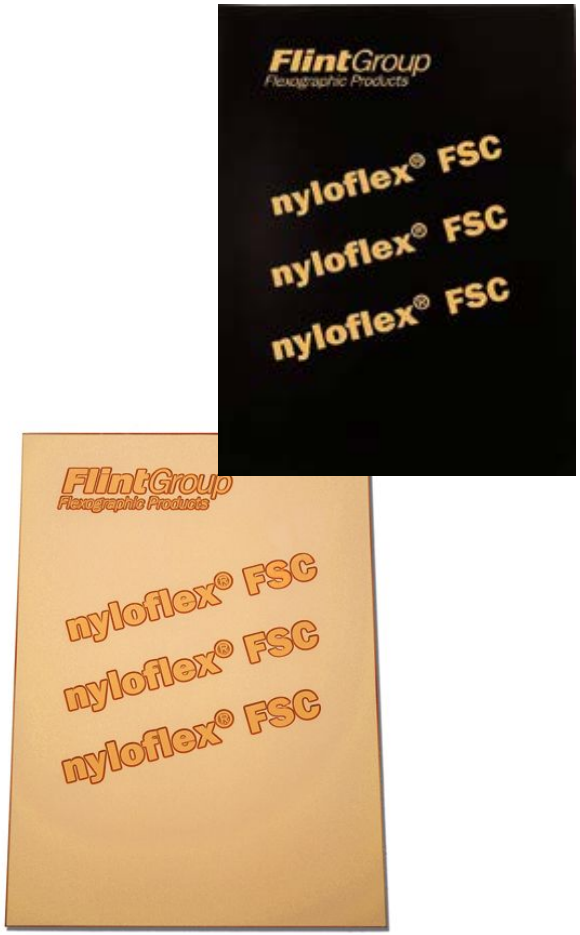
- Mid level post-print corrugated

PremoCorr™ Level 3

- High level post-print corrugated

New nyloflex® FSC

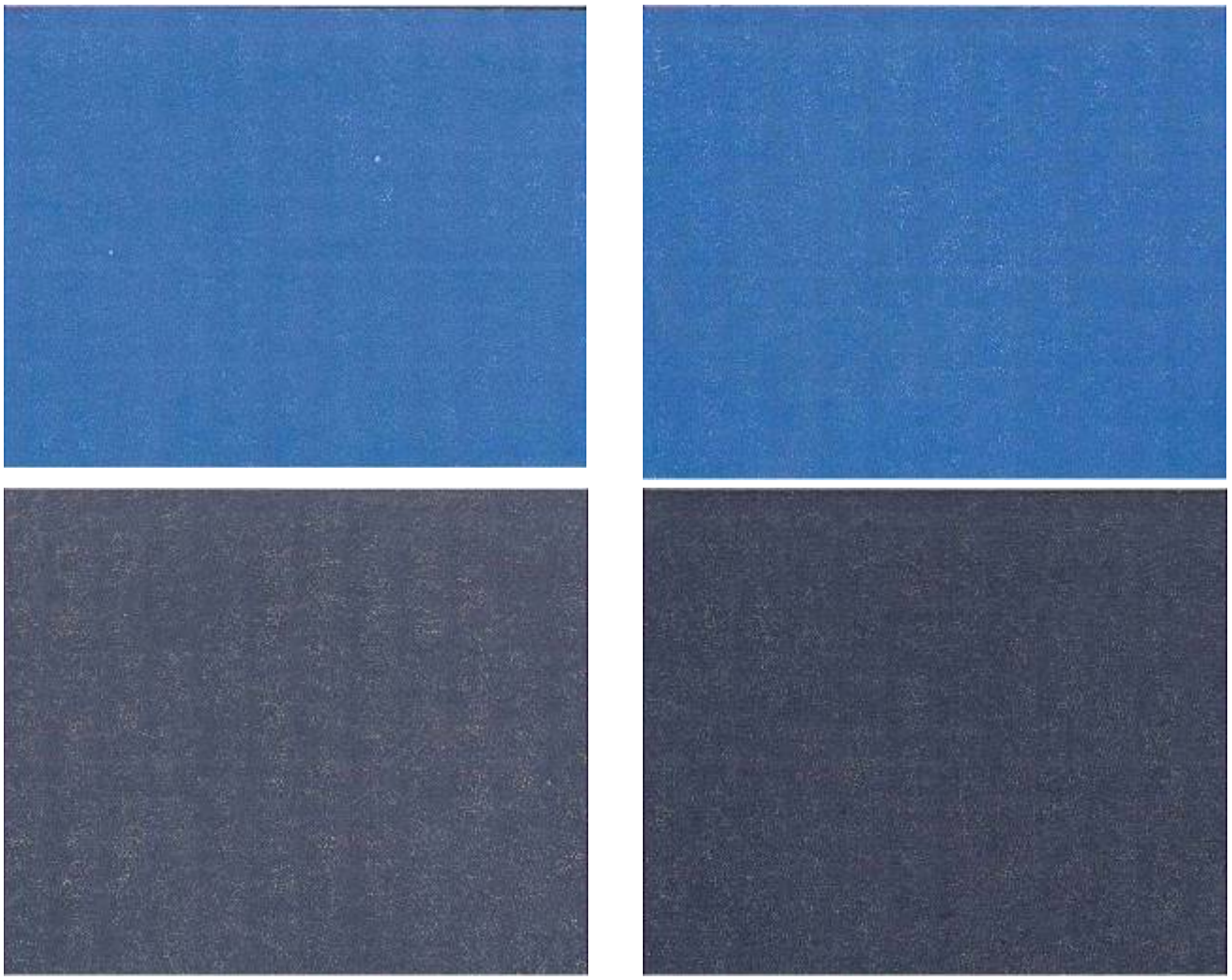
- New product for the corrugated post-print market
  - FSC – a soft durometer (26 Shore A) plate for excellent solids coverage with fine, detailed reverse and positive printing on A-, B-, C-Flute, rough surfaces, recycled, and low quality liners



