

Steven L. Klein's Lighting Lingo Dictionary
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Accent Lighting: Directional lighting to emphasize a particular object or to draw attention to a part of the field of view.

Absorption: The dissipation of light within a surface or medium.

Accommodation: The process by which the eye changes focus from one distance to another.

Adaptation: The process by which the visual system becomes accustomed to more or less light than it was exposed to during an immediately preceding period. It results in a change in the sensitivity of the eye to light.

Air Fitting: (Air bonnet, Air hood, Air saddle, Air box) A fitting which is mounted to an air handling luminaire and connects to the primary air duct by flexible ducting. It normally contains one or two volume controls.

Alternating Current (AC): The flow of electricity that cycles or alternates direction many times per second. The number of cycles per second is referred to as frequency. Most common frequency used in this country is 60 Hertz (cycles per second).

Alzak: A process and originally patented trademark of the ALCOA group. It is an electrochemical brightening of high purity aluminum in the manufacturing process.

Ambient Lighting: Background or fill light in a space.

Amperes (amps or A): The unit of measurement of electric current.

Aperture: The opening in the ceiling of a recessed device usually described in terms of size, 3" 4" etc, and finish such as specular clear alzak or satin pewter, or multi groove baffle, etc.

Baffle: An opaque or translucent element that serves to shield a light source from direct view at certain angles, or serves to absorb unwanted light.

Ballast: An auxiliary device consisting of induction wires wound around a metal core and sometimes includes a capacitor for power correction. It is used with fluorescent and HID lamps to provide the necessary starting voltage and to limit the current during operation.

"Batwing" Distribution: Candlepower distribution which serves to reduce glare and veiling reflections by having its maximum output in the 30 degree to 60 degree zone.

Branch Circuit: An electrical circuit running from a service panel having its own overload protection device.

Brightness: An attribute of visual perception in which a source appears to emit a given amount of light. "Brightness" should be used only for non quantitative references of physiological sensations and perceptions of light. Brightness was formerly used as a synonym for the photometric term "luminance" and incorrectly for the radiometric term "radiance"

Bulb: Slang term used erroneously in place of Lamp (Bulbs grow in gardens)

"BX" Cable: A cable comprised of a flexible metallic covering inside of which are two or more insulated wires for carrying electricity.

Can: Slang term used for the housing portion of a recessed down light.

Candela: The unit of measurement of luminous intensity of a light source in a given direction.

Candlepower: Luminous intensity expressed in candelas.

Candlepower Distribution Curve: A curve, generally polar, represents the variation of luminous intensity of a lamp or luminaire in a plane through the light center.

Capacitor: An electric energy storage device which when built into or wired to a ballast changes it from low to high power factor.

Cavity Ratio: A number indicating cavity proportions calculated from length, width and height.

Circadian Rhythm: to refer to the genetically fixed inner autonomous rhythmicity. Coined from the Latin *Circa* meaning approximately, and *Dies*, meaning day. Hormonal oscillation is response to changes in environmental light and darkness. It is generally accepted that autonomous circadian rhythms exist in all eukaryotic organisms.

Circadian System: In principle, each single cell is capable of developing circadian rhythms. In a multicellular organism, the circadian rhythms of the individual cells, tissues and organs must be reasonably synchronized with one another and adapted to the diurnal rhythms of their environment. Mammals and humans have developed a circadian system in order to fulfill this task. The system comprises three paired centers in the nervous system, which are connected by crossed and uncrossed nerve paths: the retina, the suprachiasmatic nucleus, and the intergeniculate leaflet.

Circuit Breaker: Reset-able safety device to prevent excess current flow.

Class "P" Ballast: Contains a thermal protective device that deactivates the ballast when the case reaches a certain critical temperature. The device resets automatically when the case temperature drops to a lower temperature.

Coefficient of Utilization (CU): The ratio of the luminous flux (lumens) from a luminaire calculated as received on the work-plane to the luminous flux emitted by the luminaire's lamps alone.

