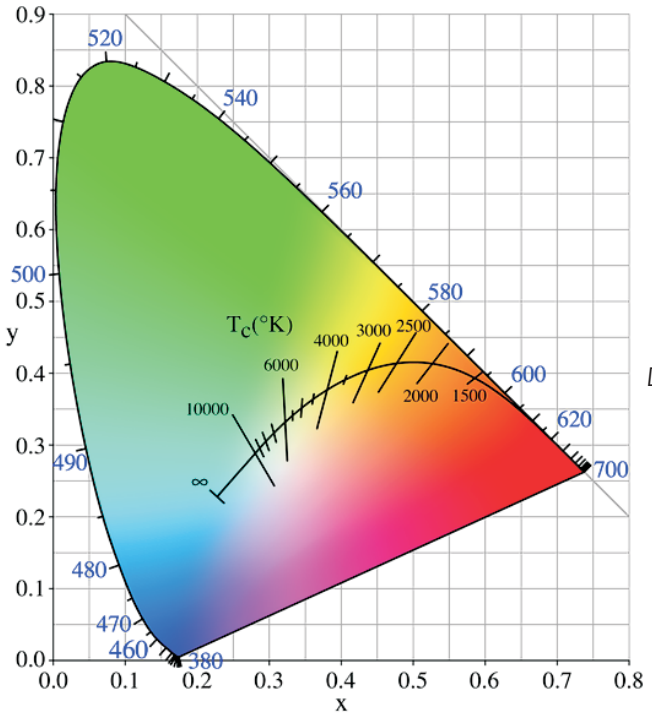
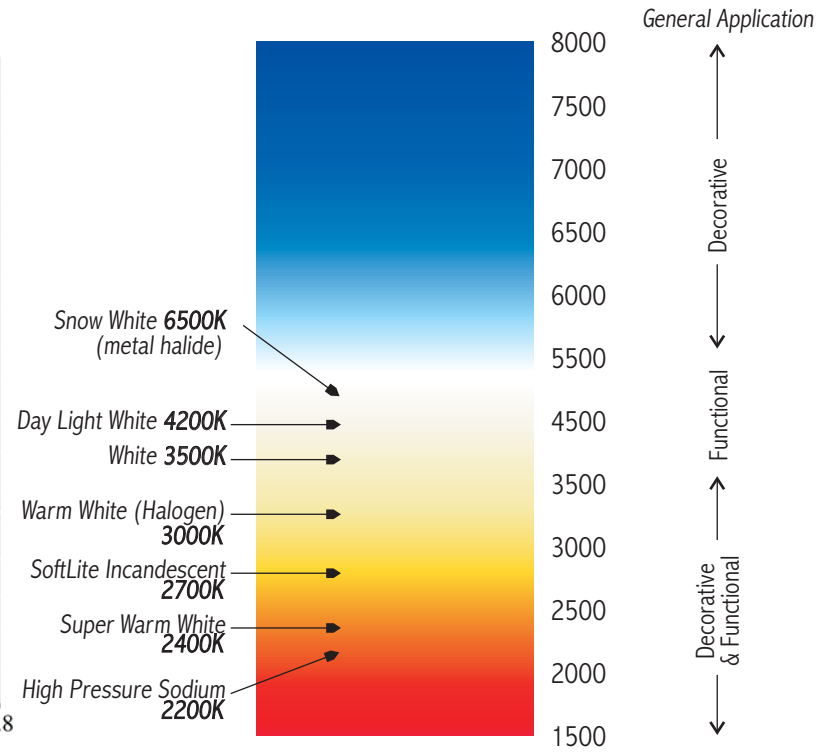
Lamp Color (Kelvin)





Lamp Color

One of the most important attributes of metal halide lamps is their ability to provide crisp white light in a variety of different color temperatures to accommodate users' needs. High pressure sodium and mercury lamps are very limited in the color and quality of light they produce. The colors they generate are often unpleasing or inappropriate for many applications.
This helps explain why the use of metal halide lamps continues to increase dramatically each year around the world.
The color of light sources is a complicated relationship deriving from a number of different factors, including Correlated Color Temperature, Color Rendering Index (CRI), and spectral distribution.

Correlated Color Temperature (CCT)

The first factor in choosing a lamp color is to determine the associated Kelvin temperature. For example, if a retail store wants accent lighting to blend in with warm halogen incandescent lamps, they may choose a Venture MP 100/C/U/27K which has a Correlated Color Temperature of 2700 Kelvin. This "temperature" is not simply an arbitrary number, but is correlation with actual thermal temperature. Anyone who has seen a piece of metal being heated will notice that as the temperature of the metal increases, the color of the metal changes. This is a rough explanation of how the CCT of high intensity discharge and fluorescent light sources is measured. CCT is defined as the absolute temperature (expressed in degrees Kelvin) of a theoretical black body whose chromaticity most nearly resembles that of its light source. From this standpoint, the CCT rating is an indication of how "warm" or "cool" the light source is. The higher the number, the cooler the lamp. The lower the number, the warmer the lamp.

Spectral Energy Distribution

When we look at a light source, we "perceive" a single color. In reality, we are seeing literally thousands of colors and hues of colors made up of a combination of different wavelengths of light. These different combinations, and the relative intensity of various wavelengths of light, can be used to determine a light source's CRI.

Color Rendering Index (CRI)

In general, CRI is an indication of a lamp's ability to show individual colors relative to a standard. This value is derived from a comparison of the lamp's spectral distribution compared to a standard (typically a black body) at the same color temperature. Incandescent lighting is the only light source that follows a true black body curve. Other sources (i.e. metal halide) are rated with a Correlated Color Temperature (CCT). The CCT, however, does not provide information on the quality of color.
For this, a Color Rendering Index (CRI) is also necessary. In general, the higher the CRI rating of a lamp, the better different colors will show. However, this guideline can be misleading with certain lamp types because a high CRI sometimes makes different colors easier to distinguish, but standard colors may appear different than they actually are.

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