Soft Plate – Uncoated/Kraft/Solid

Uncoated

Kraft



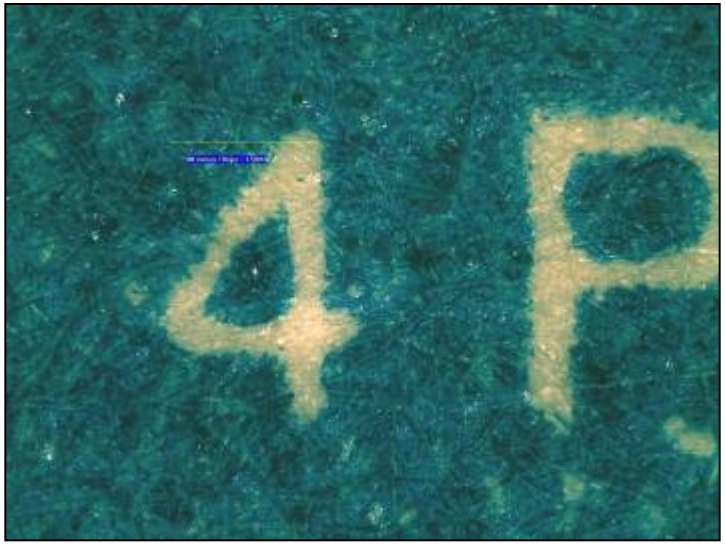
Standard

FSC

Soft Plate – Reverse Print/Uncoated

Standard

FSC

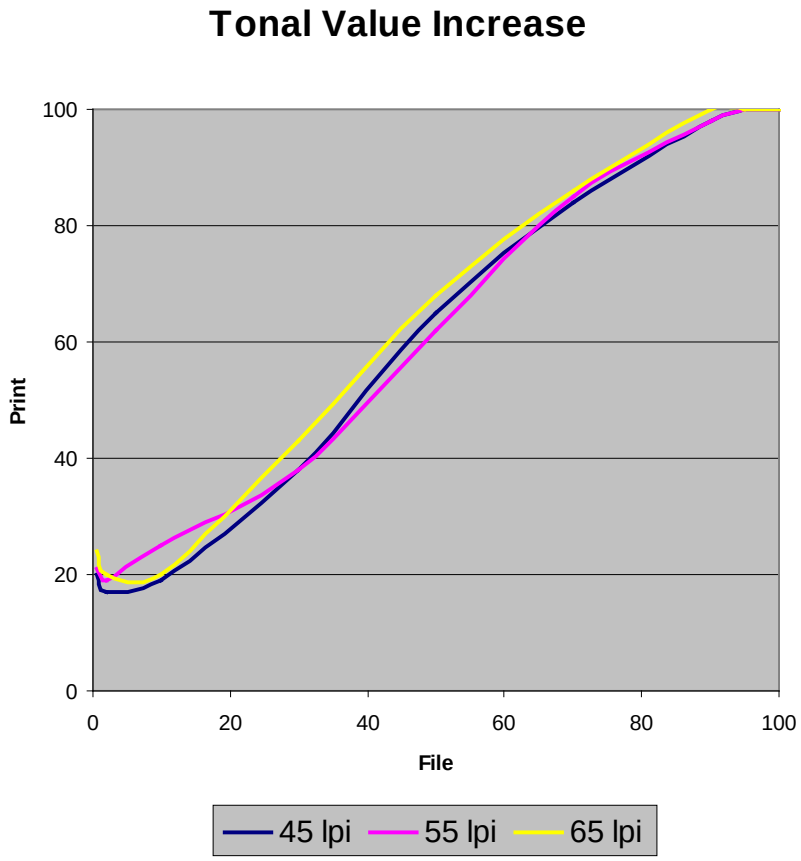


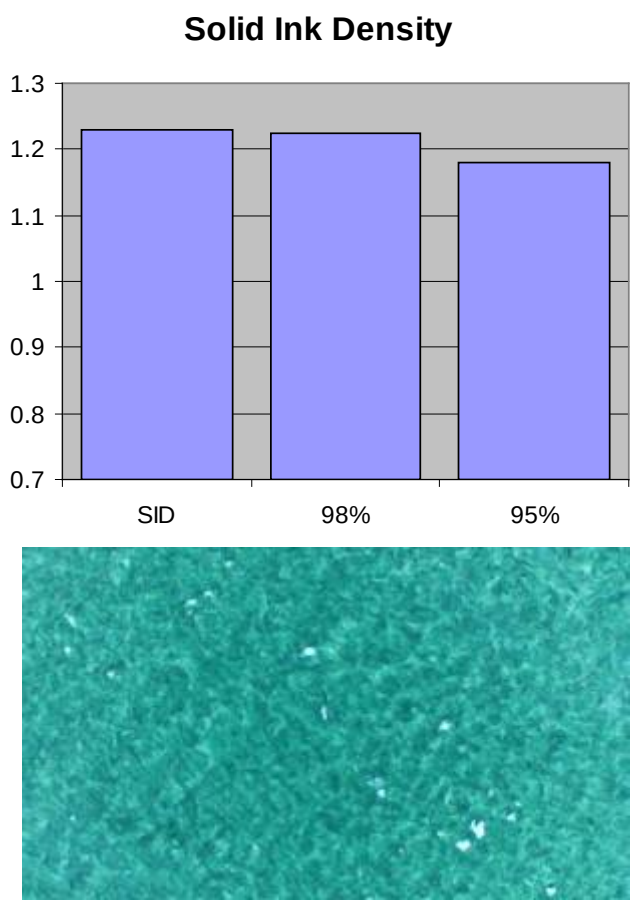
Large Paper Company Press Trial

- **Three materials were run side-by-side:**
  - **Other Brand 32 Durometer**
  - **nyloflex® Brand 32 Durometer**
  - **nyloflex® FSC 26 Durometer**