Cold Cathode Lamp: An electric –discharge lamp whose mode of operation is that of a glow discharge.

Color Rendering Index (CRI): Measure of the degree of 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.

Color Temperature: The absolute temperature of a blackbody radiator having a chromaticity equal to that of the light source.

Cone Reflector: Parabolic reflector that directs light downward thereby eliminating brightness at high angles.

Contrast: The difference in brightness (luminance) of an object and its background.

Cool Beam Lamps: Incandescent PAR lamps that use a special coating (dichroic interference filter) on the reflectorized portion of the bulb to allow heat to pass out in the back while reflecting only visible energy to the task, thereby providing a "cool beam" of light.

Cutoff Luminaires: Outdoor luminaires that restrict all light output to below 85 degrees from vertical.

Cutoff Angle: The angle at which a lamp is not directly visible in a reflector

Dimming Ballast: Special fluorescent lamp ballast, which when used with a dimmer control, permits varying light output.

Direct Current (DC): Flow of electricity continuously in one direction from positive to negative.

Direct Glare: Glare resulting from high luminances or insufficiently shielded light sources in the field of view. It usually is associated with bright areas, such as luminaires, ceilings and windows which are outside the visual task or region being viewed.

Discharge Lamp: A lamp in which light (or radiant energy near the visible spectrum) is produced by the passage of an electric current through a vapor or a gas.

Discomfort Glare: Glare producing discomfort. It does not necessarily interfere with visual performance of visibility.

Distribution Panel: Box containing circuit breakers or fuses where power is distributed to branch circuits.

Efficacy: See Lamp Efficacy.

Efficiency: See Luminaire Efficiency.

Endogenous: Caused by factors caused inside the organism

Equivalent Sphere Illumination (ESI): The level of sphere illumination, which would produce task visibility equivalent to that produced by a specific lighting environment.

“ER” (Elliptical Reflector): Lamp whose reflector focuses the light about 2” ahead of the bulb, reducing light loss when used in deep baffle downlights.

Eukariotic: An organism in which the cells have a distinct nucleus containing genetic material and separated from cytoplasm by a nuclear membrane. Examples: Protozoa, plants, animals, humans

Extended Life Lamps: Incandescent lamps that have an average rated life of 2500 or more hours and reduced light output compared to standard general service lamps of the same wattage.

Fiber optic: Plastic or glass strands of clear optical quality such that light entering one end can be transmitted to the other end by the process of total internal reflection. (TIR)

Floodlighting: A system designed for lighting a scene or object to a luminance greater than its surroundings. It may be for utility advertising or decorative purposes.

Fluorescent Lamp: A low-pressure mercury electric-discharge lamp in which a fluorescing coating (phosphor) transforms some of the ultraviolet energy generated by the discharge into light.

Footcandle (fc): The unit of illuminance when the foot is taken as the unit of length. It is the illuminance on a surface one square foot in area on which there is a uniformly distributed flux of one lumen.

Foot Lambert (fl): A unit of luminance of a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per square foot.

Fuse: Replaceable safety device to prevent excess current flow.

General Lighting: See Ambient Lighting.

General Service Lamps: "A" or "PS" incandescent lamps.

Glare: The sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort, or loss in visual performance and visibility.

Greenfield: A type of Flexible metallic tubing for the protective enclosure of electric wires.

Grounding: Connection of electrical components to earth for safety.

Ground Relamping: Relamping of a group of luminaires at one time to reduce relamping labor costs.

Heat Extraction: The process of removing heat from a luminaire by passing return air through the lamp cavity.

High Intensity Discharge (HID) Lamp: A discharge lamp in which the light producing arc is stabilized by wall temperature, and the arc tube has a bulb wall loading in excess of three watts per square centimeter. HID lamps include groups of lamps known as mercury, metal halide, and high pressure sodium.

