



An International Paper Company

## Brightness versus Whiteness

Don't be confused by Whiteness versus Brightness.

Whiteness is measured one way; on a CIE Scale. The CIE scale measures blue, red, green shades.

**Q:** Should my printer customer care about whiteness?

**A:** Depends on the image you are printing. No matter digital or offset, normally a "balanced white" versus a "blue or bluer white" shade is better for flesh-tones. Bluer shades tend to wash skin color out while a more balanced or red shade will be a little more appealing when it comes to the human face. Bluer shades seem to pop a little better on landscapes such as skies and water backgrounds. But it's all in the eye of the beholder and you should encourage your print customer to sample all shades before committing to one of the great sheets of paper you are about to sell them.

So that's Whiteness. Let's just focus on Brightness. There are two different scales to measure Brightness and it can be confusing.

## Brightness: GE Versus ISO D65

**Q:** Why can the same sheet of paper give two different brightness numbers?

**A:** The simplest explanation is that they are tested by two different instruments.

**Q:** Why does the same sheet of paper tested by two different instruments give two different brightness numbers?

### First:

Fluorescent agents are added to paper to make them look brighter, whiter and bluer. It is basically the same agent that is used in textiles. Have you ever wondered why your white shirt turns blue on a dance floor or in a game room? It's because the black lights excite the fluorescent agent in the material.

### Second:

The instruments used are different.

How are they different? GE meters (yes, this is short for General Electric who invented this instrument) use a quartz halogen lamp, while ISO D65 instruments use a Xenon lamp (much brighter and bluer). GE meters filter out some of the light, ISO D65 use no filters. GE meters measure the light reflected at a 45 degree angle to the sample; ISO D65 meters measure it basically straight on.

### Third:

GE meters have been around more than 50 years and are commonly used in the US only. ISO type meters are used everywhere in the world and are relatively modern in design. GE meters were made to give a reading of 0% to 100%. Since ISO type meters "read" more light, they can give higher numbers than 100.

So, because of all the instrumentation differences, the exact same paper can have different brightness readings. Remember, when comparing the brightness level of competing sheets, for your particular need, clarify the type of brightness scale used.