- **Print samples analyzed for the following characteristics:**
  - **Tonal Value Increase (Dot Gain)**
  - **Solid Ink Density**
  - **Solid Ink Laydown**
  - **Fluting**

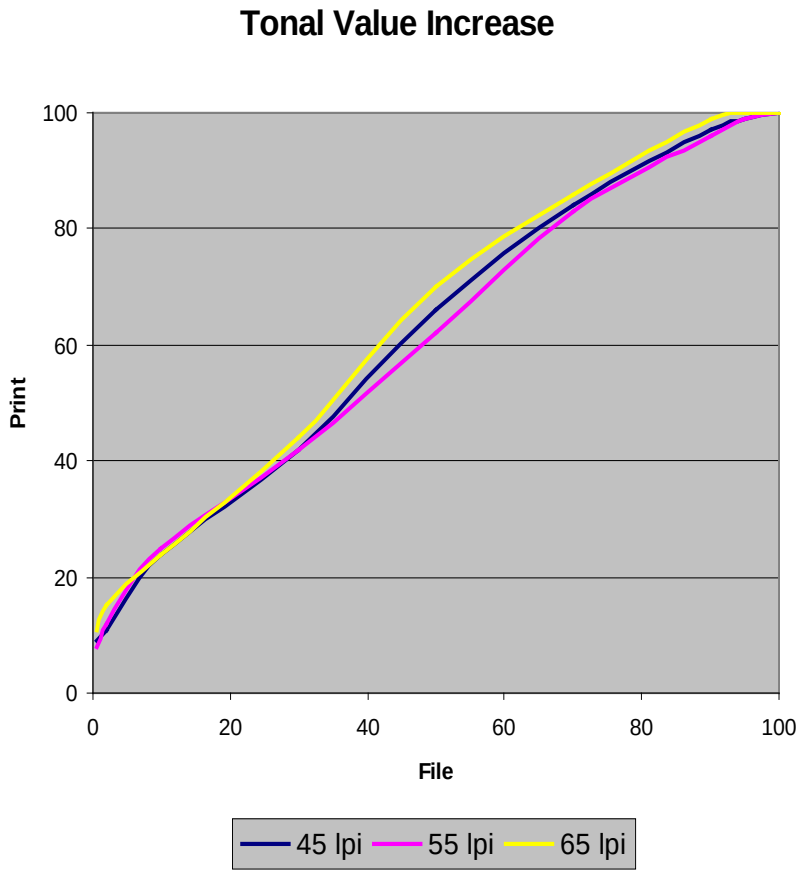
Results – Other Brand 32

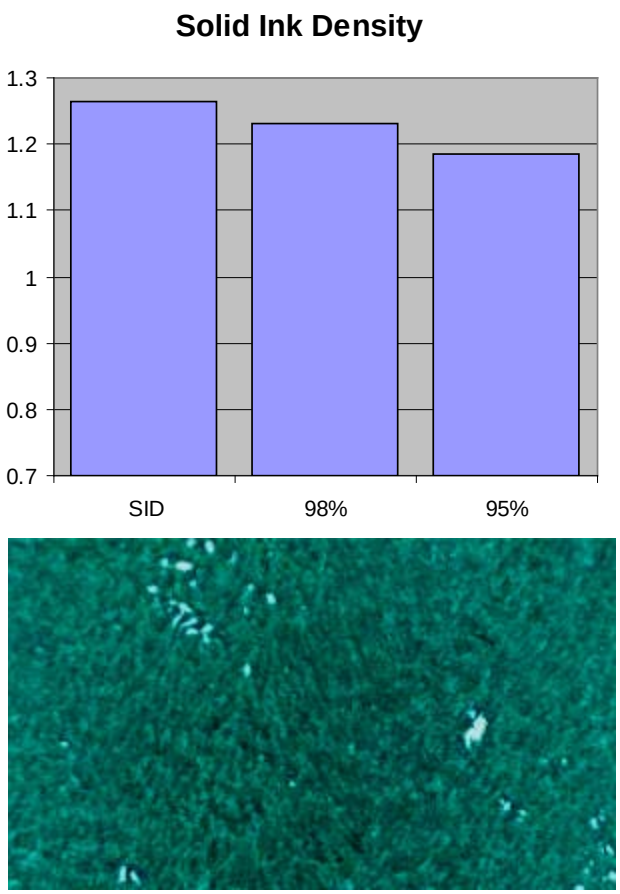




Dot gain generally conforms to normal expectations, however highlights tend to gain more than normal. Also, note the pinholes in the solid image above.

