Understanding Paper Weights and Thickness

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Agenda

• Weights and Thickness Measurements
• Basis Weights
• M Weight
• GSM
• Caliper
• PPI
• Comparison Chart
• Wrap Up
Paper Weights & Thicknesses

• Choosing the correct paper thickness for a print job can be confusing but it is very important.
• Paper sheets can be specified in Basis Weight, M Weight, Caliper, GSM, LBS & PPI
• 80 # Text & 80# Cover?
• Why is the same GSM different for different substrates?
• OEMs have thickness substrate limits for their digital presses.
Basis Weight

• The weight, measured in pounds, of 500 sheets of paper in that paper’s base sheet size.
• Sizes were determined when paper was invented for a type of printing.
• Even after the paper is trimmed to a smaller size, it is still categorized by the weight of the base sheet size.
• Since the starting base size is not the same between paper types, the basis weights do not correspond directly. (80# Text is much lighter than 80# Cover)
M Weight

• M Weight is the term used for the weight of 1,000 sheets (2 Reams) of the actual size (any size) of a paper.
• This is helpful to determine the weight of a shipment of paper.
• It is also helpful if the print job is being mailed.

2 reams of 8.5x11 20# Copy Plus weigh 10 lbs, so it is specified as 10 M.
Grams Per Square Meter

• Listed as GSM or g/m2
• The weight in grams of a square meter of paper or substrate.
• Generally speaking, the higher the GSM the heavier & thicker the paper.
• Density is an important factor in determining GSM. The more pulp, filler or fibers in a substrate, the more dense it will be.
• GSM is not a good way to be sure of the thickness of a substrate.
Caliper

• Simply the paper’s thickness measured in thousandth’s of an inch.
• Caliper is measured using a micrometer.
• Caliper is usually expressed in “points” or PTS. \[0.007 = 7\text{pt}\]
• A substrate’s caliper is affected by it’s Basis Weight, Recipe and Finish.
  – A 100# cover stock with a smooth finish would not have the same caliper as a 100# cover stock with a felt finish.
  – The felt finish sheet would be toothier and thus have a thicker caliper.
  – Caliper is also affected by the mix of pulp & air in a sheet of paper. Referred to as Yield.
• Most customers are ultimately concerned about the caliper when specifying a substrate.
Pages Per Inch - PPI

• A measurement of how many sheets will make up an inch thickness of paper.
• Each sheet is 2 “pages”.
• To determine the PPI, divide two by the caliper of the given sheet

$$\frac{2}{0.0038} = 526 \text{ PPI} = 263 \text{ sh}$$
20# Bond / 50# Offset

$$\frac{2}{0.0048} = 417 \text{ PPI} = 208 \text{ sh}$$
24# Bond / 60# Offset

$$\frac{2}{0.0058} = 345 \text{ PPI} = 172 \text{ sh}$$
28# Bond / 70# Offset
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Paper Thickness Wrap Up

• There are several ways to determine the thickness or weight of a paper
• Basis Weight is expressed in pounds
• GSM is also based on weight
• OEM’s specify their digital equipment capability in GSM thickness.
• Caliper is based on thickness and is what most customers are concerned about.
• PPI is mainly important to book printers and direct mail houses
• Our marketing collateral has all of the paper thickness & weight specifications for each item. (except for PPI)

#1105739 18x12 80# - 66M - 216 GSM – 9.2 PT - McCoy Digital Gloss Cover
You are now a paper thickness expert!

Thank you!