

AC (Alternating Current): Electrical current in which the direction is reversed at regular intervals or cycles; in the U.S. the standard is 120 reversals or 60 cycles per second.

Ampere: (Amps): The SI unit measuring the intensity of electrical current flow.

American National Standards Institute (ANSI): The organization that coordinates voluntary guidelines and standards for the electrical and other industries.

Arc Gap: The distance measured between the electrodes of an arc discharge lamp (HID lamp).

Ballast: A device used to provide the starting voltage and regulate the current to discharge lamps, including Fluorescent, Metal Halide, and High Pressure Sodium.

Ballast factor: The percentage of rated lumens from the same lamp using a commercial ballast as compared to an ANSI reference ballast. A ballast factor of .94 means the commercial ballast produces 94% of light produced by an ANSI reference ballast operating same lamp. The ballast factor can be referred to in the catalogs from Fluorescent ballast manufacturers.

Base: The physical end of the lamp that inserts into the lamp socket or holder.

Beam Angle (Spread): The central part of the beam of light from a reflector lamp (i.e. BR, MR and PAR types) where the intensity is 50% of the maximum candlepower.

Burn Position: The position in which lamps are designed to be operated. Often designated by the position of the lamp base. BU = Base Up, Horiz = Horizontal.

Candela (cd): The measuring unit of luminous intensity of a light source in a given direction. A light source may have different intensities depending upon the given direction which the measurement is taken. The old measurement equated to the amount of light produced by a standard candle.

Candle Power (cp): Luminous intensity expressed in candelas. Typically used in measuring the luminous intensity distribution of a reflector lamp or lighting fixture.

Center Beam Candle Power (CBCP): The intensity of light produced at the center of a reflector's beam, expressed in candelas.

Chromaticity of a Color: The quality of color that includes its dominant or complementary wavelength, purity, hue, and saturation. Independent of luminance or brightness.

CRI (Color Rendering Index): An index from 0-100 measuring a light source's ability to render color accurately. Sodium lamps can have a CRI as low as 22, while tungsten Halogen lamps can have a CRI as high as 100. Any lamps rated above 80 CRI tend to be of good color rendering.

Correlated Color Temperature: A scientific measurement of the balance of wavelengths making up any "white" light. The unit of measurement is in Kelvin(K) which determines the warm or cool appearance of a light source. The lower the color temperature, the warmer or more yellow is the appearance. The higher the color temperature, the cooler or bluer is the appearance. Typical color temperatures are 2800K for incandescent, 3000K for Halogen, 4200K Cool White Fluorescent, and 5000K daylight Fluorescent and Metal Halide.

Compact Fluorescent Lamp (CFL): The standard term given to small diameter Fluorescent lamps, some of which have built-in ballasts and medium screw bases for replacement of incandescent lamps.

Current: A measure of the rate of flow of electricity, expressed in amperes.

Daylight: Generally defined as having a correlated color temperature of 6000K or higher.

DC (Direct Current): A type of electrical current and distribution by which electricity flows in one direction through the conductor. Battery operated systems are typical DC applications.

Dichroic: "Two Color"; Often referred to in lighting as the dichroic coating applied to glass filters and glass reflectors to change or control the color of light passing through the lighting fixture or lamp.

Dimmable: A lamp that has varying lumen output controlled by dimming device.

Dimmer: An electronic device used to vary the lumen output of a lamp.

Discharge Lamp: See High Intensity Discharge Lamp.

Efficacy: The measured effectiveness at which lamps convert power (measured in watts) into light (measured in lumens). Also see Lumens Per Watt.

Ellipsoidal Reflector: A reflector designed to converge light so that the beam is focused to a single point. This often results in the reduction of light trapped within a lighting fixture.

Energy Policy Act (EPACT): Energy legislation passed in 1992 by the U.S. Congress. The law involves a variety of different industries including lighting. The lighting section of the legislation covers lamp labeling and minimum energy efficiency standards (lumens/watt) for many commonly used lamps including incandescent and Fluorescent sources.

Filament: A tungsten wire that when heated electrically generates radiation in the visible, infrared and ultraviolet ranges.