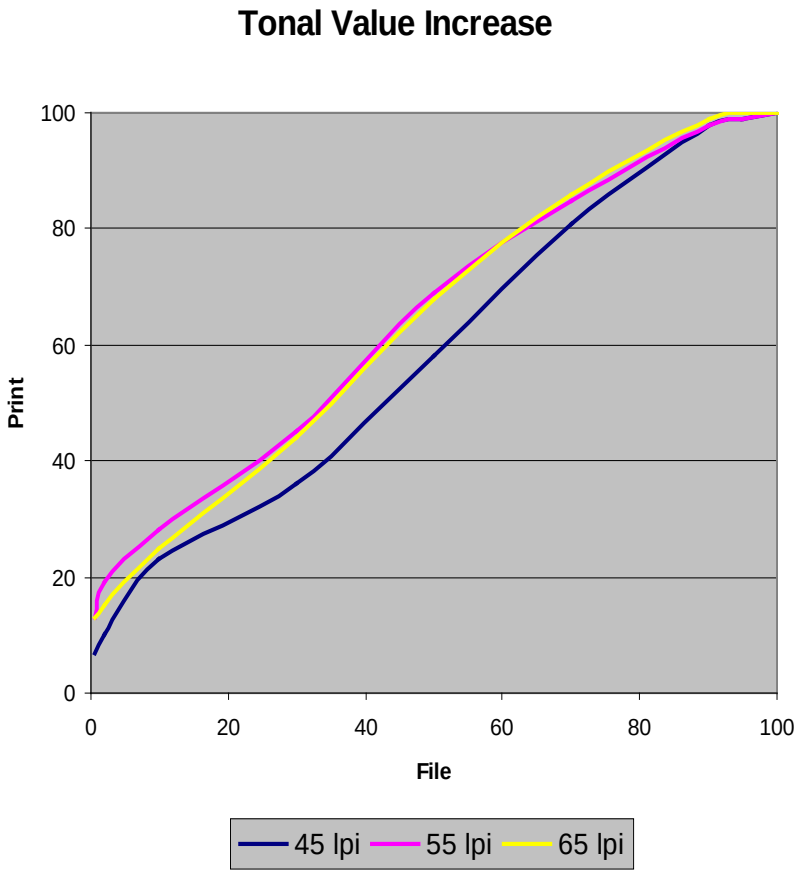
Results – nyloflex® Brand 32

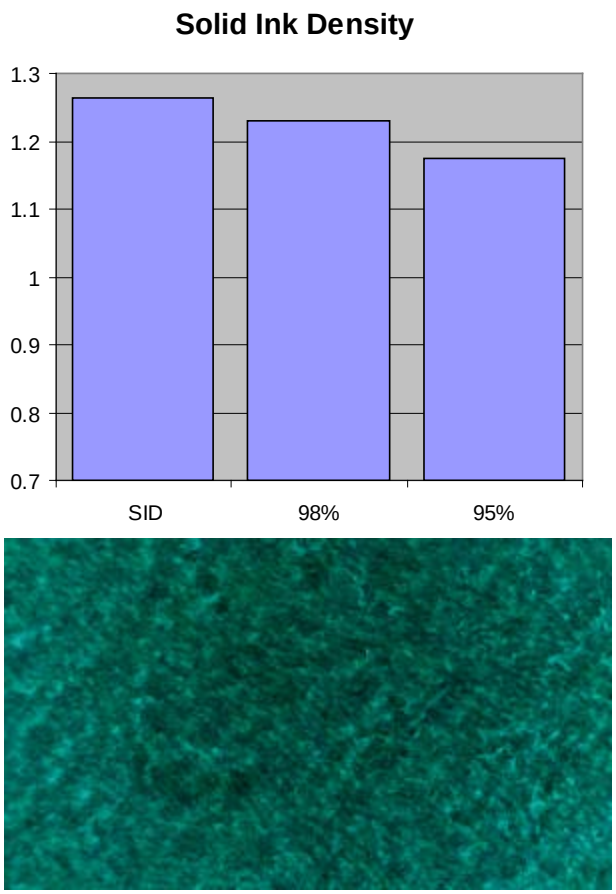




Dot gain conforms to normal expectations, with better highlights than Other Brand.
Pinholes in solid areas tend to be comparable to Other Brand with slightly higher SID.

