TECHNICAL BASIS FOR LIGHTING DESIGN

COLOR RENDERING / COLOR RENDERING PROPERTIES

Custom lighting is a solution - key factors in adequate lighting.

Color rendering

The color emitted by a lit object depends on the spectral composition of the light, giving a vital importance to the spectral composition of the light source. A cool-white light accentuates the blue and the nuances of purple and green. A warm-white light brings out the nuances of red, yellow and orange.

The ability of a light source to copy colors is determined by a number, the color rendering index (CRI). This index defines the ability of a light source to reproduce the colors of various objects faithfully compared with a natural light source. The maximum CRI is represented by the value 100 – 100 CRI means that all the colors of the object are rendered in the same manner as with a natural light source, thus giving a "natural" aspect to the observer. The more the CRI index drifts away from 100, the more the color is distorted.

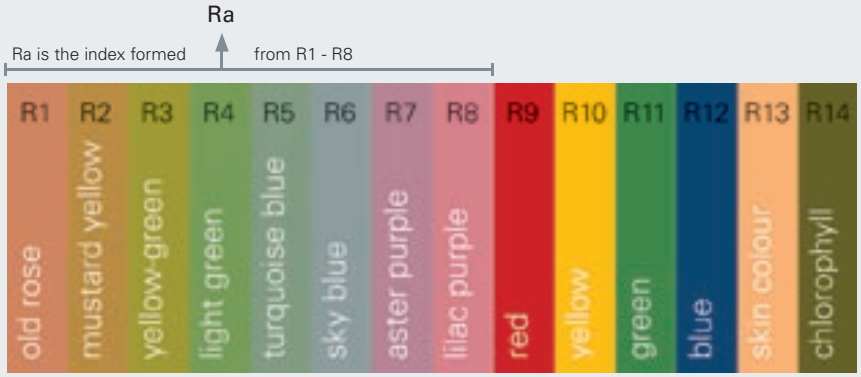
Lights having high color rendering in the category 1A are required for dermatological examinations, medical therapy and surgery. These are situations that demand excellent color rendering. On one hand, these types of lights provide less light and are more expensive than fluorescent tubes in category 1B (lights with good color rendering for lighting rooms) but, on the other hand, the physician has a light which renders each color faithfully and perfectly.

Determining the CRI of a light source

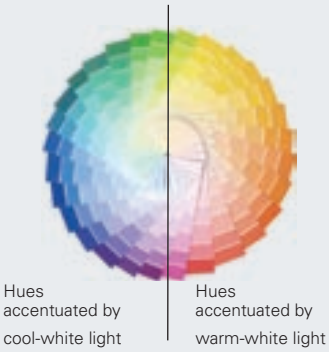
To determine the CRI value of a light source, 14 test colors which dominate our environment are generally illuminated with a light source reference and with the light source to inspect. The smaller the gap between the light source reference and the inspected light source, the better the color rendering quality of this light source.

The test color red R9 has a particularly important role in the medical world given that it is extremely difficult to differentiate the red nuances of in tissues and blood.

R13 is the "skin color" test color and it generally has a fairly important role for all skin treatment and care (for a better recognition of blood vessels and veins) in medical practices and the cosmetics field.



Color rendering properties



Poor properties of color rendering make it impossible for the eye to recognize all existing colors.

Good properties of color rendering make it possible for the eye to see all actual existing colors.