Fluorescent Lamp: A low-pressure mercury discharge lamp in which an electric discharge of ultraviolet energy excites a coating of phosphor on the lamp glass and transforms some of that energy to visible light. Fluorescent lamps are manufactured in many different forms including linear four foot T8 lamps, U-shaped and Coiled Compact Fluorescent lamps with integrated ballasts. Fluorescent lamps typically require a matching ballast to operate the lamp properly.

Footcandle (fc): A unit of illuminance. One footcandle is equal to 1 lumen per square foot (lm/ft²); see Lux. A lighting designer would use a measure of footcandles at the work surface to determine the proper illumination level for office lighting.

Frequency: The number of times per second that an alternating current system reverses from positive to negative and back to positive, expressed in hertz (Hz).

Halogen Lamp: A higher pressure, high temperature incandescent lamp containing Halogen gas that recycles tungsten back onto the filament surface. The Halogen cycle allows for higher efficacy, higher color temperature, and longer life cycles than incandescent lamps.

Hertz (Hz): A unit of frequency equal to one cycle per second (see frequency). The U.S. standard is 60 Hz.

High Intensity Discharge Lamp (HID): A high pressure lamp in which high intensity light is produced by an electrical arc source. General terminology for Mercury lamps, Metal Halide lamps, High Pressure Sodium lamps, High Pressure Xenon lamps, or any other high intensity arc discharge source.

Hue: The attribute of colors that permits them to be classed as red, yellow, green, blue or an intermediate between any contiguous pair of these colors.

Ignitor: A ballast component that produces enough voltage to cause the initial arc to form across electrodes in HID lamps.

Illuminance: The concentration of luminous flux on a surface. Measured in Lux (lx) or Footcandles (fc).

Incandescent Lamp: A lamp that provides light when a filament, surrounded by inert gas, is heated to incandescence by an electric current.

Inrush Current: The current generated during the initial start up of a lamp system. Inrush current can be several times higher than the operating current of a lamp.

Instant Start: A type of Fluorescent lamp ballast that applies high voltage across the lamp with no preheating of the cathode.

Kelvin: a unit of color temperature measurement. (see Correlated Color Temperature)

Kilowatt (kW): A measure of electrical power equal to 1000 watts.

Kilowatt Hour (kW/hr): 1000 watts of electricity used for one hour. A unit of measure that utility companies utilize for billing purposes.

LCL (Light Center Length): The distance between the center of the filament or arc tube and the reference plane (usually the bottom of the lamp base).

LED (Light Emitting Diode): A solid state lighting device.

Life, Average Rated: Average life is a value for life expectancy based on laboratory tests using controlled system characteristics measured in hours where 50% are still operating.

Lumens: The international unit of measurement for light. A measurement of total quantity of light output from an electric lamp in all directions for a given unit of time.

Lumens, Initial: Quantity of light output measured after 100 hours of operation using controlled system characteristics.

Lumens, Mean: Average quantity of light output over the life of the lamp. High Pressure Sodium and incandescent lamps are measured for mean lumens at 50% of lamp life. Fluorescent and Metal Halide lamps are measured for mean lumens at 40% of rated lamp life.

Lumens Per Watt (LPW, Lm/W): Efficacy; Lumen output divided by lamp watts consumed.

Lumen Depreciation: The decrease in lumen output of a light source over time, until failure.

Luminance: Photometric brightness, luminance is a measure of the flux emitted from, or reflected by, a relatively flat and uniform surface. Luminance may be thought of as luminous intensity per unit area. Candelas per square meter (cd/m²).

Luminous Intensity: see Candela (cd).

Lux (lx): An international metric unit of luminance. One lux is equal to 1 lumen per square meter (see footcandle). 1 lx = 1 lumen per square meter (lm/m²).

Metal Halide Lamp: A member of the high intensity discharge light source family. The light from this source is produced by the radiation from mercury, together with halides of metals such as sodium, scandium, indium and dysprosium. Metal Halide light sources typically require a matching ballast to operate the lamp properly. Metal Halide lamps are available in single-ended and double-ended varieties. Lamp design vary from tubular to elliptical shapes.

MOL (Maximum Overall Length): The end-to-end measurement of a lamp.