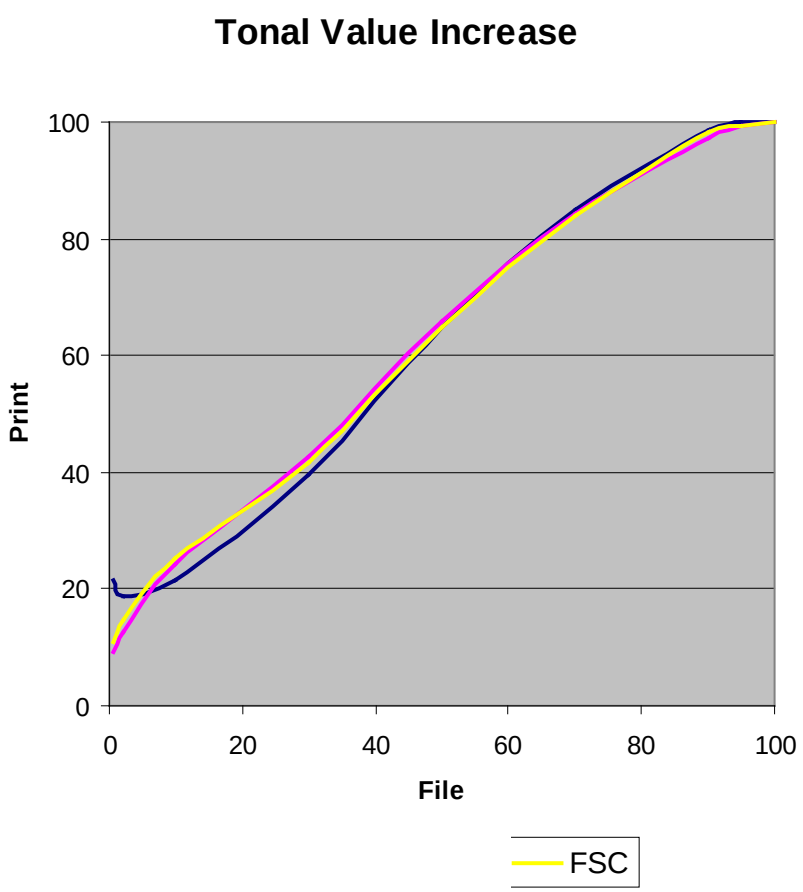
Results – nyloflex® FSC 26

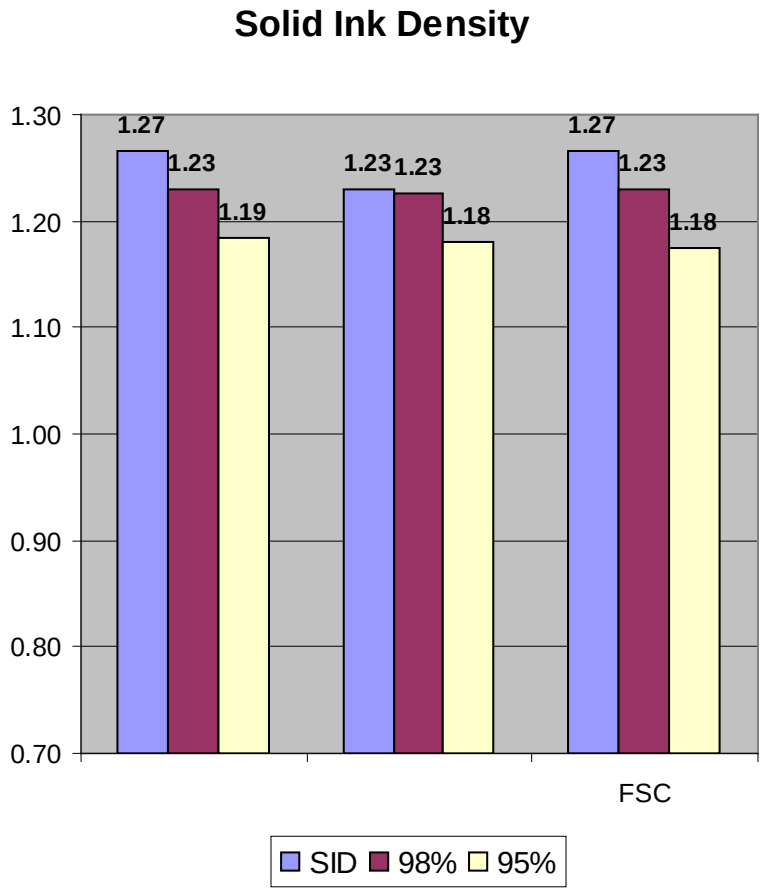




Dot gain tends to be a little low in midtones (possibly over-compensated), but good highlight reproduction. Note the excellent solid coverage and increased SID.

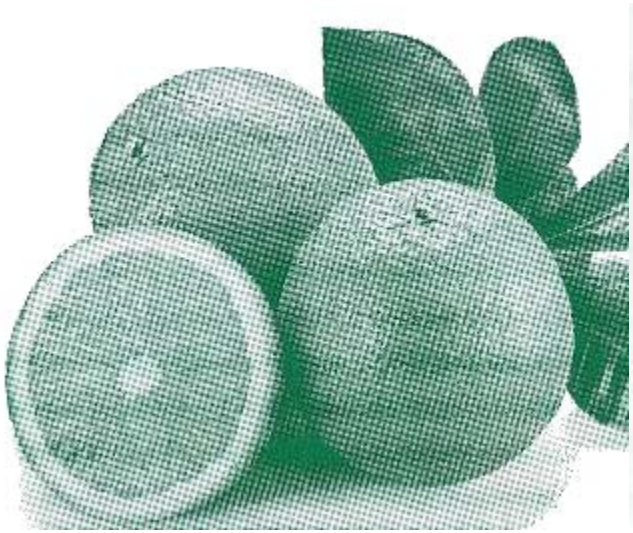
Performance Comparison – TVI & SID



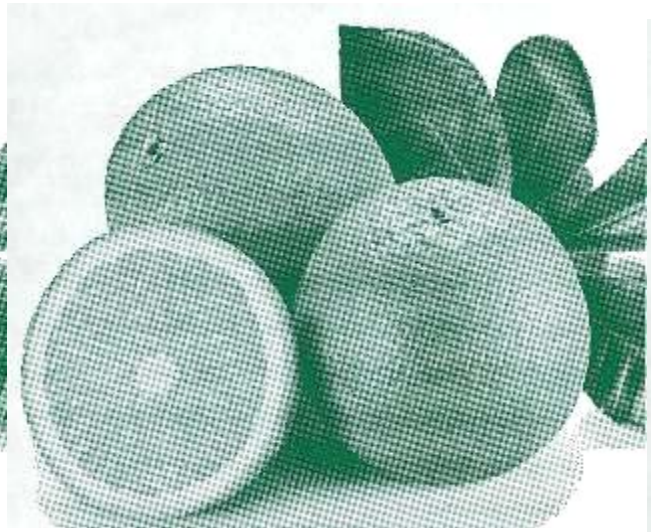


Overall dot gain tends to be comparable. Also, given its higher SID and smoother ink laydown, FSC performs better than 32 Durometer Material.

