athens paper

WALL PRINTING

PAPER TIPS Whiteness vs. Brightness

For over 40 years one of the key measurements of any grade of paper has been brightness. Generally speaking, **the brighter the paper the better the contrast between the paper and the ink.** A brighter sheet is easier to read, and colors tend to pop off the sheet when compared to the same printed copy on a sheet that is less bright. Brightness has also been an indicator of the quality of the grade, as brighter sheets are ranked higher and typically cost more. This has been true for both coated and uncoated papers. **Brightness** has always been measured using a G.E. Reflectance Scale. It **is actually a measurement of the reflection of light off of a grade of paper,** with 1 being the lowest reflection, or what would be given to a totally black grade, and 100 for the brightest measured grade. Over the years the paper industry has improved the manufacturing process, so that today many premium grades have brightness ratings of close to 100, the maximum rating possible under the G.E. system.

Over the past few years, as imported papers have gained a larger foothold in the domestic market, a new term has been introduced. **Whiteness** is now often referred to when evaluating grades of paper, with a C.I.E. (International Commission on Illumination) measurement used for rating. What is the **difference between whiteness and brightness?** We have already explained that brightness measures the reflection of light. In doing so it actually measures only a limited amount of the full color range. **Whiteness measures the full spectrum of visible light**, and provides a measurement **more closely aligned with what our eyes actually see.** Put another way, on a scale of 1 to 10, brightness reflects a color range approximately between 4 and 8. Whiteness, on the other hand, measures all of the colors in the range, from 1 through 10. As a result we may have 2 grades of paper that measure the same on a brightness scale, but because of a difference in shade they look different to the eye. This can be the case when you have 2 grades of opaque that measure 92 on the G.E. brightness scale, but one is a warm white and the other is more of a blue white. Their brightness rating is the same, but the paper looks different because of differences in shade. In this example there is 1 common measurement for brightness, but 2 separate measurements under a whiteness scale.

The **trend in paper making is toward whiter and brighter paper**. Paper is becoming a global product, with imports coming in at an increasing level. Whiteness is a global standard, and we anticipate a growing acceptance of whiteness as a key measurement tool. Giving exact comparisons between the G.E. Brightness scale and the C.I.E. Whiteness scale can be difficult, since the range of colors measured will vary. We have listed below some general comparisons. Please note the highest rating on a brightness scale is 100, while whiteness measurements will go much higher.

Brightness	Whiteness Range
84	94 - 98
92	138 - 148
96	148 - 155