

Sustainable INL News

Meeting the needs of the present without compromising the ability of future generations to meet their needs

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Full Spectrum Lighting

Recently, the Engineering Research Office Building (EROB), INL Administration Building (IAB), and most of the University Boulevard (UB) buildings went to full spectrum lighting throughout most office areas. But what is full spectrum light and what makes it better?

High quality full spectrum lighting should duplicate the visible wavelengths of our sun and provide high visual clarity. The standard definition of full spectrum lighting is a Color Rendering Index (CRI) of 90 or higher and a color temperature of 5000-6000 Kelvin. The higher the CRI number the more accurate the source with sunlight having a CRI of 100.

Pure sunlight at noon has a color temperature of around 5000 Kelvin with water vapor in the atmosphere or cloudiness tending to make it closer to 6000 Kelvin. Lamps producing color temperatures below 5000 Kelvin will appear yellow and include lighting such as incandescent, standard

fluorescent, halogen, and high pressure sodium. Lamps rated with a color temperature above 6,000 Kelvin will appear more bluish in comparison to natural light or high quality artificial full spectrum lighting. Lamps with this blue appearance, such as the common incandescent daylight bulbs sold in retail outlets tend to make colors look rather "washed out" in comparison to the light produced by a true full spectrum light source.

Full spectrum lighting should not emit ultraviolet (UV) light. Just a few minutes outdoors provides your body with its UV needs so there is no need to increase exposure to harmful UV rays from artificial lighting. UV radiation can be harmful to your skin and can also cause damage to your eyes with long term exposure.

Typically, lamps marketed as full spectrum that emit UV are the results of poor manufacturing processes. UV radiation produced by the cathode is not being fully absorbed by the phosphors in the lamp. High quality lamp

manufacturers will insure that there are sufficient phosphors within their products to convert all UV energy into visible light. There are manufacturers that take matters one step further by producing low mercury full spectrum lamps that prevent UV exposure and also make the lamps TCLP compliant for landfill disposal.

The benefit of full spectrum lighting is employee comfort. Most people prefer full spectrum, which has been found to be easier on most people's eyes and has been shown to help with Seasonal Affective Disorder (SAD). Natural daylight has always had desirable qualities, and is often recommended for improving mood and motivation. Most people will agree that working in an office with no windows can be depressing. The cold winter months and overcast seasons can be gloomy, but full spectrum lighting can make the indoors appear more like a summer day. Additionally, these lights will have a

positive impact on both energy consumption and human productivity. Eventually, all facilities should have full spectrum lighting. F&SS is aware that some employees may not like full spectrum lighting for numerous reasons. INL is approaching this by asking all employees to give the new lamps a chance first, then work with F&SS to find a reasonable solution if problems persist.

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