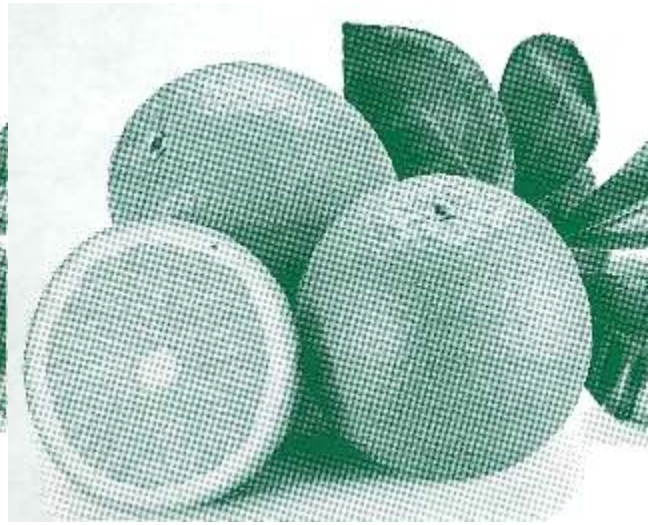
Performance Comparison – Fluting (non flat top)



Other 32



nyloflex® 32



nyloflex® FSC

As can be seen in the photos above, the greatest reduction of fluting occurs when using FSC material

Conclusions

- **Based on good highlight reproduction, higher SID, smoother ink laydown and reduced appearance of fluting,** FSC **outperforms all other materials tested.**

Corrugated Press Trial – FVTC

nyloflex® FSC 250 D

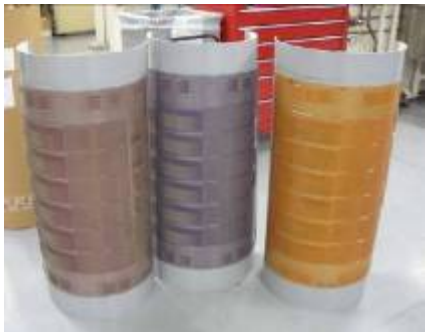
Foam Cushion 250

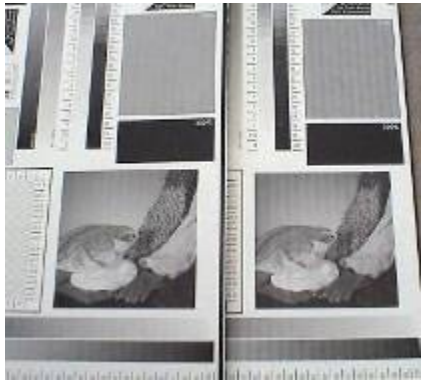
Fluting Comparison

Rely on us.

FlintGroup
Flexographic Products

Fox Valley Test



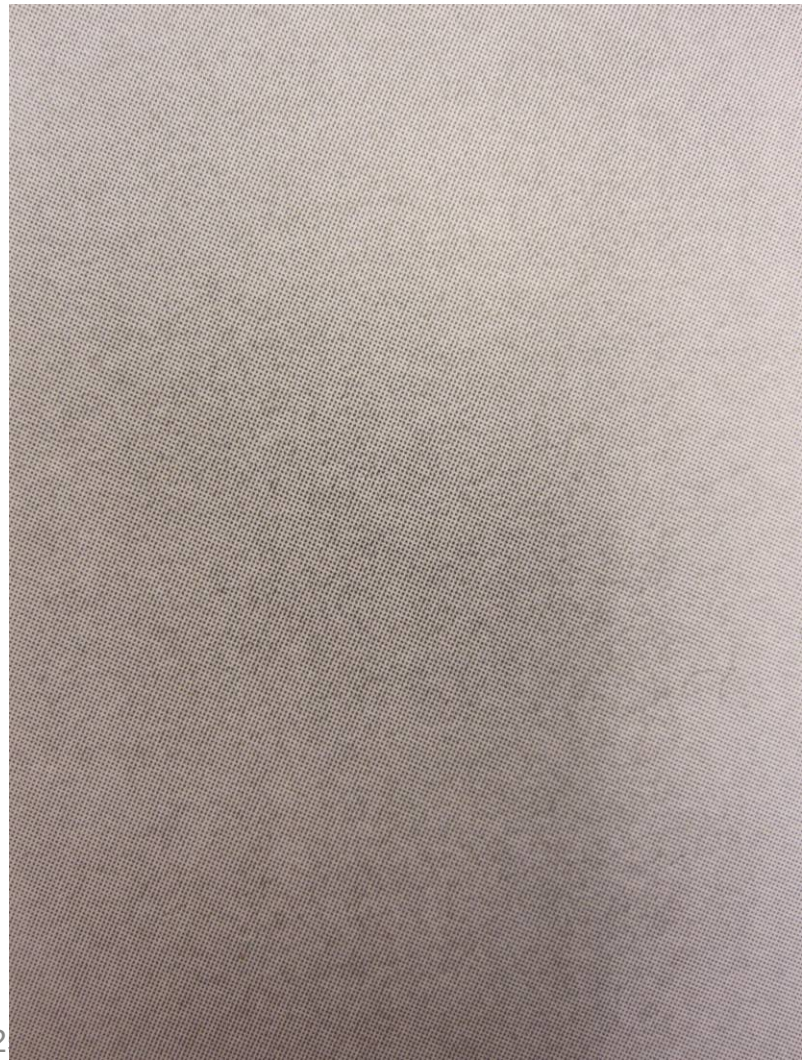


- Plate Types - nyloflex® FSC D .250” and Foam Cushion .250”
- Conducted at Fox Valley Technical College, Appleton WI
- Grant International Workhorse Press
- 400 lpi 3.8 BCM 60º, Ceramic, Chambered doctor blade
- Plate undercut - 0.280”, C flute Kemi, Mottle White, Kraft