MR-16: Mirrored reflector lamp with a 16/8 inch diameter. Most MR-16 lamps are made up of a Halogen capsule surrounded by a dichroic coated reflector. Alignment of the filament within the reflector is critical to creating a precision beam. Smaller diameter lamps include MR11 and MR8.

Nanometer (nm): A unit of length equal to 10⁻⁹ meter. It is the preferred unit of measure for light in the visible and ultraviolet regions of the energy spectrum.

NEMA: National Electrical Manufacturers Association.

Neodymium: A rare earth metal used in reflector and glass coatings to help reduce the yellow light emitted by the lamp.

Ohms Law: Volts x Amps = Watts

Operating Current: Steady state current consumed by a lamp at rated watts.

Operating Position: See burn position.

PAR (Parabolic Aluminized Reflector): A type of Halogen lamp made up of an aluminum coated parabolic glass reflector that controls its light beam by either the reflector or front glass.

Parabolic Reflector: A smooth surfaced, curved reflector formed in the shape of a parabola which focuses all the light at the focal point to create a parallel beam.

Phosphor: An inorganic chemical compound processed into a powder and deposited on the inner glass surface of certain discharge lamps. Phosphors absorb short wavelength ultraviolet radiation, transforms it and emits it as visible light.

Power Factor (PF): A measure of the effectiveness of which an electrical device converts amperes to watts. Power factors can range from 0 to 1.0. A high power factor means that an electrical system is utilizing power efficiently. Devices with power factors of greater than 0.90 are considered "high power factor."

Preheat: A fluorescent lamp type that requires a starter, which enables the electrodes to be properly heated before allowing the ballast to supply the correct current flow.

Programmed Rapid Start: A fluorescent lamp starting method where the cathodes are heated prior to lamp ignition, then the heat is removed or reduced once the lamp has started.

Rapid Start: A type of Fluorescent ballast that applies a low filament voltage to preheat the cathodes. Simultaneously, a starting voltage (lower than that used in instant start ballasts) is also applied to strike the arc. When the cathodes are hot enough the lamp will strike.

Spectral Distribution: The distribution and intensity of spectral energy of a lamp. Concerning the lighting industry, the UV, visible and IR regions are most important. Visible and UV light are most often measured in nanometers while IR light is most often measured in micrometers.

TCLP Test (Toxicity Characteristic Leaching Procedure): Federal EPA regulations (RCRA of 1990) have defined this test to determine whether wastes are to be treated as hazardous or non-hazardous. The TCLP test measures the ability of the mercury in a lamp to leach from a landfill into groundwater.

Total Harmonic Distortion (THD): A measure of the distortion of an electrical wave form. THD is expressed in percent and may refer to individual electrical loads (such as a ballast). The ANSI recommendation is for THD to be no greater than 32%.

Transformer: An electrical device used to raise or lower the voltage of alternating current.

Trigger Start: A circuit used to eliminate the starter and start the preheat lamp almost instantly. In this circuit each electrode is connected to a separate winding in the ballast so the electrode is continuously heated.

Tungsten: A heavy metal used in wire filaments and electrodes. Also known as Wolfram.

Ultraviolet (UV): The portion of the electromagnetic spectrum in which the longest wavelength is just below the visible spectrum, extending from approximately 4nm to approximately 400nm.

Voltage: The force or the pressure of electricity. For incandescent and Halogen lamps, voltage generally refers to the line voltage of which the lamp should be connected. For HID, Fluorescent, and Low-Voltage lamps, the voltage generally refers to the operating voltage which the lamp is connected to a power supply (ballast or transformer) after it has warmed up.

Watt: A unit of electrical power used to indicate power consumption.

Wavelength: Distance between two successive points of a periodic wave. The wavelengths of light are typically expressed in nanometers (nm), or billionths of a meter.

Xenon, Low Pressure: A filament lamp in which Xenon gas is contained in a quartz capsule with a low pressure atmosphere. This includes Xenon Wedge-Base, Festoon, and Bi-pin type lamps. Xenon is a heavy, colorless, chemically inactive, monatomic gaseous element.

Xenon, High Pressure: A short-arc discharge lamp which Xenon gas is contained in a hard glass or special quartz capsule with a high pressure atmosphere. This includes lamps used for searchlight, followspots, and medical applications. Xenon is a heavy, colorless, chemically inactive, monatomic gaseous element.