High Output Fluorescent Lamp: Operates at 800 or more milliamperes for higher light output than standard fluorescent lamp (430MA)

High Pressure Sodium (HPS) Lamp: High intensity discharge (HID) lamp in which light is produced by radiation from sodium vapor. Includes clear and diffuse-coated lamps.

Incandescent Lamp: A lamp in which light is produced by a filament heated to incandescence by an electric current.

Instant Start Fluorescent Lamp: A fluorescent lamp designed for starting by a high voltage without preheating of the electrodes.

Intergeniculate Leaflet (IGL): The retina and the suprachiasmatic nucleus are connected to each other via this neural pathway. Nerve fibers extend via the optic nerve to the IGL, a center located in the lateral geniculate body. Nerve fibers from the IGL, a center located in the lateral geniculate body. Nerve fibers from the IGL reach the suprachiasmatic nucleus via the geniculohypothalamic tract. It is assumed that zeitgebers of the circadian systems other than light also influence the suprachiasmatic nucleus via this path.

Inverse Square Law: The law stating that the illuminance at a point on a surface varies directly with the intensity of a point source and inversely as the square of the distance between the source and the point. If the surface at the point is normal to the direction of the incident light, the law is expressed by $f_c = c_p/d^2$.

Isolux Chart: A series of lines plotted on any appropriate set of coordinates, each line connecting all the points on a surface having the same illumination.

Junction Box: A metal box in which circuit wiring is spliced. It may also be used for mounting luminaires, switches or receptacles.

Kilowatt-Hour (KWH): Unit of electrical power consumed over a period of time.
KWH=watts/1000xhours used.

Lamp: An artificial source of light (also a portable luminaire equipped with a cord and plug).

Lamp Efficacy: The ratio of lumens produced by a lamp to the watts consumed. Expressed as lumens per watt (LPW).

Lamp Lumen Depreciation (LLD): Multiplier factor in illumination calculations for reduction in the light output of a lamp over a period of time.

LED: Light Emitting Diode is a semiconductor d
Lens: Used in luminaires to redirect light into useful zones.

Light: Radiant energy that is capable of exciting the retina and producing a visual sensation. The visible portion of the electromagnetic spectrum extends from about 380 to 770 nm.

Local Lighting: Lighting designed to provide illuminance over a relatively small area or confined space without providing any significant general surrounding lighting.

Louver: A series of baffles used to shield a source from view at certain angles or to absorb unwanted light. The baffles usually are arranged in a geometric pattern.

Long Life Lamps: See Extended Life Lamps.

Low Pressure Sodium Lamp: A discharge lamp in which light is produced by radiation of sodium vapor at low pressure producing a single wavelength of visible energy, i.e., yellow.

Low Voltage Lamps: Incandescent lamps that operate at 6 to 12 volts.

Lumen: The unit of luminous flux. It is the luminous flux emitted within a unit solid angle (one steradian) by a point source having a uniform luminous intensity of one candela.

Luminaire: A complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply.

Luminaire Dirt Depreciation (LDD): The multiplier to be used in illuminance calculations to relate the initial illuminance provided by clean, new luminaires to the reduced illuminance that they will provide due to dirt collection on the luminaires at the time at which it is anticipated that cleaning procedures will be instituted.

Luminaire Efficiency: The ratio of luminous flux (lumens) emitted by a luminaire to that emitted by the lamp or lamps used therein.

Luminance: The amount of light reflected or transmitted by an object.

Lux: The metric unit of illuminance. One lux is one lumen per square meter (lm/m²).

Maintenance Factor (MF): A technique of calculating illuminance after a measured period of time, under specific conditions. It takes into account temperature and voltage variations, dirt accumulation on luminaire and room surfaces, lamp depreciation, maintenance procedures and atmosphere conditions.

Mercury Lamp: A high intensity discharge (HID) lamp in which the major portion of the light is produced by radiation from mercury. Includes clear, phosphor-coated and self-ballasted lamps.