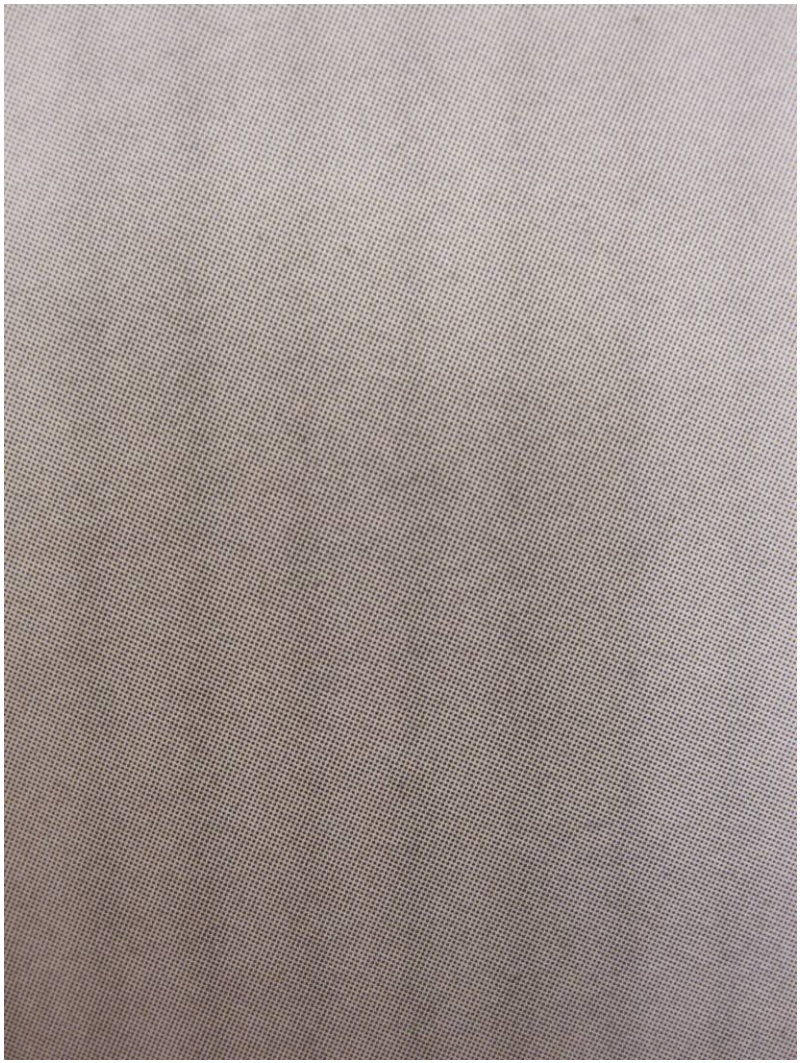
Fluting at 85 lpi: nyloflex® FSC 250 v. Foam Cushion 250

