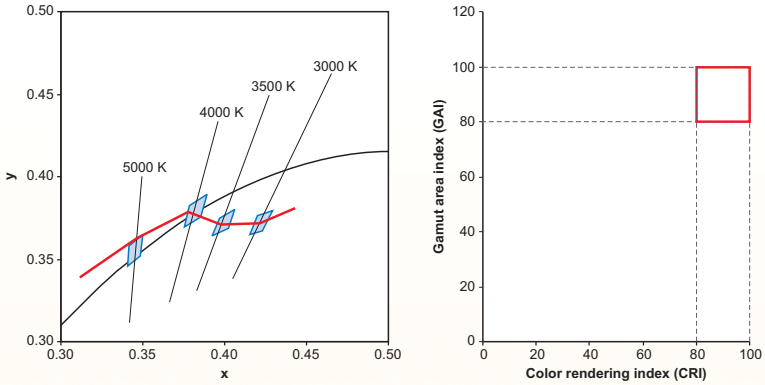
Class A Color for White Lighting

The lighting industry relies on two metrics to communicate the color properties of sources used for illumination. Color rendering index (CRI) is used to represent how well object colors are seen when illuminated and correlated color temperature (CCT) is used to describe the tint (warm or cool) of the illumination itself. As has been recognized for many years, neither metric is ideal for characterizing what they are intended to communicate.

In 2002, the LRC began a series of studies aimed at improving the metrics used for color rendering and for perceived tint of illumination. What they found was that color rendering is a two-dimensional construct and that people usually prefer sources of illumination that have minimum tint. The consistency of perceived tint across different light sources that have the same designation is also an important factor. To help non-specialists select light sources, a new designation, called "Class A Color," was developed for light sources that scored well on all of these metrics.



Class A Color lighting recommendations (left) for "white" illumination (red line) of prescribed chromaticity tolerance (blue lines) and (right) CRI/GAI combination (CRI ≥ 80 and 80 ≤ GAI ≤ 100).

Is that a blue suit or a black suit? Class A Color lighting can help consumers make accurate color choices.

Definition of Class A Color

To simplify the communication of the color properties of light sources to end users and consumers, LRC researchers have proposed a new designation called Class A Color for sources of illumination used in architectural applications. Class A Color sources have:

- chromaticity on or near the proposed line of minimum tint, which is not the same as the blackbody locus;
- good color rendering, defined by a CRI greater than 80 and a high (but not too high) gamut area index (80<GAI<100); and
- consistency in tint as defined by proposed tolerance zones of chromaticity.

The Class A Color concept uses metrics that are easy to compute and, more importantly, predictive of human acceptance of color rendering and tint of illumination. Importantly too, the Class A Color designation is simple to understand by non-specialists in lighting because it avoids industry jargon. Because the research that led to the development of the Class A Color designation is readily available in published form, it is allows for a deeper and more sophisticated examination by designers and specifiers of architectural lighting systems.

For more information, visit www.lrc.rpi.edu/programs/solidstate/colorResearch.asp.

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Lighting Research Center, Rensselaer Polytechnic Institute • 21 Union Street • Troy, NY 12180 • (518) 687-7100 • www.lrc.rpi.edu