Metal Halide Lamp: A high intensity discharge (HID) lamp in which the major portion of the light is produced by radiation of metal halides and their products of dissociation-possibly in combination with metallic vapors such as mercury. Includes clear and phosphor coated lamps.

Nadir: Vertically downward directly below the luminaire or lamp; designated as 0 degrees.

Neon: Luminous Tubes that emit light when ions of neon gas are excited by the passing of an electric arc.

Offending Zone: The difference between lamp cut off and visual cut off. If a reflector produces light at an angle greater than the shielding angle, the light is in the offending zone.

Outlet Box: See Junction Box.

“Par” Lamps: Parabolic aluminized reflector lamps which offer excellent beam control, come in a variety of beam patterns from very narrow spot to wide flood, and can be used outdoors unprotected because they are made of “hard” glass that can withstand adverse weather.

Parabolic Louvers: A grid of baffles which redirect light downward and provide very low luminaire brightness.

Pattern Control: A blade, in the air passage of an air handling luminaire, which sets the direction of air flow from the luminaire.

Photometry: The science of measuring visible light in units that are weighted according to the sensitivity of the human eye. It is a quantitative science based on a statistical model of the human visual response to light. In other words, human perception of light under carefully controlled conditions.

Phototransduction: A process by which light is converted into electrical signals in the rod cells, cone cells, and photosensitive ganglion cells

Plug-in Wiring: Electrical distribution system which has quick-connect wiring connectors.

Point Method Lighting Calculation: A lighting design procedure for predetermining the illuminance at various locations in lighting installations, by use of luminaire photometric data.

Polarization: The process by which the transverse vibrations of light waves are oriented in a specific plane. Polarization may be obtained by using either transmitting or reflecting media.

Power Factor: Ratio of watts over volts times amperes. Power factor in lighting is primarily applicable to ballasts. Since volts and watts are usually fixed, amperes (or current) will go up as power factor goes down. This necessitates the use of larger wire sizes to carry the increased amount of current needed with Low Power Factor (L.P.F.) ballasts. The addition of a capacitor to a L.P.F. ballast converts it to a H.P.F. ballast.

Preheat Fluorescent Lamp: A fluorescent lamp designed for operation in a circuit requiring a manual or automatic starting switch to preheat the electrodes in order to start the arc.

“R” Lamps: Reflectorized lamps available in spot (clear face) and flood (frosted face).

Radiometry: The field that studies the measurement of electromagnetic radiation, including visible light. Note that light is also measured using the techniques of photometry, which deal with brightness as perceived by the human eye, rather than absolute power.

Radiance and Spectral Radiance: Radiometric measures that describe the amount of light that passes through or is emitted from a particular area, and falls within a given solid angle in a specified direction. They are used to characterize both emission from diffuse sources and reflection from diffuse surfaces. The SI unit of radiance is watts per steradian per square meter. Radiance characterizes total emission or reflection, while spectral radiance characterizes the light at a single wavelength or frequency.

Rapid Start Fluorescent Lamp: A fluorescent lamp designed for operation with a ballast that provides a low-voltage winding for preheating the electrodes and initiating the arc without a starting switch or the application of high voltage.

Raw Footcandles: See Footcandles.

Reflection: Light bouncing off a surface. In specular reflection the light strikes and leaves a surface at the same angle. Diffuse reflected light leaves a surface in all directions.

Reflectance: Sometimes called reflectance factor. The ratio of reflected light to incident light (light falling on a surface). Reflectance is generally expressed in percent.

Reflected Glare: Glare resulting from specular reflections of high luminances in polished or glossy surfaces in the field of view. It usually is associated with reflections from within a visual task or areas in close proximity to the region being viewed.

Refraction: The process by which the direction of a ray of light changes as it passes obliquely from one medium to another in which its speed is different.

Romex: A cable comprised of flexible plastic sheathing inside of which are two or more insulated wires for carrying electricity.

Room Cavity Ratio (RCR): A number indicating room cavity proportions calculated from length, width and height.

