

Better Buildings By Design Conference 2006
Seminar Presentation

Lighting Concepts and Terminology

*Please note that all terms denoted by *** are defined by the Illuminating Engineering Society of North America ED-100 Course Manual.*

Common Terms Relating to Quantity of Illumination:

Lumen:

The quantity of luminous flux emitted within a unit solid angle by a point source with one candela intensity in all directions.

Footcandle:

A standard measurement of illuminance, representing the amount of illuminance on a surface one foot square on which there is a uniformly distributed flux of one lumen.

Luminance: ***

The intensity of the source or surface in the direction of an observer divided by the area of the source or surface seen by the observer.

Illuminance: ***

The density of luminous flux falling onto a horizontal surface, measured in footcandles (lumens per square foot).

Common Terms Relating to Appearance of Illumination:

Correlated Color Temperature: ***

The absolute temperature of a blackbody radiator having a chromaticity equal to that of the light source. It is expressed as a value on the Kelvin scale (a temperature scale measured in degrees above absolute zero, K).

Color Rendering Index: ***

The measure of the degree of resultant color shift objects undergo when illuminated by the light source as compared with the color of those same objects when illuminated by a reference source of comparable color temperature.

Spectral Distribution:

A graph of the radiant power emitted by a light source as a function of wavelength. SPDs provide a visual profile or "finger print" of the color characteristics of the source throughout the visible part of the spectrum.

Common Terms Relating to Lighting Technique:

Ambient (General) Illumination:

Electric and/or natural lighting throughout a space that produces uniform general illumination.

Task Illumination:

Light that is directed to a specific surface or area to provide illumination for visual tasks.

Accent Illumination:

Directional lighting designed to emphasize a particular object or to draw attention to a part of the field of view.

Sparkle: ***

Small points of high luminance that can enhance visual interest (e.g. a candle flame or decorative tree lights).

Miscellaneous Lighting Terms:

Lamp Life: ***

The life value assigned to a particular lamp type. This is commonly a statistically determined estimate of average or of median operational life.

Fluorescent lamp life is based on a three-hour burn cycle, in which the lamps are turned on for at least three hours and then turned off for 20 minutes. This process is repeated until the lamps fail. Operating fluorescent lamps at a longer than three hour burn cycle will increase lamp life; conversely, operating them on shorter burn cycles will reduce lamp life.

Efficacy: ***

A ratio of unlike terms. For lighting, it is used to compare the capabilities of lamps to transform electric power into light. A lamp that consumes 100 watts of power and produces 2000 lumens would have an efficacy of 20 lumens per watt.

Ballast: ***

An electrical device that provides proper starting voltage and controls operating current.