Uncoated Board

nyloflex® FSC 250



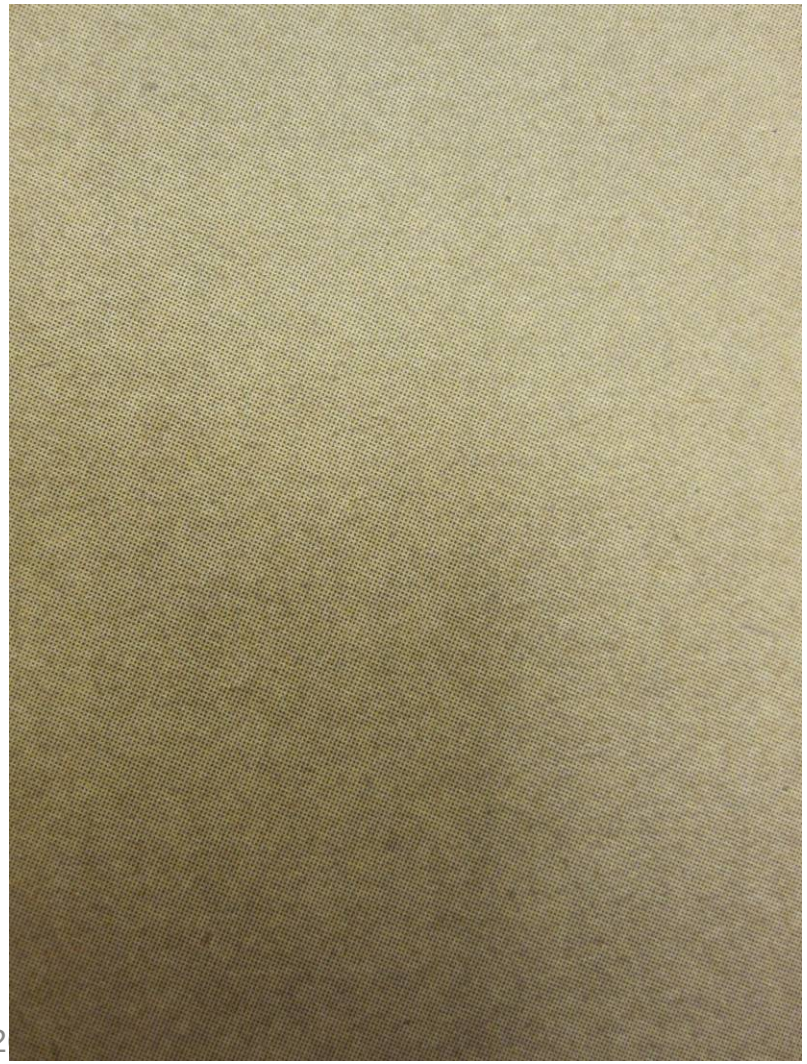
Foam Cushion .250



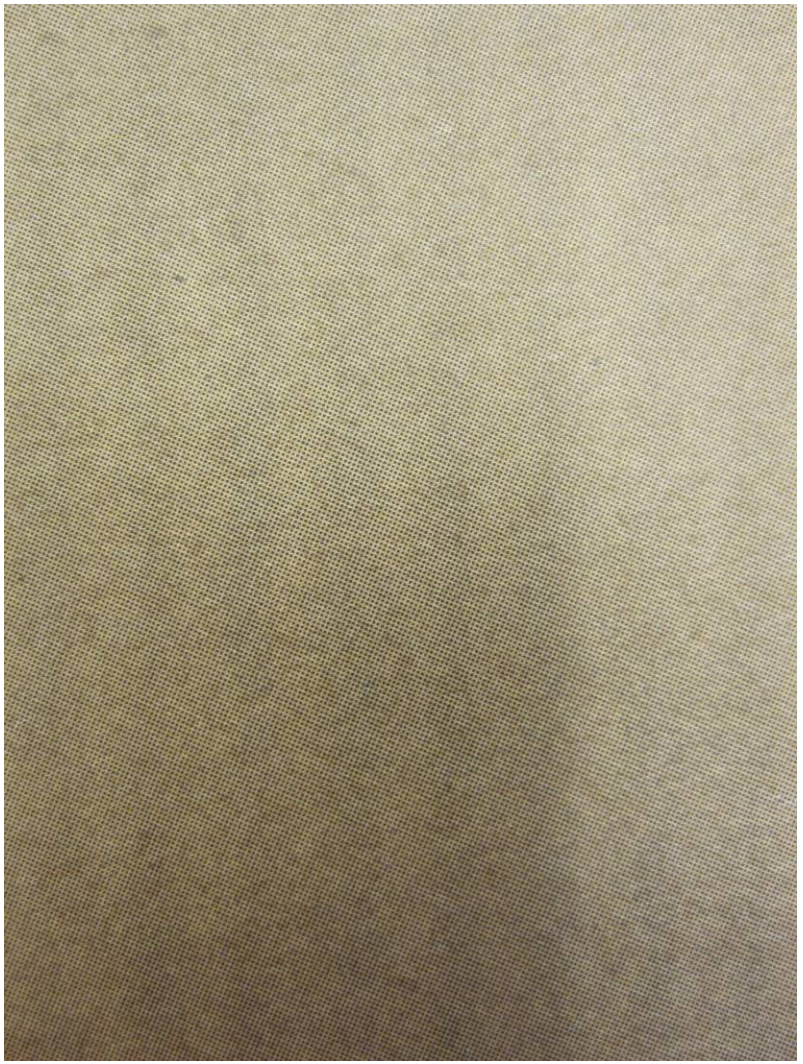
Fluting at 85 lpi: nyloflex® FSC 250 v. Foam Cushion 250

Kraft Board

nyloflex® FSC 250

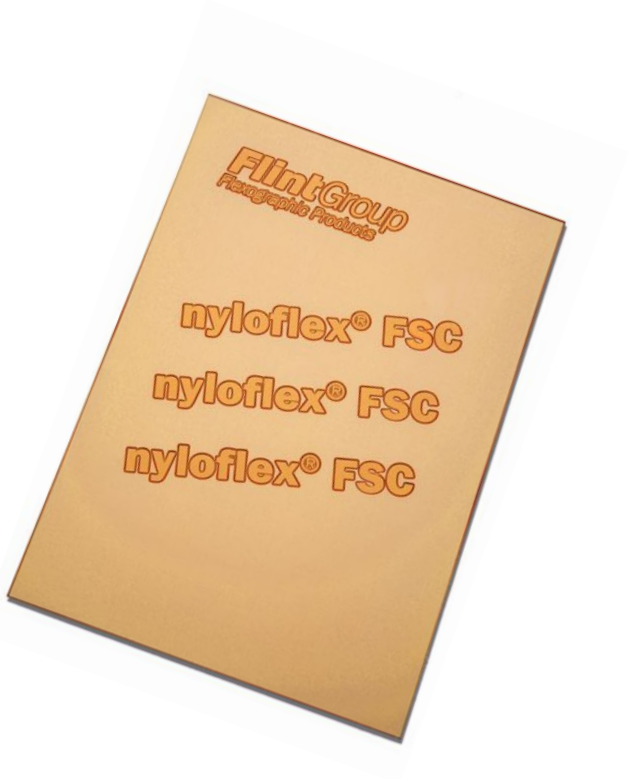


Foam Cushion .250



Results

- A lower level of fluting was found with the FSC D using the Mottle White and Kraft.
- There was not a significant difference with the solid ink coverage and sharpness of both reverse and positive type.



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