Rough Service Lamps: Incandescent lamps designed with extra filament supports to withstand bumps, shocks and vibrations with some loss in lumen output.

RTFC!: Sage advice give to those who seek information that is readily available to those who refuse to make the effort to read the manufacturer's catalog

Scallop: Lighting slang meaning elliptical beam signature as seen on a vertical surface

Scallop Pattern: A series of elliptical beam signatures. When used symmetrically and arranged to overlap, qualifies as a wall-wash technique

Self-ballasted Mercury Lamps: Any mercury lamp of which the current-limiting device is an integral part.

Service Entrance: Point at which power utility wires enter a building.

Shielding Angle: Determining factor of the quality of a reflector, it is the angle at which lamp and lamp image in a reflector are the same.

Silver Bowl Lamps: Incandescent 'A' lamps with a silver finish inside the bowl portion of the bulb. Used for indirect lighting.

Sound Transmission (room to room): Sound passing from one room to another, normally through an air return plenum. Also called Crosstalk.

Sound Transmission Class (STC): A number rating system for room to room sound transmission through air handling luminaries. The higher the STC number, the lower the level of sound transmission.

Spacing Ratio: Ratio of the distance between luminaire centers to the mounting height above the work-plane for uniform illumination.

Spectral Energy Distribution (SED) Curves: A plot of the level of energy at each wavelength of a light source.

Speech Privacy: The extent to which people, in public areas, can speak without being overheard by or disturbing others.

Sphere Illumination: The illumination on a task from a source providing equal luminance in all directions about that task, such as an illuminated sphere with the task located at the center.

Suprachiasmatic Nucleus (SCN): A small accumulation of nerve cells in the hypothalamus, the SCN is located directly above the optical chiasma and is considered to be the circadian pacemaker (or inner clock)

Task Lighting: Lighting directed to a specific surface or area that provides illumination for visual tasks.

Three-way Lamps: Incandescent lamps that have two separately switched filaments permitting a choice of three levels of light such as 30/70/100, 50/100/150 or 100/200/300 watts. They can only be used in a base down position.

Transformer: A device to raise or lower electric voltage.

Transmission: The passage of light through a material.

Tungsten-Halogen Lamp: A gas filled tungsten incandescent lamp containing a certain proportion of halogens.

Veiling Reflections: Regular reflections superimposed upon diffuse reflections from an object that partially or totally obscure the details to be seen by reducing the contrast. This is sometimes called reflected glare.

Vibration Service Lamps: See Rough Service Lamps.

Visual Comfort Probability (VCP): The rating of a lighting system expressed as a per cent of people who, when viewing from a specified location and in a specified direction, will be expected to find it acceptable in terms of discomfort glare.

Visual Edge: The line on an isolux chart that has a value equal to 10% of the maximum illumination.

Visual Field: The field of view that can be perceived when the head and eyes are kept fixed.

Visual System: Rods and Cones of the retinas of both eyes are the receptors of visual stimuli. The signals of the receptors are pre-processed in the neuronal layers of the retina and passed via the optic nerve and the optical tract to the lateral geniculate body and from there via optic radiation to the occipital cortex of the telecephalon.

Volt (V): The unit for measuring electric potential. It defines the force or pressure of electricity.

Wall Wash Lighting: A smooth even distribution of light over a wall.

Watt (W): The unit for measuring electric power. It defines the power or energy consumed by an electrical device. The cost of operating an electrical device is determined by the watts it consumes times the hours of use. It is related to volts and amps by the following formula: Watts = Volts x Amps.

Wavelength: The distance between repeating units of a wave pattern. In a sine wave, the wavelength is the distance between the midpoints of the wave.

Zeitgeber: Coined from two German words meaning "time giver", this word refers to external synchronizing factors, such as light, noise, food, exercise, etc

Zonal Cavity Method Lighting Calculation: A lighting design procedure used for predetermining the relation between the number and types of lamps or luminaires, the room characteristics, and the average illuminance on the work-plane. It takes into account both direct and reflected flux.